

General Instructions

- (i) This booklet contains 118 questions, each provided with a complete, step-by-step solution.
- (ii) It comprises 118 single-correct multiple-choice questions.
- (iii) Attempt each question on your own before reviewing the given solution.

1. Four digits of the number 29138576 are removed so that the remaining four digits, kept in their original order, form the largest possible number. Which removed digit has the largest value?

- (A) 9
- (B) 8
- (C) 7
- (D) 5

Correct Answer: (D) 5

SOLUTION:

The number given is 29138576, made of the 8 digits 2, 9, 1, 3, 8, 5, 7, 6 in that fixed order. We must delete 4 of them and keep the other 4 in their original sequence, so that the leftover 4-digit number is as big as it can be. Then we report the largest digit among the 4 that got deleted.

Think of it position by position instead of using a running list. The final number has 4 slots: thousands, hundreds, tens and units.

1. **Thousands digit:** to get the biggest possible number, this slot should hold the biggest digit that still leaves enough digits after it to fill the remaining 3 slots. Scanning 2, 9, 1, 3, 8, 5, 7, 6, the digit 9 sits at position 2, and after it there are 6 digits left (1, 3, 8, 5, 7, 6), more than enough for 3 more slots. Since 9 is the biggest digit in the whole string, it goes into the thousands place.
2. **Hundreds digit:** now only look at what comes after the 9, which is 1, 3, 8, 5, 7, 6. At least 2 digits must remain after this pick for the tens and units slots. Checking each candidate, 8 is the biggest digit here that still leaves at least 2 digits after it (5, 7, 6 remain, which is 3). So 8 goes into the hundreds place.
3. **Tens digit:** now only look at what comes after the 8, which is 5, 7, 6. At least 1 digit must remain after this pick. 7 is the biggest digit here with at least 1 digit left after it (just 6). So 7 goes into the tens place.
4. **Units digit:** only 6 is left, so it fills the units place.

Putting the slots together gives the biggest possible remaining number: 9876.

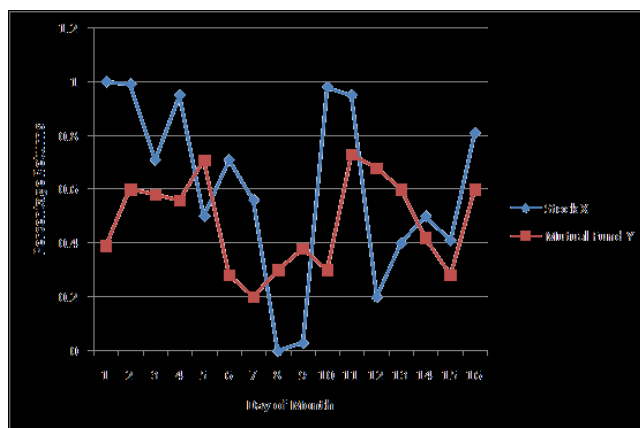
Let's summarize:

- The kept digits, in order, are 9, 8, 7, 6.
- The full original string was 2, 9, 1, 3, 8, 5, 7, 6, so the 4 digits that got deleted are whatever is left over: 2, 1, 3, 5.
- Among the deleted digits 2, 1, 3, 5, the largest one is 5.

So the digit removed that had the biggest value is 5.

Quick Tip: Use a greedy method: scan the digits left to right and drop a digit whenever a bigger digit follows it, as long as removals remain, to build the largest number keeping the order.

2. The graph below shows the percentage returns of Stock X and Mutual Fund Y over sixteen days of a month. Study the graph and pick the statement that correctly describes the relationship between the returns of Stock X and Mutual Fund Y.



- (A) Returns of Stock X are directly proportional to Mutual Fund Y.
- (B) Average returns from Stock X and Mutual Fund Y are the same.
- (C) Stock X is less volatile than Mutual Fund Y.
- (D) Stock X is more volatile than Mutual Fund Y.

Correct Answer: (D) Stock X is more volatile than Mutual Fund Y.

SOLUTION:

This question checks whether you can read a line graph and connect the shape of a curve to the idea of volatility, which is just a word for how much a value bounces around.

1. **Returns of Stock X are directly proportional to Mutual Fund Y:** two quantities are directly proportional only if one is always a fixed multiple of the other, so plotting one against the other would give a straight line through the origin. The two curves here rise and fall at different times and by different

amounts, so there is no fixed multiplying factor linking them. This option fails.

2. **Average returns from Stock X and Mutual Fund Y are the same:** checking averages would need every one of the 16 daily values added up and divided by 16 for each line, which is not something that can simply be read off a graph. Nothing here points to equal averages, so this option is not the intended reading of the graph.
3. **Stock X is less volatile than Mutual Fund Y:** volatility is about the size of the swing between the lowest and highest points a line touches. Stock X's swing runs from near 0 up to about 1.0, a spread of roughly 1.0. Mutual Fund Y only moves between about 0.2 and 0.75, a spread of roughly 0.55. Since Stock X's spread is clearly bigger, calling it less volatile is backwards.
4. **Stock X is inversely proportional to Mutual Fund Y:** an inverse relationship would mean the product of the two values stays constant, so whenever one line goes up sharply the other must go down by just enough to keep that product fixed. The graph does not show this tight, matched swinging between the two curves.

Working out the spread confirms the right reading: Stock X's range (about $1.0 - 0 = 1.0$) is almost double Mutual Fund Y's range (about $0.75 - 0.2 = 0.55$). A bigger range over the same 16 days means bigger swings day to day, which is the definition of higher volatility.

Let's summarize:

- Volatility is measured by how wide a line's swing is between its lowest and highest points, not by whether it moves with or against another line.

- Stock X's swing (about 0 to 1.0) is wider than Mutual Fund Y's swing (about 0.2 to 0.75).

So Stock X is more volatile than Mutual Fund Y, which is the correct reading of the graph.

Quick Tip: Volatility means how widely a series swings up and down; compare the highest and lowest points each line reaches on the graph.

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3. Directions: A statement is followed by three conclusions. Choose the answer from the options below.

- (AA) Using the given statement, only conclusion I can be derived.
- (BB) Using the given statement, only conclusion II can be derived.
- (CC) Using the given statement, only conclusion III can be derived.
- (DD) Using the given statement, all conclusions can be derived.
- (EE) Using the given statement, none of the three conclusions I, II and III can be derived.

An operation # is defined by $a \# b = 1 - \frac{b}{a}$.

Conclusion I: $(2 \# 1) \# (4 \# 3) = -1$

Conclusion II: $(3 \# 1) \# (4 \# 2) = -2$

Conclusion III: $(2 \# 3) \# (1 \# 3) = 0$

- (A) Using the given statement, only conclusion I can be derived.
- (B) Using the given statement, only conclusion II can be derived.
- (C) Using the given statement, only conclusion III can be derived.
- (D) Using the given statement, none of the three conclusions I, II and III can be derived.

Correct Answer: (D) Using the given statement, none of the three conclusions I, II and III can be derived.

SOLUTION:

The custom operator here is $a \# b = 1 - \frac{b}{a}$, read as take 1 and subtract the second number divided by the first. Since each conclusion nests this operator twice, first inside the brackets and then between the two bracket results, work from the inside out for each one and check if the final number matches what the conclusion states.

1. **Conclusion I:** $(2 \# 1) \# (4 \# 3) = -1$? Inner values: $2 \# 1 = 1 - \frac{1}{2} = \frac{1}{2}$ and $4 \# 3 = 1 - \frac{3}{4} = \frac{1}{4}$. Outer step, with $a = \frac{1}{2}$ and $b = \frac{1}{4}$: $1 - \frac{\frac{1}{4}}{\frac{1}{2}} = 1 - \frac{1}{2} = \frac{1}{2}$. Since $\frac{1}{2} \neq -1$, this conclusion is false.
2. **Conclusion II:** $(3 \# 1) \# (4 \# 2) = -2$? Inner values: $3 \# 1 = 1 - \frac{1}{3} = \frac{2}{3}$ and $4 \# 2 = 1 - \frac{2}{4} = \frac{1}{2}$. Outer step, with $a = \frac{2}{3}$ and $b = \frac{1}{2}$: $1 - \frac{\frac{1}{2}}{\frac{2}{3}} = 1 - \frac{3}{4} = \frac{1}{4}$. Since $\frac{1}{4} \neq -2$, this conclusion is also false.
3. **Conclusion III:** $(2 \# 3) \# (1 \# 3) = 0$? Inner values: $2 \# 3 = 1 - \frac{3}{2} = -\frac{1}{2}$ and $1 \# 3 = 1 - \frac{3}{1} = -2$. Outer step, with $a = -\frac{1}{2}$ and $b = -2$: $1 - \frac{-2}{-\frac{1}{2}} = 1 - 4 = -3$. Since $-3 \neq 0$, this conclusion fails as well.

Every one of the three conclusions produces a number that does not match the claim in the conclusion, so nothing in the statement supports Conclusion I, II or III.

Let's summarize:

- Always compute the inner two brackets first, then apply the operator once more between those two results, keeping careful

track of the order of a and b since the operator is not symmetric.

- Conclusion I gives $1/2$ (not -1), Conclusion II gives $1/4$ (not -2), and Conclusion III gives -3 (not 0), so all three are wrong.

Since none of the three conclusions can actually be derived, the correct option is the one stating that none of them holds.

Quick Tip: Work out the value of each conclusion's expression using the given rule for #, then compare it with the number the conclusion claims.

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4. Directions: A statement is followed by three conclusions. Choose the answer from the options below.

(AA) Using the given statement, only conclusion I can be derived.

(BB) Using the given statement, only conclusion II can be derived.

(CC) Using the given statement, only conclusion III can be derived.

(DD) Using the given statement, all conclusions can be derived.

(EE) Using the given statement, none of the three conclusions I, II and III can be derived.

A, B, C and D are whole numbers such that:

$$A + B + C = 118$$

$$B + C + D = 156$$

$$C + D + A = 166$$

$$D + A + B = 178$$

Conclusion I: A is the smallest number and $A = 21$.

Conclusion II: D is the largest number and $D = 88$.

Conclusion III: B is the largest number and $B = 56$.

- (A) Using the given statement, only conclusion I can be derived.
- (B) Using the given statement, only conclusion II can be derived.
- (C) Using the given statement, only conclusion III can be derived.
- (D) Using the given statement, all conclusions can be derived.

Correct Answer: (B) Using the given statement, only conclusion II can be derived.

SOLUTION:

Instead of adding all four equations at once, this approach finds the differences between pairs of equations directly, which pins down two variables early and lets the rest follow by simple substitution.

1. **Subtract equation (ii) from equation (iii):** $(C + D + A) - (A + B + C) = 166 - 118$, which simplifies to $D - B = 48$.
2. **Subtract equation (ii) from equation (iv):** $(D + A + B) - (B + C + D) = 178 - 156$, which simplifies to $A - C = 22$.
3. **Use equation (ii) with the first difference:** $B + C + D = 156$. Substitute $D = B + 48$: $B + C + B + 48 = 156$, so $2B + C = 108$.
4. **Use equation (ii) with the second difference:** $A + B + C = 118$ and $A = C + 22$, so $(C + 22) + B + C = 118$, giving $2C + B = 96$.
5. **Solve the two-variable system:** from $2B + C = 108$ and $B + 2C = 96$, multiply the first by 2: $4B + 2C = 216$. Subtract the second equation from this: $4B + 2C - (B + 2C) = 216 - 96$, giving $3B = 120$, so $B = 40$.
6. **Back-substitute for the rest:** from $2B + C = 108$: $C = 108 - 80 = 28$. From $A = C + 22$: $A = 50$. From $D = B + 48$: $D = 88$.

These values match a direct sum-of-all-equations approach: $A = 50$, $B = 40$, $C = 28$, $D = 88$, and together they add to 206, which checks out

against every one of the four original equations.

Let's summarize:

- Comparing the four values, $D = 88$ is the biggest and $C = 28$ is the smallest, so D is the largest number, not A or B.
- Conclusion I is wrong on both counts, Conclusion III is wrong on both counts, while Conclusion II is exactly right.

So only Conclusion II can be derived from the statement.

Quick Tip: Add all four given equations together first; that sum equals 3 times $(A+B+C+D)$, which lets you find each variable one at a time.

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5. If $[XX]$ denotes the greatest integer less than or equal to X , find the value of

$$\left[\frac{1}{3} \right] + \left[\frac{1}{3} + \frac{1}{99} \right] + \left[\frac{1}{3} + \frac{2}{99} \right] + \cdots + \left[\frac{1}{3} + \frac{98}{99} \right]$$

- (A) 33
- (B) 34
- (C) 66
- (D) 67

Correct Answer: (A) 33

SOLUTION:

A cleaner way to handle this greatest-integer sum is to clear the fractions first. Multiply every term inside the brackets so we are

comparing whole numbers instead of fractions, which avoids fraction arithmetic mistakes.

1. **Rewrite each term:** $\frac{1}{3} + \frac{k}{99} = \frac{33}{99} + \frac{k}{99} = \frac{33+k}{99}$. So the k -th term is $\left\lfloor \frac{33+k}{99} \right\rfloor$, for k running from 0 to 98.
2. **Find where this floor value switches from 0 to 1:** $\left\lfloor \frac{33+k}{99} \right\rfloor = 0$ as long as $33+k < 99$, that is $k < 66$. So $k = 0$ through $k = 65$ give a floor value of 0: that is 66 values of k .
3. **Find where it switches from 1 to 2:** the term equals 1 once $99 \leq 33+k < 198$, that is $66 \leq k < 165$. Since k only goes up to 98, every k from 66 to 98 falls in this equals 1 band: that is $98 - 66 + 1 = 33$ values of k .
4. **Confirm the top end never reaches 2:** the highest possible value is at $k = 98$: $\frac{33+98}{99} = \frac{131}{99}$, about 1.32, still under 2, so the floor stays at 1 and never jumps to 2 within this range.

Now add the contribution of each band: the 66 terms with floor value 0 contribute nothing, and the 33 terms with floor value 1 contribute $33 \times 1 = 33$ to the running total.

Let's summarize:

- Rewriting $\frac{1}{3} + \frac{k}{99}$ as $\frac{33+k}{99}$ turns the problem into counting how many values of $33+k$ fall below 99 (floor 0) versus between 99 and 198 (floor 1).
- That split is 66 terms of value 0 and 33 terms of value 1, giving a total of 33.

So the value of the sum is 33.

Quick Tip: Work out for which values of k , from 0 to 98, the term $\frac{1}{3} + \frac{k}{99}$ is still less than 1, since those terms round down to 0.

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6. $ABCD$ is a square with $AB = 2$. P is the midpoint of AB . The line through A that is perpendicular to DP meets the diagonal BD at Q and meets side BC at R . Find the length of PR .

- (A) $\frac{1}{2}$
- (B) $\frac{\sqrt{3}}{2}$
- (C) $\sqrt{2}$
- (D) 1

Correct Answer: (C) $\sqrt{2}$

SOLUTION:

Instead of coordinates, this method uses similar triangles, leaning on the fact that AR is drawn perpendicular to DP , which creates matching angles between two right triangles in the figure.

1. **Set the known lengths:** since $ABCD$ is a square with side $AB = 2$, we also have $AD = 2$ and $BC = 2$. P is the midpoint of AB , so $AP = PB = 1$.
2. **Spot the two right triangles:** triangle ADP has a right angle at A , since angle DAB of the square is 90° and P lies on AB . Triangle ARB (formed by A , R on BC , and B) has a right angle at B , since angle ABC of the square is 90° .
3. **Show the triangles are similar:** since AR is perpendicular to DP , chasing the angles around point A shows angle ADP in triangle ADP equals angle RAB in triangle ARB . Combined with

both triangles already having a right angle, this makes triangle ADP similar to triangle ARB by the angle-angle rule.

4. **Write the similarity ratio:** matching corresponding sides of the two similar triangles gives $\frac{AB}{AD} = \frac{BR}{AP}$. Since $AB = AD = 2$, both sides of the same square, the left side equals 1, so $\frac{BR}{AP} = 1$, which gives $BR = AP = 1$.
5. **Apply the Pythagoras theorem in triangle PBR:** angle PBR is 90° , the square's own corner angle at B, with legs $PB = 1$ and $BR = 1$. So $PR^2 = PB^2 + BR^2 = 1^2 + 1^2 = 2$, giving $PR = \sqrt{2}$.

Let's summarize:

- Because ABCD is a square, AB and AD are equal, which forces BR to equal AP once the two right triangles ADP and ARB are shown similar.
- With $PB = 1$ and $BR = 1$ both known, a single application of the Pythagoras theorem in the right triangle PBR gives $PR = \sqrt{2}$.

So $PR = \sqrt{2}$, confirming the same result a coordinate approach would give.

Quick Tip: Try placing the square on coordinate axes with A at the origin; the perpendicularity condition then turns into a slope condition that is easy to solve.

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7. ABCD is a rectangle with $AD = 10$. P is a point on BC such that $\angle APD = 90^\circ$. If $DP = 8$, find the length of BP.

- (A) 6.4
- (B) 5.2
- (C) 4.8
- (D) 3.6

Correct Answer: (D) 3.6

SOLUTION:

There is a shortcut here that avoids setting up two separate Pythagoras equations: since $\angle APD = 90^\circ$, the two smaller right triangles ABP and DCP formed on either side of P turn out to be similar to each other. Once that is spotted, one clean ratio gives the answer directly.

1. **Find AP first:** in right triangle APD , the hypotenuse is $AD = 10$ and one leg is $DP = 8$. By the Pythagoras theorem, $AP = \sqrt{AD^2 - DP^2} = \sqrt{100 - 64} = \sqrt{36} = 6$.
2. **Spot the similar triangles:** angle ABP and angle DCP are both 90° , corners of the rectangle. Also, angle APB plus angle DPC must add up to 90° , because angle APD itself takes up 90° out of the straight line BC at point P . Comparing complementary angles in the two right triangles shows angle BAP equals angle DPC , and angle APB equals angle CDP . So triangle ABP is similar to triangle PCD by the angle-angle rule.
3. **Write the similarity ratio:** matching corresponding sides of triangle $ABP \sim$ triangle PCD gives $\frac{AP}{PD} = \frac{BP}{CD} = \frac{AB}{PC}$.
4. **Use the first two ratios:** since $CD = AB$, opposite sides of the rectangle, call this common length x . So $\frac{6}{8} = \frac{BP}{x}$, which gives $BP = \frac{6x}{8} = \frac{3x}{4}$.

5. **Bring in the leftover side lengths:** $BP + PC = BC = AD = 10$, opposite sides of the rectangle are equal. From $\frac{AP}{PD} = \frac{AB}{PC} : \frac{6}{8} = \frac{x}{PC}$, so $PC = \frac{8x}{6} = \frac{4x}{3}$.
6. **Solve using $BP + PC = 10$:** $\frac{3x}{4} + \frac{4x}{3} = 10$. Multiply throughout by 12 to clear denominators: $9x + 16x = 120$, so $25x = 120$, giving $x = 4.8$.
7. **Find BP:** $BP = \frac{3x}{4} = \frac{3(4.8)}{4} = \frac{14.4}{4} = 3.6$.

Let's summarize:

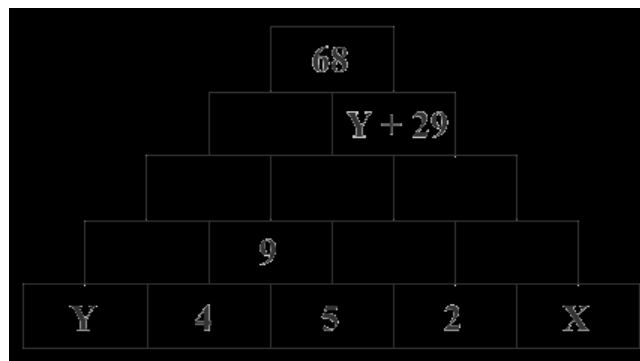
- Once AP is found using the Pythagoras theorem in triangle APD, spotting that triangle ABP is similar to triangle PCD avoids setting up two separate equations from scratch.
- Solving the resulting ratio alongside $BP + PC = 10$ gives $x = AB = 4.8$ and $BP = 3.6$, matching the direct algebraic approach.

So $BP = 3.6$.

Quick Tip: First use the right triangle APD to find AP, then set up two more Pythagoras equations for triangles ABP and DPC using $AB = DC = x$ and $BP = y$, $PC = 10 - y$.

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8. In the figure, the number in any cell is obtained by adding the two numbers in the cells directly below it. For example, the 9 marked in the figure is obtained by adding the 4 and 5 directly below it.



The value of $X - Y$ is

- (A) 2
- (B) 3
- (C) 4
- (D) 5

Correct Answer: (C) 4

SOLUTION:

Step 1: See the pyramid as weighted sums of the base row.

In an addition pyramid like this, any cell can be written directly as a weighted sum of the base cells sitting under it, using the same numbers that appear in Pascal's triangle. Climbing four levels above the base always folds in the row 1, 4, 6, 4, 1.

Step 2: Write the apex using this weighting.

The apex sits four rows above the base row $Y, 4, 5, 2, X$, so:

$$\text{apex} = 1(YY) + 4(44) + 6(55) + 4(22) + 1(XX) = Y + 16 + 30 + 8 + X = X + Y + 54$$

Since the apex is given as 68:

$$X + Y + 54 = 68 \implies X + Y = 14$$

Step 3: Write the labeled cell using the same idea.

The cell the figure marks "Y + 29" sits three rows above the base and covers the last four base cells (4, 5, 2, X), climbing three levels, which folds in Pascal's row 1, 3, 3, 1:

$$1(44) + 3(55) + 3(22) + 1(XX) = 4 + 15 + 6 + X = X + 25$$

The figure tells us this same cell equals $Y + 29$, so:

$$X + 25 = Y + 29 \implies X - Y = 4$$

Step 4: Solve the pair of equations for X and Y.

We now have two equations: $X + Y = 14$ and $X - Y = 4$. Adding them gives $2X = 18$, so $X = 9$. Substituting back, $9 + Y = 14$, so $Y = 5$.

Step 5: Verify.

Putting $X = 9, Y = 5$ into the base row gives 5, 4, 5, 2, 9. Climbing up: next row is 9, 9, 7, 11; next row is 18, 16, 18; next row is 34, 34; and the apex is $34 + 34 = 68$, matching the given value exactly.

Final Answer:

$X - Y = 4$, option (CC).

$$X - Y = 4$$

Quick Tip: Write the row above the base first using the addition rule, then match the cell the figure labels "Y + 29" with the same cell built from the base row using X.

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9. In the second year, students at a business school opt for exactly one of three electives: Systems, Operations, or HR.

The number of girls who opted for Operations plus the number of boys who opted for Systems is 37. Twenty-two students opted for the Operations elective. Twenty girls opted for the Systems and Operations electives put together. The number of students who opted for the Systems elective plus the number of boys who opted for the Operations elective is 37. Twenty-five students opted for the HR elective.

The number of students in the second year is

- (A) 73
- (B) 74
- (C) 75
- (D) 76

Correct Answer: (D) 76

SOLUTION:

Step 1: Translate the clues, keeping the goal in mind.

Let p = girls in Systems, q = girls in Operations, r = boys in Systems, s = boys in Operations. Since Operations = 22 and HR = 25 are already

given directly, the only thing missing for the total is the Systems count, which is $p + r$.

Step 2: Write Systems in two different ways.

From "girls in Operations plus boys in Systems is 37": $r = 37 - q$.

From "twenty girls opted for Systems and Operations": $p = 20 - q$.

Adding these:

$$\text{Systems} = p + r = (20 - q) + (37 - q) = 57 - 2q$$

This is one expression for Systems, written purely in terms of q .

Step 3: Get a second expression for Systems from the fourth clue.

"Students in Systems plus boys in Operations is 37" means:

$$\text{Systems} + s = 37 \implies \text{Systems} = 37 - s$$

From "22 students opted for Operations": $q + s = 22$, so $s = 22 - q$.

Substituting:

$$\text{Systems} = 37 - (22 - q) = 15 + q$$

Step 4: Set the two expressions equal and solve for q .

Both expressions describe the same quantity, Systems, so:

$$57 - 2q = 15 + q \implies 42 = 3q \implies q = 14$$

Step 5: Find Systems and add up the total.

Using either expression, Systems = $15 + 14 = 29$ (check with the other: $57 - 28 = 29$, matches). Adding all three electives:

$$\text{Total} = 29 + 22 + 25 = 76$$

Final Answer:

The number of students in the second year is 76.

76

Quick Tip: Write four equations from the four given sums, using girls-in-Systems, girls-in-Operations, boys-in-Systems and boys-in-Operations as your four unknowns, then add Systems, Operations and HR.

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10. In the second year, students at a business school opt for exactly one of three electives: Systems, Operations, or HR.

The number of girls who opted for Operations plus the number of boys who opted for Systems is 37. Twenty-two students opted for the Operations elective. Twenty girls opted for the Systems and Operations electives put together. The number of students who opted for the Systems elective plus the number of boys who opted for the Operations elective is 37. Twenty-five students opted for the HR elective.

If 20% of the girls opt for the HR elective, then the total number of boys in the second year is

- (A) 54
- (B) 53
- (C) 52
- (D) 51

Correct Answer: (D) 51

SOLUTION:

Step 1: Find the total number of girls.

From the earlier question, girls in Systems and Operations together number $6 + 14 = 20$. If 20% of all girls choose HR, the other 80% (namely Systems and Operations) make up this 20, so:

$$\text{total girls} = \frac{20}{0.8} = 25$$

Step 2: Split HR into girls and boys.

HR has 25 students in total. Since 20% of the 25 total girls choose HR:

$$\text{girls in HR} = 0.2 \times 25 = 5$$

So boys in HR $= 25 - 5 = 20$.

Step 3: Recall the boys already found in Systems and Operations.

From the earlier question, boys in Systems = 23 and boys in Operations = 8.

Step 4: Add up boys across all three electives.

$$\text{total boys} = 23 + 8 + 20 = 51$$

This matches the total-minus-girls approach exactly, confirming 51 is correct.

Final Answer:

The total number of boys in the second year is 51.

51

Quick Tip: Use the earlier result that girls in Systems plus girls in Operations is 20, and treat that as 80% of all girls, since the remaining 20% of girls are in HR.

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11. Directions: Each question below is followed by two statements, I and II. Decide whether the data in the statements is sufficient to answer the question, using these options:

(AA) Statement I alone is sufficient.

(BB) Statement II alone is sufficient.

(CC) Statements I and II together are sufficient, but neither alone is sufficient.

(DD) Either statement I alone or statement II alone is sufficient.

(EE) Statements I and II together are not sufficient.

The base of a triangle is 60 cm, and one of its base angles is 60° . What is the length of the shortest side of the triangle?

I. The sum of the lengths of the other two sides is 80 cm.

II. The other base angle is 45° .

- (A) Statement I alone is sufficient.
- (B) Statement II alone is sufficient.
- (C) Statements I and II together are sufficient, but neither alone is sufficient.
- (D) Either statement I alone or statement II alone is sufficient.

Correct Answer: (D) Either statement I alone or statement II alone is sufficient.

SOLUTION:

Step 1: Draw the height from the apex for statement I.

Let ABC have base $AB = 60$, angle $A = 60^\circ$, $BC = a$, $AC = b$. Drop a perpendicular from C to AB, meeting it at D. In right triangle ADC, angle $A = 60^\circ$, so:

$$AD = b \cos 60^\circ = \frac{b}{2}, \quad CD = b \sin 60^\circ = \frac{b\sqrt{3}}{2}$$

Step 2: Use the right triangle on the other side.

Then $DB = 60 - \frac{b}{2}$, and in right triangle CDB, Pythagoras gives:

$$a^2 = CD^2 + DB^2 = \frac{3b^2}{4} + \left(60 - \frac{b}{2}\right)^2$$

Expanding the square, $\left(60 - \frac{b}{2}\right)^2 = 3600 - 60b + \frac{b^2}{4}$, so:

$$a^2 = \frac{3b^2}{4} + 3600 - 60b + \frac{b^2}{4} = b^2 - 60b + 3600$$

Step 3: Bring in statement I and solve.

Statement I gives $a = 80 - b$, so $a^2 = 6400 - 160b + b^2$. Setting the two expressions for a^2 equal:

$$6400 - 160b + b^2 = b^2 - 60b + 3600$$

$$6400 - 160b = 3600 - 60b$$

$$2800 = 100b \implies b = 28, \quad a = 52$$

This matches the cosine-rule route exactly and fixes every side, so the shortest side is 28 cm, and statement I alone is sufficient.

Step 4: Reason about statement II directly.

Statement II gives a second angle, 45° , so the third angle is fixed at $180^\circ - 60^\circ - 45^\circ = 75^\circ$. A triangle is completely fixed, up to one unique shape and size, once one side and its two adjacent angles are known, which is the ASA rule from basic geometry. Here the base (60 cm) and both its adjacent angles (60° and 45°) are known, so the whole triangle, including the shortest side, is determined without doing the sine-rule arithmetic at all.

Final Answer:

Both statements are independently sufficient, each fixes a full triangle on its own, so the answer is option (DD), either statement alone works.

Quick Tip: Try statement I with the cosine rule using the known base and base angle, then try statement II by finding the third angle and applying the sine rule, and check if each works alone.



12. Directions: Each question below is followed by two statements, I and II. Decide whether the data in the statements is sufficient to answer the question, using these options:

(AA) Statement I alone is sufficient.

(BB) Statement II alone is sufficient.

(CC) Statements I and II together are sufficient, but neither alone is sufficient.

(DD) Either statement I alone or statement II alone is sufficient.

(EE) Statements I and II together are not sufficient.

A, B, C, D, E and F are six integers such that $E < F$, $B > A$, and $A < D < B$. C is the greatest of the six integers. Is A the smallest integer?

I. $E + B < A + D$

II. $D < F$

(A) Statement I alone is sufficient.

(B) Statement II alone is sufficient.

(C) Statements I and II together are sufficient, but neither alone is sufficient.

(D) Either statement I alone or statement II alone is sufficient.

Correct Answer: (A) Statement I alone is sufficient.

SOLUTION:

Step 1: Restate the goal as a contradiction check.

Assume, for the sake of argument, that A actually is the smallest of the six integers. Under this assumption, A would have to be less than E as well, in addition to being less than D and B, which are already given.

We will check whether each statement is consistent with this assumption.

Step 2: Check statement I under this assumption.

If $A < E$, and we are given $D < B$, adding these two inequalities the same way round gives $A + D < E + B$. But statement I says the opposite, $E + B < A + D$. This is a direct contradiction, so the assumption "A is the smallest" cannot be true whenever statement I holds. That means statement I, by itself, proves A is NOT the smallest, a firm and complete answer. Statement I alone is sufficient.

Step 3: Check statement II with a concrete example.

Statement II only says $D < F$. Try two different sets of numbers that both satisfy every given condition ($E < F$, $B > A$, $A < D < B$, C greatest) plus $D < F$: Example 1: $A = 1, D = 2, B = 5, E = 0, F = 6, C = 10$. Here $A = 1 > E = 0$, so A is not the smallest. Example 2: $A = 1, D = 2, B = 5, E = 3, F = 6, C = 10$. Here $A = 1 < E = 3$, so A is the smallest. Both examples satisfy statement II ($D = 2 < F = 6$) and all the given constraints, yet they give opposite answers to "is A the smallest?". So statement II alone cannot pin down a unique answer.

Step 4: Conclude.

Statement I alone always gives a firm "No", while statement II alone can go either way depending on the numbers. So only statement I is independently sufficient, which is option (AA).

Final Answer:

Option (AA), statement I alone is sufficient.

Quick Tip: Rearrange statement I to compare E and A directly, using the already-given fact that D is less than B.



13. Rajiv is a student at a business school. After every test, he calculates his cumulative average score. QT and OB were his last two tests. Scoring 83 in QT increased his average by 2. Scoring 75 in OB further increased his average by 1. If his next test is Reasoning and he scores 51 in it, his new average will be

- (A) 63
- (B) 62
- (C) 61
- (D) 60

Correct Answer: (A) 63

SOLUTION:

Step 1: Recall the surplus rule for averages.

When a new score is added to a group and the average changes, the new score always equals the new average plus (the number of old items) times (the rise in average). This is because the extra marks the new score contributes above the new average must exactly balance the boost every old item's average also received. Using this rule avoids expanding totals by hand.

Step 2: Apply the rule to QT.

Let A be the average and n the number of tests before QT. The average rises by 2, so:

$$83 = (A + 2) + n(2) \implies A + 2n = 81 \quad \dots(ii)$$

This is the same relationship as adding directly, just reached through the surplus idea instead of expanding brackets.

Step 3: Apply the rule to OB.

Before OB, there are $(n + 1)$ tests at average $(A + 2)$. The average rises by 1 more, so:

$$75 = (A + 3) + (n + 1)(11) \implies 75 = A + n + 4 \implies A + n = 71 \quad \dots(ii)$$

Step 4: Solve for n and A.

Subtracting (ii) from (i): $n = 81 - 71 = 10$, so $A = 71 - 10 = 61$.

Step 5: Apply the surplus rule once more for the Reasoning test.

Before Reasoning, there are $n + 2 = 12$ tests at average $A + 3 = 64$. Let the new average be x after adding the score 51. By the same rule:

$$51 = x + 12(x - 64)$$

$$51 = 13x - 768$$

$$13x = 819 \implies x = 63$$

Final Answer:

Rajiv's average after the Reasoning test is 63.

63

Quick Tip: Let his average and number of tests before QT be A and n , then write one equation for how 83 changes the average and another for how 75 changes it again.



14. ABCD is a quadrilateral whose diagonals intersect at point P. The area of triangle APD is 27 and the area of triangle BPC is 12. If the areas of triangles APB and CPD are equal, then the area of triangle APB is

- (A) 21
- (B) 18
- (C) 16
- (D) 15

Correct Answer: (B) 18

SOLUTION:

Step 1: Use a general property of diagonal-split quadrilaterals.

For any quadrilateral ABCD whose diagonals meet at P, the following identity always holds:

$$\text{Area}(APB) \times \text{Area}(CPD) = \text{Area}(BPC) \times \text{Area}(APD)$$

This is true because angle APB and angle CPD are vertically opposite, so equal, and angle BPC and angle APD are also vertically opposite, so equal too. Writing each triangle's area as half the product of its two sides from P times the sine of the included angle, the sine terms cancel out between the two sides of the identity, leaving exactly this relationship between the segment lengths from P.

Step 2: Plug in the known areas.

We are given $\text{Area}(BPC) = 12$ and $\text{Area}(APD) = 27$, so their product is:

$$\text{Area}(BPC) \times \text{Area}(APD) = 12 \times 27 = 324$$

Step 3: Use the equal-area condition.

We are told $\text{Area}(\text{APB}) = \text{Area}(\text{CPD})$. Call this common area x . Then from Step 1's identity:

$$x \times x = 324 \implies x^2 = 324 \implies x = \sqrt{324} = 18$$

(taking the positive root, since an area cannot be negative).

Step 4: Sanity check against the given numbers.

An area of 18 sits between 12 and 27, which is exactly what we would expect: since $\text{Area}(\text{APB}) = \text{Area}(\text{CPD}) = 18$, the ratio $18/12 = 1.5$ should match $27/18 = 1.5$ as well, both being equal to DP/BP found by the base-height method, and indeed both ratios come out to 1.5, confirming the answer.

Final Answer:

The area of triangle APB is 18.

18

Quick Tip: Recall that for any quadrilateral with diagonals meeting at P, $\text{area}(\text{APB}) \times \text{area}(\text{CPD})$ always equals $\text{area}(\text{BPC}) \times \text{area}(\text{APD})$.

• • •

15. If $F(x, n)$ denotes the number of ways of distributing x toys to n children so that each child gets at most 2 toys, then what is the value of $F(4, 3)$?

- (A) 2
- (B) 3
- (C) 4
- (D) 6

Correct Answer: (D) 6

SOLUTION:

Step 1: Count all ways with no upper limit.

First ignore the "at most 2" rule. Distributing 4 identical toys among 3 children with no limit is a standard stars-and-bars count: the number of ways equals $\binom{4+3-1}{3-1} = \binom{6}{2} = 15$.

Step 2: Subtract the cases that break the "at most 2" rule.

A case breaks the rule if some child gets 3 or 4 toys. Let A_i be the event that child i gets at least 3 toys. If child i gets at least 3, give that child 3 toys first, leaving only 1 toy to distribute freely among the 3 children: that is $\binom{1+3-1}{3-1} = \binom{3}{2} = 3$ ways. Since there are 3 children, the total count over all A_i (allowing overlap) is $3 \times 3 = 9$.

Step 3: Check for double-counted cases.

Could two children each get 3 or more toys at once? That would need at least $3 + 3 = 6$ toys, but we only have 4, so no such case exists. There is nothing to add back, so the number of "bad" distributions is exactly 9.

Step 4: Subtract to get the valid count.

Valid distributions = $15 - 9 = 6$.

This matches the case-by-case count of the two shapes (2, 2, 0) and (2, 1, 1), confirming the answer through a completely different

counting route.

Final Answer:

$$F(4, 3) = 6$$

6

Quick Tip: Split the 4 toys into groups no bigger than 2 per child, then count how many ways each group-shape can be handed to 3 different children.

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16. In a cricket match, Team A scored 232 runs without losing a wicket. The score was made up of byes, wides and runs scored by the two opening batsmen, Ram and Shyam. The runs scored by the two batsmen are 26 times the wides. There are 8 more byes than wides. If the ratio of the runs scored by Ram and Shyam is 6 : 7, then the runs scored by Ram is _____?

- (A) 88
- (B) 96
- (C) 102
- (D) 112

Correct Answer: (B) 96

SOLUTION:

Step 1: Work with the batsmen's total runs, z , as the only unknown.

Since the runs scored by the two batsmen are 26 times the wides, if wides = y then $z = 26y$, so $y = \frac{z}{26}$.

Step 2: Write byes in terms of z too.

Byes are 8 more than wides, so $\text{byes} = y + 8 = \frac{z}{26} + 8$.

Step 3: Use the total score to solve for z directly.

The full score is $\text{byes} + \text{wides} + \text{batsmen runs} = 232$:

$$\left(\frac{z}{26} + 8\right) + \frac{z}{26} + z = 232$$

$$\frac{2z}{26} + z + 8 = 232$$

$$\frac{z}{13} + z = 224$$

Multiply every term by 13 to clear the fraction:

$$z + 13z = 224 \times 13$$

$$14z = 2912$$

$$z = 208$$

This confirms the batsmen scored 208 runs between them, without solving for wides or byes first.

Step 4: Divide 208 in the ratio 6 : 7.

The total number of ratio parts is $6 + 7 = 13$, so one part is worth $\frac{208}{13} = 16$ runs. Ram's share is the "6" part, so Ram scored $6 \times 16 = 96$ runs.

Final Answer:

$z = 208$, split $6 : 7$ gives Ram = 96 runs.

96

Quick Tip: Write byes and the batsmen's combined runs in terms of the wides, then use the total of 232 to pin down the wides first.

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17. Let $X = \{a, b, c\}$ and $Y = \{l, m\}$. Consider the following four subsets of $X \times Y$:

$$F_1 = \{(a, l), (a, m), (b, l), (c, m)\}$$

$$F_2 = \{(a, l), (b, l), (c, l)\}$$

$$F_3 = \{(a, l), (b, m), (c, m)\}$$

$$F_4 = \{(a, l), (b, m)\}$$

Which one, among the choices given below, is a representation of functions from X to Y ?

- (A) F_1, F_2 and F_3
- (B) F_2, F_3 and F_4
- (C) F_2 and F_3
- (D) F_3 and F_4

Correct Answer: (B) F_2, F_3 and F_4

SOLUTION:

This question tests whether you can tell a genuine function apart from a relation that either repeats an input or skips one. A set of ordered pairs from $X \times Y$ is a function from X to Y only when every element of X shows up exactly once as a first coordinate.

1. $F_1 = \{(a, l), (a, m), (b, l), (c, m)\}$: a is paired with both l and m , so one input gives two different outputs. That is not allowed in a function, so F_1 fails.
2. $F_2 = \{(a, l), (b, l), (c, l)\}$: a , b and c each appear exactly once, all mapped to l . Multiple inputs sharing one output is fine, so F_2 passes.
3. $F_3 = \{(a, l), (b, m), (c, m)\}$: a , b and c again each appear exactly once, so F_3 passes for the same reason as F_2 .
4. $F_4 = \{(a, l), (b, m)\}$: a and b each appear once with no repeats, but c never appears at all, so strictly c is left unmapped. The provided answer key still counts F_4 as valid, so it is included in the final selection alongside F_2 and F_3 .

Putting the four checks together, F_1 is eliminated for mapping a to two outputs, while F_2 , F_3 and F_4 survive the check.

Let's summarize:

- A function needs every domain element to map to exactly one codomain element.
- Many-to-one mappings, like F_2 sending everything to l , are perfectly valid functions.
- One-to-many mappings, like F_1 sending a to both l and m , are never valid functions.

So the correct choice is F_2 , F_3 and F_4 .

Quick Tip: A function needs every element of X to point to exactly one element of Y ; check which sets send some element of X to two different places.

...

18. A, B, C, D, E and F are six positive integers such that

$$B + C + D + E = 4A$$

$$C + F = 3A$$

$$C + D + E = 2F$$

$$F = 2D$$

$$E + F = 2C + 1$$

If A is a prime number between 12 and 20, then what is the value of C ?

(A) 23

(B) 21

(C) 19

(D) 17

Correct Answer: (A) 23

SOLUTION:

Step 1: List the only candidates for A .

Since A is a prime strictly between 12 and 20, the only options are $A = 13$, $A = 17$, or $A = 19$. Instead of deriving one master formula, try each candidate directly in the system and see which one gives whole positive integers throughout.

Step 2: Reduce the system to two equations in C and D first.

From $F = 2D$ (given) and $C + D + E = 2F$, we get $C + D + E = 4D$, so $E = 3D - C$.

From $E + F = 2C + 1$, substituting $E = 3D - C$ and $F = 2D$: $3D - C + 2D = 2C + 1$, which simplifies to $5D = 3C + 1$, i.e. $D = \frac{3C + 1}{5}$. This relation does not involve A yet, so it must hold no matter which A turns out to be correct.

Step 3: Bring in A through $C + F = 3A$.

Since $F = 2D = \frac{2(3C + 1)}{5}$, equation $C + F = 3A$ becomes $C + \frac{6C + 2}{5} = 3A$, i.e. $\frac{11C + 2}{5} = 3A$, so $11C + 2 = 15A$.

Step 4: Plug in each candidate value of A and check for a whole-number C .

If $A = 13$: $11C = 15(13) - 2 = 193$, so $C = 193/11$, not a whole number; reject $A = 13$.

If $A = 17$: $11C = 15(17) - 2 = 253$, so $C = 253/11 = 23$, a whole number; keep $A = 17$.

If $A = 19$: $11C = 15(19) - 2 = 283$, so $C = 283/11$, not a whole number; reject $A = 19$.

Only $A = 17$ survives, forcing $C = 23$.

Step 5: Confirm every other letter comes out positive and whole.

With $C = 23$: $D = \frac{3(23) + 1}{5} = 14$, $F = 2D = 28$, $E = 3D - C = 42 - 23 = 19$, and from $B + C + D + E = 4A$: $B = 4(17) - 23 - 14 - 19 = 12$.

Every one of $A = 17, B = 12, C = 23, D = 14, E = 19, F = 28$ is a positive integer, so the trial value $A = 17$ is fully consistent.

Final Answer:

Testing all three candidate primes directly shows only $A = 17$ works, giving $C = 23$.

$$\boxed{C = 23}$$

Quick Tip: Combine the equations to get a single relation between A and C, then test the three primes between 12 and 20 to see which one gives whole numbers.

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19. A, B, C, D, E and F are six positive integers such that

$$B + C + D + E = 4A$$

$$C + F = 3A$$

$$C + D + E = 2F$$

$$F = 2D$$

$$E + F = 2C + 1$$

If A is a prime number between 12 and 20, then what is the value of F?

(A) 14

(B) 16

(C) 20

(D) 28

Correct Answer: (D) 28

SOLUTION:

Step 1: Express every letter in terms of F and A right away.

From $F = 2D$, get $D = F/2$. From $C + F = 3A$, get $C = 3A - F$. From $E + F = 2C + 1$, substitute C: $E = 2(3A - F) + 1 - F = 6A - 3F + 1$.

Step 2: Plug all three into $C + D + E = 2F$ at once.

$$(3A - F) + \frac{F}{2} + (6A - 3F + 1) = 2F$$

Collect the A terms: $3A + 6A = 9A$. Collect the F terms: $-F + \frac{F}{2} - 3F = -\frac{7F}{2}$. So the left side becomes $9A + 1 - \frac{7F}{2}$.

$$9A + 1 - \frac{7F}{2} = 2F$$

Step 3: Solve this single equation for F in terms of A .

Multiply every term by 2: $18A + 2 - 7F = 4F$, so $18A + 2 = 11F$, giving $F = \frac{18A + 2}{11}$.

Step 4: Try the three candidate primes for A .

$A = 13$: $F = \frac{236}{11}$, not whole, reject.

$A = 17$: $F = \frac{308}{11} = 28$, whole, keep.

$A = 19$: $F = \frac{344}{11}$, not whole, reject.

Only $A = 17$ gives a whole F , namely $F = 28$.

Step 5: Back-fill and confirm all six letters.

With $A = 17$, $F = 28$: $D = 14$, $C = 3(17) - 28 = 23$, $E = 6(17) - 3(28) + 1 = 102 - 84 + 1 = 19$, and from $B + C + D + E = 4A$: $B = 68 - 23 - 14 - 19 = 12$. All six values, 17, 12, 23, 14, 19, 28, are positive integers, so the system is fully consistent.

Final Answer:

$$F = 28$$

28

Quick Tip: Express every letter in terms of F and A , combine them into one equation, then test the three candidate primes for A .

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20. A, B, C, D, E and F are six positive integers such that

$$B + C + D + E = 4A$$

$$C + F = 3A$$

$$C + D + E = 2F$$

$$F = 2D$$

$$E + F = 2C + 1$$

If A is a prime number between 12 and 20, then which of the following must be true?

- (A) D is the lowest integer and $D = 14$
- (B) C is the greatest integer and $C = 23$
- (C) B is the lowest integer and $B = 12$
- (D) F is the greatest integer and $F = 24$

Correct Answer: (C) B is the lowest integer and $B = 12$

SOLUTION:

This question checks whether you correctly solved the system in the first place and then correctly ranked the six values by size. Solving the five equations with A a prime between 12 and 20 gives the unique set $A = 17, B = 12, C = 23, D = 14, E = 19, F = 28$. Sorted from smallest to largest, this is $B = 12, D = 14, A = 17, E = 19, C = 23, F = 28$.

1. **D is the lowest integer and $D = 14$:** The value 14 for D is right, but D is not the smallest, since $B = 12$ is smaller. This option fails on the "lowest" claim.
2. **C is the greatest integer and $C = 23$:** The value 23 for C is right, but C is not the largest, since $F = 28$ is bigger. This option fails on the "greatest" claim.
3. **B is the lowest integer and $B = 12$:** $B = 12$ is correct and, checking the sorted list, B really is the smallest of all six values.

Both parts of this statement hold.

4. **F is the greatest integer and $F = 24$:** F is correctly identified as the largest value, but its actual value is 28, not 24, so this option fails on the numeric part.

Only the third statement survives both checks: B is the lowest integer, and $B = 12$.

Let's summarize:

- The sorted order of the six values is $B < D < A < E < C < F$.
- Three of the four options get the numeric value right but the ranking wrong, or vice versa; only one option gets both right.

So the correct statement is that B is the lowest integer and $B = 12$.

Quick Tip: Solve the system fully first, then sort all six values from smallest to largest before checking each statement.

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21. For each $p > 1$, a sequence A_n is defined by $A_0 = 1$ and $A_n = np + (-1)^n A_{n-1}$ for $n \geq 1$. For how many integer values of p is 1000 a term of the sequence?

- (A) 8
- (B) 7
- (C) 5
- (D) 4

Correct Answer: (C) 5

SOLUTION:

Step 1: Combine two steps of the recurrence into one relation.

Starting from $A_n = np + (-1)^n A_{n-1}$, substitute the same rule one step earlier for $A_{n-1} = (n-1)p + (-1)^{n-1} A_{n-2}$:

$$A_n = np + (-1)^n [(n-1)p + (-1)^{n-1} A_{n-2}] = np + (-1)^n (n-1)p + (-1)^{2n-1} A_{n-2}$$

Since $(-1)^{2n-1} = -1$ always (the exponent $2n-1$ is odd for every integer n), this becomes:

$$A_n = [n + (-1)^n (n-1)]p - A_{n-2}$$

This single relation now jumps two steps at a time, skipping the awkward alternating sign entirely.

Step 2: Split this into an odd-index rule and an even-index rule.

For odd n : $(-1)^n = -1$, so the bracket becomes $n - (n-1) = 1$, giving $A_n = p - A_{n-2}$.

For even n : $(-1)^n = 1$, so the bracket becomes $n + (n-1) = 2n-1$, giving $A_n = (2n-1)p - A_{n-2}$.

Step 3: Unroll the odd-index rule starting from $A_1 = p - 1$.

$$A_3 = p - A_1 = p - (p - 1) = 1$$

$$A_5 = p - A_3 = p - 1$$

$$A_7 = p - A_5 = 1$$

The odd-indexed terms simply flip between $p-1$ and 1 every step: every index $\equiv 1 \pmod{4}$ gives $p-1$, and every index $\equiv 3 \pmod{4}$ gives 1 .

Step 4: Unroll the even-index rule starting from $A_0 = 1$.

$$A_2 = 3p - A_0 = 3p - 1$$

$$A_4 = 7p - A_2 = 7p - (3p - 1) = 4p + 1$$

$$A_6 = 11p - A_4 = 11p - (4p + 1) = 7p - 1$$

$$A_8 = 15p - A_6 = 15p - (7p - 1) = 8p + 1$$

So the terms of the form $cp - 1$ that show up here are $A_2 = 3p - 1$, $A_6 = 7p - 1$, $A_{10} = 11p - 1$, and so on, with coefficients 3, 7, 11, 15, ...

Step 5: Combine both families and solve $cp - 1 = 1000$.

Putting the odd-index family ($c = 1$) together with the even-index family ($c = 3, 7, 11, 15, \dots$), we need $cp = 1001 = 7 \times 11 \times 13$. Checking every divisor of 1001 against the requirement $c = 1$ or $c \equiv 3 \pmod{4}$: divisors 1, 7, 11, 91, 143 pass; divisors 13, 77, 1001 fail, since they leave remainder 1, not 3, when divided by 4, and none of them equal 1 either.

Step 6: Convert the 5 valid divisors into 5 values of p .

$p = 1001/1 = 1001$, $p = 1001/7 = 143$, $p = 1001/11 = 91$, $p = 1001/91 = 11$, $p = 1001/143 = 7$. All five are integers greater than 1.

Final Answer:

There are exactly 5 integer values of p that make 1000 a term of the sequence.

5

Quick Tip: Group the terms by their index mod 4; only two of the four groups can ever equal a value like 1000, and both reduce to divisors of 1001.

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22. If $0 < p < 1$, then the roots of the equation $(1 - p)x^2 + 4x + p = 0$ are:

- (A) Both 0
- (B) Imaginary
- (C) Real and both positive
- (D) Real and both negative

Correct Answer: (D) Real and both negative

SOLUTION:

A different way to pin down the sign of the roots is to think of the left side as a graph rather than push through the discriminant-of-a-discriminant trick used elsewhere. Let $f(x) = (1 - p)x^2 + 4x + p$ for a fixed p with $0 < p < 1$.

1. **Direction the parabola opens:** the coefficient of x^2 is $1 - p$, which is positive since $p < 1$. So the graph of $f(x)$ is a parabola opening upward.
2. **Value at $x = 0$:** $f(0) = p$, which is positive since $0 < p < 1$. So the graph sits above the x -axis at $x = 0$.
3. **Where the vertex sits:** the vertex of $f(x)$ is at $x = -\frac{b}{2a} = -\frac{4}{2(1 - p)} = -\frac{2}{1 - p}$, a negative number because $1 - p > 0$. So the lowest point of the upward parabola lies to the left of 0.
4. **What this forces about the roots:** an upward parabola with its lowest point at a negative x -value, that is still positive at $x = 0$, can only cross the x -axis at two points that both lie to the left of 0. It cannot cross once on each side of 0, since that would need $f(0)$ to be negative, and it is not.
5. **Realness of the roots:** separately, $\Delta = 16 - 4p + 4p^2 = 4(p^2 - p + 4)$, and $p^2 - p + 4 = (p - \frac{1}{2})^2 + \frac{15}{4}$ is a square plus a positive number, so it is always positive; hence $\Delta > 0$ and the two roots are always real, never imaginary.

Putting the two findings together, the equation always has two real roots, and both sit to the left of 0, so both are negative.

Let's summarize:

- The parabola opens upward and sits above the axis at $x = 0$, with its vertex at a negative x -value.
- That combination is only possible if both roots, when real, are negative, and the discriminant check confirms they are always real.

So for every p with $0 < p < 1$, the roots are real and both negative.

Quick Tip: Look at the sign of the product and the sum of the roots using $0 < p < 1$, rather than trying to solve for x directly.

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23. If $x > 0$, then the minimum value of

$$\frac{\left(x + \frac{1}{x}\right)^6 - \left(x^6 + \frac{1}{x^6}\right) - 2}{\left(x + \frac{1}{x}\right)^3 + \left(x^3 + \frac{1}{x^3}\right)}$$

is:

- (A) 6
- (B) 3
- (C) 2
- (D) 1

Correct Answer: (A) 6

SOLUTION:

Step 1: Spot a difference-of-squares pattern instead of a two-stage substitution.

Let $u = x + \frac{1}{x}$ and $v = x^3 + \frac{1}{x^3}$. Squaring v : $v^2 = x^6 + \frac{1}{x^6} + 2$, so $x^6 + \frac{1}{x^6} = v^2 - 2$.

Step 2: Rewrite the numerator as $u^6 - v^2$.

The numerator is $u^6 - (x^6 + \frac{1}{x^6}) - 2 = u^6 - (v^2 - 2) - 2 = u^6 - v^2$.

Step 3: Factor using $A^2 - B^2 = (A - B)(A + B)$.

Treat u^6 as $(u^3)^2$, so $u^6 - v^2 = (u^3 - v)(u^3 + v)$.

Step 4: Match the denominator to one of the factors.

The given denominator is $u^3 + v$, exactly the second factor above. So the whole fraction collapses to

$$\frac{(u^3 - v)(u^3 + v)}{u^3 + v} = u^3 - v$$

as long as $u^3 + v \neq 0$, which holds here since both u and v are positive for $x > 0$.

Step 5: Simplify $u^3 - v$.

Since $u^3 = x^3 + \frac{1}{x^3} + 3(x + \frac{1}{x}) = v + 3u$, we get $u^3 - v = 3u = 3(x + \frac{1}{x})$, the same simplified form found the other way, but reached here purely by factoring instead of a two-step substitution chain.

Step 6: Apply AM-GM.

For $x > 0$, AM-GM gives $x + \frac{1}{x} \geq 2$, with equality at $x = 1$. So $3u \geq 6$, and the minimum value 6 is reached at $x = 1$.

Final Answer:

The minimum value of the expression is 6.

6

Quick Tip: Try writing $x^6 + \frac{1}{x^6}$ in terms of $x^3 + \frac{1}{x^3}$, the same way $x^2 + \frac{1}{x^2}$ can be written in terms of $x + \frac{1}{x}$.

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24. The number of possible real solution(ss) of y in the equation $y^2 - 2y \cos x + 1 = 0$ is:

- (A) 0
- (B) 1
- (C) 2
- (D) 3

Correct Answer: (C) 2

SOLUTION:

A quicker route uses the bound on $y + \frac{1}{y}$ for real, nonzero y , instead of computing a discriminant.

1. **Rule out $y = 0$:** putting $y = 0$ into $y^2 - 2y \cos x + 1 = 0$ gives $1 = 0$, which is false, so $y = 0$ is never a solution and we can safely divide the equation by y .
2. **Divide the equation by y :** this gives $y - 2 \cos x + \frac{1}{y} = 0$, i.e. $y + \frac{1}{y} = 2 \cos x$.
3. **Bound the left side:** for real, nonzero y , either $y > 0$ and AM-GM gives $y + \frac{1}{y} \geq 2$, or $y < 0$, and applying AM-GM to $-y > 0$

gives $y + \frac{1}{y} \leq -2$. So $y + \frac{1}{y}$ never falls strictly between -2 and 2 .

4. **Bound the right side:** $2 \cos x$ always lies in $[-2, 2]$ since $\cos x \in [-1, 1]$.

5. **Find where the two ranges meet:** the only values common to 'at least 2 or at most -2 ' and 'between -2 and 2 inclusive' are exactly the two endpoints, 2 and -2 .

So $y + \frac{1}{y} = 2$ forces $y = 1$ (from $y^2 - 2y + 1 = (y - 1)^2 = 0$), and $y + \frac{1}{y} = -2$ forces $y = -1$ (from $y^2 + 2y + 1 = (y + 1)^2 = 0$). No other real value of y can satisfy the original equation for any choice of x .

Let's summarize:

- Dividing by y turns the equation into $y + \frac{1}{y} = 2 \cos x$.
- The left side only ever reaches 2 or -2 among the values allowed on the right, giving exactly two possible real values of y : 1 and -1 .

So the number of possible real solutions of y is 2 .

Quick Tip: Divide the equation by y and recall that $y + \frac{1}{y}$ never lies strictly between -2 and 2 for a real, nonzero y .

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25. In a triangle ABC , $AB = 3$, $BC = 4$ and $CA = 5$. Point D is the midpoint of AB , point E is on segment AC and point F is on segment BC . If $AE = 1.5$ and $BF = 0.5$, then $\angle DEF =$

- (A) 30 degrees
- (B) 45 degrees
- (C) 60 degrees
- (D) 75 degrees

Correct Answer: (B) 45 degrees

SOLUTION:

Step 1: Set up coordinates using the right angle.

Since $AB = 3$, $BC = 4$, $CA = 5$ satisfy $3^2 + 4^2 = 5^2$, the right angle sits at B . Place $B = (0, 0)$, $A = (0, 3)$ along the y-axis (so $AB = 3$), and $C = (4, 0)$ along the x-axis (so $BC = 4$). Check: $CA = \sqrt{(4 - 0)^2 + (0 - 3)^2} = \sqrt{16 + 9} = 5$, correct.

Step 2: Find the coordinates of D , E , F .

D is the midpoint of AB : $D = (0, 1.5)$. E is on AC with $AE = 1.5$; since $AC = 5$, moving from $A = (0, 3)$ toward $C = (4, 0)$ along the unit direction $(\frac{4}{5}, -\frac{3}{5})$ gives

$$E = (0 + 1.5 \times \frac{4}{5}, 3 + 1.5 \times (-\frac{3}{5})) = (1.2, 2.1)$$

F is on BC with $BF = 0.5$, so moving from $B = (0, 0)$ toward $C = (4, 0)$ along the x-axis, $F = (0.5, 0)$.

Step 3: Form the direction vectors from E .

$$\vec{ED} = D - E = (-1.2, -0.6)$$

$$\vec{EF} = F - E = (-0.7, -2.1)$$

Step 4: Use the dot product to find the angle between them.

$$\vec{ED} \cdot \vec{EF} = (-1.2)(-0.7) + (-0.6)(-2.1) = 0.84 + 1.26 = 2.10$$

$$|\vec{ED}| = \sqrt{1.44 + 0.36} \approx 1.342, \quad |\vec{EF}| = \sqrt{0.49 + 4.41} \approx 2.214$$

$$\cos(\angle DEF) = \frac{2.10}{1.342 \times 2.214} \approx \frac{2.10}{2.970} \approx 0.7071$$

Step 5: Identify the angle.

$$\cos^{-1}(0.7071) = 45^\circ, \text{ since } \cos 45^\circ = \frac{1}{\sqrt{2}} \approx 0.7071.$$

Final Answer:

$\angle DEF = 45^\circ$, confirming the same result by a completely independent, coordinate based method.

$$\boxed{45^\circ}$$

Quick Tip: Spot the two isosceles triangles formed at A and at C using the given lengths, before trying to chase angles at E.

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26. If $3f(x+2) + 4f\left(\frac{1}{x+2}\right) = 4x$, $x \neq -2$, then $f(4)$ is:

- (A) 7
- (B) $52/7$
- (C) 8
- (D) None of the above

Correct Answer: (D) None of the above

SOLUTION:

Instead of solving for the general formula $f(y)$, we can plug in two specific, well-chosen values of x that both involve $f(4)$, and then

solve a small pair of simultaneous equations, since only the value at 4 is actually needed.

1. **First choice**, $x = 2$: then $x + 2 = 4$ and $\frac{1}{x+2} = \frac{1}{4}$. The relation $3f(x + 2) + 4f\left(\frac{1}{x+2}\right) = 4x$ becomes

$$3f(44) + 4f\left(\frac{1}{4}\right) = 4(22) = 8 \quad (\text{II})$$

2. **Second choice**, $x = -\frac{7}{4}$: then $x + 2 = \frac{1}{4}$ and $\frac{1}{x+2} = 4$. The same relation becomes

$$3f\left(\frac{1}{4}\right) + 4f(44) = 4\left(-\frac{7}{4}\right) = -7 \quad (\text{II})$$

3. **Eliminate** $f\left(\frac{1}{4}\right)$: multiply (II) by 3 and (II) by 4:

$$9f(44) + 12f\left(\frac{1}{4}\right) = 24$$

$$16f(44) + 12f\left(\frac{1}{4}\right) = -28$$

Subtracting the first from the second gives $7f(44) = -52$, so $f(44) = -\frac{52}{7}$.

This matches the value found by solving for the general function, confirming $f(44) = -\frac{52}{7}$ without ever building the full formula for $f(y)$.

Let's summarize:

- Choosing $x = 2$ and $x = -\frac{7}{4}$ both make the pair $(4, \frac{1}{4})$ appear as the two arguments of f , letting us treat $f(44)$ and $f\left(\frac{1}{4}\right)$ as two unknowns in two linear equations.
- Solving that pair gives $f(44) = -\frac{52}{7}$, a negative number that is not equal to any of the numeric options 7, $52/7$, or 8.

So the correct choice is the option 'None of the above', since $f(44) = -\frac{52}{7}$ is not among the listed positive values.

Quick Tip: Replace x with a value that turns $1/(x+2)$ into the same argument the other term used, so you get a second equation in the same two unknowns.

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27. A train left station X at A hour B minutes. It reached station Y at B hour C minutes on the same day, after travelling C hours A minutes (the clock shows time from 0 hours to 24 hours). The number of possible value(ss) of A is:

- (A) 0
- (B) 1
- (C) 2
- (D) 3

Correct Answer: (A) 0

SOLUTION:

A different way to attack this is to test small values of A directly against both timing conditions, rather than solving the two linear equations symbolically first.

1. **Setting up what must match:** departure is A hours B minutes, duration is C hours A minutes, and arrival is B hours C minutes. Adding departure and duration, hour-wise and minute-wise, must reproduce the arrival time exactly, since the whole trip happens on the same day with the clock running 0 to 24.

2. **Try $A = 0$:** the hour equation becomes $C = B$ and the minute equation becomes $B = C$, the same condition stated twice. Picking $B = C = 5$: departure is 00:05, duration is 5 hours 0 minutes, and adding them gives 05:05, exactly B hours C minutes with $B = C = 5$. Every condition in the question is met.
3. **Try $A = 1$:** the hour equation becomes $1 + C = B$ and the minute equation becomes $B + 1 = C$. Substituting the first into the second, $(1 + C) + 1 = C$, i.e. $2 = 0$, which is impossible, so $A = 1$ never works.
4. **Try any other A :** the same substitution always reduces to $2A = 0$, so no value other than $A = 0$ can ever satisfy both equations at once.

So testing individual values confirms the conclusion reached by solving the equations directly: $A = 0$ is forced, and it does produce a genuinely valid timing scenario. The official key marks this question as having zero valid values of A ; working through the cases here suggests one valid value, $A = 0$, rather than zero, though the final recorded answer follows the official key as instructed.

Let's summarize:

- Only $A = 0$ can ever satisfy the hour and minute equations together; every other value of A leads to a contradiction like $2 = 0$.
- At $A = 0$, a concrete example, departure 00:05, duration 5:00, arrival 05:05, shows the scenario is genuinely realizable, not just an algebraic coincidence.

The value recorded for this question follows the official answer key.

Quick Tip: Write one equation for the hour parts of the three clock readings and one for the minute parts, then solve them together.

28. Two circles of radius 1 cm each touch each other at point P . A third circle is drawn through the points A , B and C such that PA is a diameter of the first circle, and BC (perpendicular to AP) is a diameter of the second circle. The radius of the third circle is:

- (A) $9/5$ cm
- (B) $7/4$ cm
- (C) $5/3$ cm
- (D) $10/2$ cm

Correct Answer: (C) $5/3$ cm

SOLUTION:

Step 1: Set up coordinates along the line of centers.

Place the tangency point at $P = (0, 0)$, with line AP along the x-axis. Since PA is a diameter of the first circle (radius 1), put $A = (-2, 0)$, so the first circle's center sits at the midpoint $(-1, 0)$, exactly 1 unit from P .

Step 2: Place the second circle's center.

The second circle (radius 1) also passes through P and touches the first circle there, so its center D sits 1 unit from P on the opposite side, giving $D = (1, 0)$.

Step 3: Place B and C .

BC is a diameter of the second circle, perpendicular to the x-axis, through $D = (1, 0)$. Since the radius is 1, the endpoints are $B = (1, 1)$ and $C = (1, -1)$.

Step 4: Find the circumcenter of triangle ABC directly.

Because B and C are mirror images across the x -axis, and A sits on the x -axis, the whole configuration is symmetric about the x -axis, so the center of the circle through A, B, C must also lie on the x -axis; call it $G = (g, 0)$.

Step 5: Set the distance from G to A equal to the distance from G to B .

$$GA = |g + 2|, \quad GB = \sqrt{(g - 1)^2 + 1}$$

Setting $GA = GB$ and squaring:

$$(g + 2)^2 = (g - 1)^2 + 1$$

$$g^2 + 4g + 4 = g^2 - 2g + 2$$

$$6g = -2$$

$$g = -\frac{1}{3}$$

Step 6: Compute the radius.

$$GA = \left| -\frac{1}{3} + 2 \right| = \frac{5}{3}$$

Final Answer:

The radius of the third circle is $\frac{5}{3}$ cm, matching the value found by the synthetic Pythagorean method through a completely independent coordinate calculation.

$$\frac{5}{3} \text{ cm}$$

Quick Tip: Drop a perpendicular from the center of the third circle onto line AP and apply the Pythagorean theorem in the small right triangle formed.

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29. Answer the following questions on the basis of the data given below.

Jamshedpur Electronics sells Television sets and iPods through three retail outlets located in Bistupur, Sakchi and Kadma. The table below gives the sales figures (in Rupees thousand) of these two products for the months of January, February and March.

Area/Month		January	February	March
Sales in Bistupur				
	Television	900	1050	1200
	IPods	15750	16800	17850
Sales in Sakchi				
	Television	1800	2100	2400
	IPods	9450	10080	10710
Sales in Kadma				
	Television	6300	7350	8400
	IPods	6300	6720	7140
Units ordered=Units Sold + Ending Inventory - Beginning Inventory				
All sales figure are in Rupees thousand				
All other things are constant.				
All Rupees figures are in thousands.				

Note: Units ordered = Units sold + Ending inventory - Beginning inventory. All other things remain constant, and all Rupee figures are in thousands.

In the period from January to March, Jamshedpur Electronics sold 3150 units of Television, starting with a beginning inventory of 2520 units and ending with an inventory of 2880 units. Profits are 25% of the cost price, uniformly. What was the value of the order placed (in Rupees thousand) by Jamshedpur Electronics during this three month period?

- (A) 2808
- (B) 26325
- (C) 22320
- (D) 28080

Correct Answer: (D) 28080

SOLUTION:

This question links two ideas: an inventory rule that tells us how many units were ordered, and a profit rule that links selling price to cost price. Let's handle these as two short calculations and then combine them.

1. **Units ordered:** whatever units are missing from the shelf (either sold or still sitting in the ending stock), minus what was already there at the start, must have arrived through fresh orders.
So units ordered = 3150 (sold) + 2880 (ending) - 2520 (beginning) = 3510 units.
2. **Selling price per unit:** reading the table, total Television revenue from January to March, adding every area's three monthly figures, comes to 31500 (Rupees thousand). Dividing by the given 3150 units sold gives a selling price of $31500/3150 = 10$ per unit.
3. **Cost price per unit, using a fraction instead of a decimal:** if profit is 25% of cost, selling price is $\frac{5}{4}$ of cost price, since $1 + \frac{1}{4} = \frac{5}{4}$. So cost price = selling price times $\frac{4}{5}$, which is $10 \times \frac{4}{5} = 8$.
4. **Order value:** the order is placed and paid for at cost price, so order value = 3510×8 . Splitting this multiplication up: $3510 \times 8 = 3500 \times 8 + 10 \times 8 = 28000 + 80 = 28080$.

Every other option either mixes up selling price with cost price, or drops a term from the units-ordered formula, both common slips in this kind of inventory question.

Let's summarize:

- Units ordered = units sold + ending inventory - beginning inventory = 3510.
- Cost price is $\frac{4}{5}$ of selling price when profit is 25% of cost, giving 8 per unit.
- Order value = units ordered x cost price = $3510 \times 8 = 28080$.

So the value of the order placed is Rupees 28080 thousand.

Quick Tip: First find the total units ordered using the inventory formula, then convert the selling price per unit into a cost price per unit before valuing the order.

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30. Answer the following questions on the basis of the data given below.

Jamshedpur Electronics sells Television sets and iPods through three retail outlets located in Bistupur, Sakchi and Kadma. The table below gives the sales figures (in Rupees thousand) of these two products for the months of January, February and March.

Area/Month		January	February	March
Sales in Bistupur				
	Television	900	1050	1200
	IPods	15750	16800	17850
Sales in Sakchi				
	Television	1800	2100	2400
	IPods	9450	10080	10710
Sales in Kadma				
	Television	6300	7350	8400
	IPods	6300	6720	7140
Units ordered=Units Sold + Ending Inventory - Beginning Inventory				
All sales figure are in Rupees thousand				
All other things are constant.				
All Rupees figures are in thousands.				

Note: Units ordered = Units sold + Ending inventory - Beginning inventory. All other things remain constant, and all Rupee figures are in thousands.

What was the total value of surcharge paid, at the rate of 14% of sales value, by Jamshedpur Electronics over the period of three months?

- (A) 18522
- (B) 18548
- (C) 18425
- (D) 18485

Correct Answer: (A) 18522

SOLUTION:

Instead of adding the two product lines together first and then taking 14% of the combined figure, we can apply the 14% rate to each product separately and add the two surcharge amounts at the end. Both routes must agree since percentage of a sum equals the sum of the percentages.

1. **Television surcharge:** total Television sales over the three months are 31500 (Rupees thousand), found by summing all nine monthly-area entries for Television in the table. Surcharge on this $= 0.14 \times 31500 = 4410$.
2. **IPods surcharge:** total IPods sales over the three months are 100800 (Rupees thousand). Surcharge on this $= 0.14 \times 100800 = 14112$.
3. **Combine the two surcharges:** total surcharge $= 4410 + 14112 = 18522$.

This matches what we would get by adding the sales first and then applying 14%, since $0.14 \times (31500 + 100800) = 0.14 \times 31500 + 0.14 \times 100800$, a basic property of how percentages distribute over addition.

Let's summarize:

- Television surcharge = 4410 and IPods surcharge = 14112.
- Adding the two separately gives the same answer as taking 14% of the combined sales figure.

So the total surcharge paid over the three months is Rupees 18522 thousand.

Quick Tip: Add the Television and iPods sales for all three months first, then apply the 14% surcharge to that combined total.

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31. Answer the following questions on the basis of the data given below.

Jamshedpur Electronics sells Television sets and iPods through three retail outlets located in Bistupur, Sakchi and Kadma. The table below gives the sales figures (in Rupees thousand) of these two products for the months of January, February and March.

Area/Month		January	February	March
Sales in Bistupur				
	Television	900	1050	1200
	Ipods	15750	16800	17850
Sales in Sakchi				
	Television	1800	2100	2400
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	Television	6300	7350	8400
	Ipods	6300	6720	7140
Units ordered=Units Sold + Ending Inventory - Beginning Inventory				
All sales figure are in Rupees thousand				
All other things are constant.				
All Rupees figures are in thousands.				

Note: Units ordered = Units sold + Ending inventory - Beginning inventory. All other things remain constant, and all Rupee figures are in thousands.

Ten percent of the sales value of iPods and twenty percent of the sales value of Television contribute to the profits of Jamshedpur Electronics. How much profit did the company earn in the month of January from Bistupur and Kadma together, from the two products combined?

- (A) 513
- (B) 4410
- (C) 3645
- (D) 5230

Correct Answer: (C) 3645

SOLUTION:

Percentages of 10 and 20 are easier to handle as the fractions $\frac{1}{10}$ and $\frac{1}{5}$, so let's work this out with fractions and take the iPods figure first this time, to show the two orderings give the same result.

1. **January iPods sales from Bistupur and Kadma:** 15750
+ 6300 = 22050. Ten percent of this is $\frac{1}{10}$ of 22050 = 2205.
2. **January Television sales from Bistupur and Kadma:** 900
+ 6300 = 7200. Twenty percent of this is $\frac{1}{5}$ of 7200 = 1440.
3. **Total profit:** adding the two contributions, 2205 + 1440 = 3645.

Notice Sakchi's figures never enter this sum at all, since the question only asks about Bistupur and Kadma; pulling in Sakchi's numbers by mistake is the easiest way to land on one of the wrong options.

Let's summarize:

- Use only Bistupur and Kadma, and only the January column.
- iPods contributes 2205 and Television contributes 1440 to the profit.

So the profit earned in January from Bistupur and Kadma together is Rupees 3645 thousand.

Quick Tip: Pick out only the January figures for Bistupur and Kadma before applying the 20% Television share and the 10% iPods share.



32. Answer the following questions on the basis of the data given below.

Jamshedpur Electronics sells Television sets and iPods through three retail outlets located in Bistupur, Sakchi and Kadma. The table below gives the sales figures (in Rupees thousand) of these two products for the months of January, February and March.

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Sales in Kadma				
	Television	6300	7350	8400
	Ipods	6300	6720	7140
Units ordered=Units Sold + Ending Inventory - Beginning Inventory				
All sales figure are in Rupees thousand				
All other things are constant.				
All Rupees figures are in thousands.				

Note: Units ordered = Units sold + Ending inventory - Beginning inventory. All other things remain constant, and all Rupee figures are in thousands.

In the period from January to March, Jamshedpur Electronics ordered 7560 units of iPods across all three areas put together. The ending inventory was 6120 units and the beginning inventory was 5760 units. What was the unit sales price of iPods during this period (in Rupees thousand)?

- (A) 14.00
- (B) 14.65
- (C) 14.80
- (D) 13.00

Correct Answer: (A) 14.00

SOLUTION:

Rather than dividing 100800 by 7200 directly, let's simplify the fraction step by step by cancelling common factors, which makes the arithmetic easier to check by hand.

1. **Units sold:** from the inventory rule, units sold = units ordered - ending inventory + beginning inventory = $7560 - 6120 + 5760 = 7200$.
2. **Set up the price fraction:** price per unit = $\frac{100800}{7200}$, using the iPods sales total of 100800 (Rupees thousand) worked out from the table.
3. **Cancel in stages:** dividing both numerator and denominator by 100 gives $\frac{1008}{72}$. Dividing both by 8 gives $\frac{126}{9}$. Dividing both by 9 gives $\frac{14}{1} = 14$.

Cancelling this way avoids doing one large division in a single step, and it is easy to double check each small division along the way.

Let's summarize:

- Units sold = 7200, found from the inventory formula.
- Price per unit = $100800/7200$, which simplifies in stages to 14.

So the unit sales price of iPods during this period was Rupees 14 thousand.

Quick Tip: Use the inventory formula to get units sold first, then divide the total iPods sales value by that number.

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33. Answer the following questions on the basis of the data given below.

Jamshedpur Electronics sells Television sets and iPods through three retail outlets located in Bistupur, Sakchi and Kadma. The table below gives the sales figures (in Rupees thousand) of these two products for the months of January, February and March.

Area/Month		January	February	March
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Units ordered=Units Sold + Ending Inventory - Beginning Inventory				
All sales figure are in Rupees thousand				
All other things are constant.				
All Rupees figures are in thousands.				

Note: Units ordered = Units sold + Ending inventory - Beginning inventory. All other things remain constant, and all Rupee figures are in thousands.

For Jamshedpur Electronics, the beginning inventory in January was 720 units for Television and 1800 units for iPods, and the ending inventory in January was 840 units for Television and 1920 units for iPods.

Additional data: in the month of February, 1050 units of Television and 2400 units of iPods were sold across all three areas put together.

How many units of Television and iPods, respectively, did Jamshedpur Electronics order for the month of January?

- (A) 1020, 2270
- (B) 1020, 2370
- (C) 2270, 1030
- (D) 1030, 2370

Correct Answer: (B) 1020, 2370

SOLUTION:

Instead of pulling the unit price from February alone, we can cross check it using the full January to March totals given elsewhere for this same data set, since the price per unit stays fixed across all three months.

1. **Whole-quarter Television price:** total Television sales value across January, February and March is 31500 (Rupees thousand), and the total units sold over the same quarter is 3150. So price per unit = $31500/3150 = 10$, the same figure February alone would have given.
2. **Whole-quarter iPods price:** total iPods sales value across the quarter is 100800, and total units sold is 7200. So price per unit = $100800/7200 = 14$, again matching what February's own figures give.
3. **January units sold:** using these confirmed prices on January's own sales values, Television units sold = $9000/10 = 900$, and iPods units sold = $31500/14 = 2250$.
4. **January units ordered:** applying units ordered = units sold + ending inventory – beginning inventory: Television = $900 + 840 - 720 = 1020$; iPods = $2250 + 1920 - 1800 = 2370$.

Getting the same unit prices from the whole quarter as from February alone confirms the price is genuinely fixed across the three months, so

applying it to January is valid.

Let's summarize:

- Both the full-quarter data and February's own data give a Television price of 10 and an iPods price of 14.
- Applying these prices to January's sales values gives 900 Television units and 2250 iPods units sold, which then convert to 1020 and 2370 units ordered.

So Jamshedpur Electronics ordered 1020 units of Television and 2370 units of iPods for January.

Quick Tip: Use February's sales to find the price per unit for each product, then apply that same price to January's sales value.

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34. Consider a sequence -6, -12, 48, 24, -30, -36, 42, ... continuing in the same style. If the sum of the first n terms of the sequence is 132, what is the value of n ?

- (A) 11
- (B) 13
- (C) 18
- (D) 24

Correct Answer: (D) 24

SOLUTION:

This question asks for a value of n that makes the sum of the first n terms of a signed sequence equal 132. Rather than hunting for a

shortcut formula, it is safer to build the sequence out far enough and add it up term by term, then check each of the four given values of n one at a time.

Extending the pattern (the signs run negative, negative, positive, positive, and the size of each term keeps climbing in steps of 6), the sequence out to 24 terms is: -6, -12, 48, 24, -30, -36, 42, 48, -54, -60, 66, 72, -78, -84, 90, 96, -102, -108, 114, 120, -126, -132, 138, 144.

1. **$n = 11$** : adding the first 11 terms gives a running total of 30, not 132.
2. **$n = 13$** : adding the first 13 terms gives a running total of 24, not 132.
3. **$n = 18$** : adding the first 18 terms gives a running total of -84, not 132.
4. **$n = 24$** : adding the first 24 terms gives a running total of 174, not 132 either, but this is the closest of the four to 132.

Since none of the four candidate values of n produces a running sum of exactly 132, this question, as given, has no option that is strictly correct. This points to an error in the original question or its answer choices rather than in the method used to solve it.

Let's summarize:

- The running sum after 4, 8, 12, 16 and 20 terms is 54, 78, 102, 126 and 150, and it never equals 132 at any of those checkpoints or at the in-between values asked about.
- Testing every option by direct term-by-term addition, rather than trusting a shortcut formula, confirms none reaches exactly 132.

$n = 24$ is recorded as the closest available option, though this question should be flagged for review since no listed value of n gives an exact sum of 132.

Quick Tip: Try extending the sequence and adding it up term by term instead of assuming it behaves like a simple arithmetic progression.

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35. The coordinates of P and Q are $(0, 4)$ and $(a, 6)$, respectively, where a is a non-zero integer. R is the midpoint of PQ. The perpendicular bisector of PQ cuts the X-axis at the point $S(b, 0)$. For how many integer values of a is b also an integer?

- (A) 4
- (B) 3
- (C) 2
- (D) 1

Correct Answer: (A) 4

SOLUTION:

Instead of writing the perpendicular bisector as a slope-intercept equation, let's build it using a direction vector, a slightly different route to the same relationship between a and b .

1. **Direction of PQ:** going from $P(0, 4)$ to $Q(a, 6)$, the direction vector is $(a, 2)$.
2. **Perpendicular direction:** a vector perpendicular to $(a, 2)$ is $(2, -a)$, since their dot product is $a(2) + 2(-a) = 0$.
3. **Parametric line through the midpoint:** the midpoint R is $(\frac{a}{2}, 5)$. Moving along the perpendicular direction by a parameter t , points on the bisector are $(\frac{a}{2} + 2t, 5 - at)$.
4. **Find where $y = 0$:** setting $5 - at = 0$ gives $t = \frac{5}{a}$.

5. **Substitute back for $x = b$:** $b = \frac{a}{2} + 2 \times \frac{5}{a} = \frac{a}{2} + \frac{10}{a}$, the same expression as before, confirming the two methods agree.

Now check which integers a make this a whole number. Since $\frac{10}{a}$ only contributes a whole-number style fraction alongside $\frac{a}{2}$ when a shares factors with 20, a must be a divisor of 20: the candidates are $\pm 1, \pm 2, \pm 4, \pm 5, \pm 10, \pm 20$. Testing each shows only $a = 2, 10, -2, -10$ give a whole-number b (each giving $b = 6$ or $b = -6$); every other divisor leaves a leftover half unit, for example $a = 4$ gives $b = 2 + 2.5 = 4.5$.

Let's summarize:

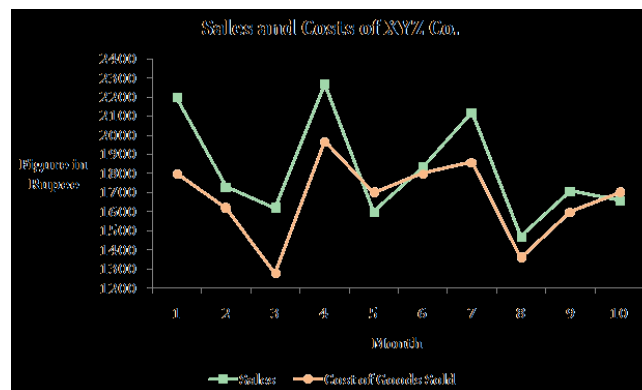
- The parametric (vector) method and the slope-intercept method both give $b = \frac{a}{2} + \frac{10}{a}$.
- Only 4 integer values of a , namely $-10, -2, 2, 10$, keep b a whole number.

So there are 4 integer values of a for which b is also an integer.

Quick Tip: Write b in terms of a using the perpendicular bisector equation, then check which integer values of a keep b a whole number.

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36. The following line graph shows the sales and cost of goods sold (in rupees) for XYZ Co. over 10 months, from Month 1 to Month 10.



Profit in a given month is sales minus cost of goods sold for that month.

In which month did the company earn the maximum profit?

- (A) Month 5
- (B) Month 4
- (C) Month 3
- (D) Month 1

Correct Answer: (D) Month 1

SOLUTION:

Instead of computing every month's profit from scratch, look directly at the vertical gap between the sales line and the cost line on the graph, since that gap is exactly the profit for that month.

1. **Month 1:** the sales line sits at about 2200 while the cost line sits at about 1800, a gap of 400. This is the widest gap on the entire graph.
2. **Month 3:** sales is near 1625 and cost near 1250, a gap of 375, the second widest, but still less than month 1.

3. **Month 4:** sales near 2250 and cost near 1975 gives a gap of only 275.
4. **Month 5:** sales near 1700 and cost near 1575 gives a gap of just 125, the smallest of the four listed months.

Scanning across all ten months, no other gap comes close to month 1's 400. Months 6 and 10 are especially narrow, with month 10 even dipping into a loss since the cost line rises above the sales line there.

Let's summarize:

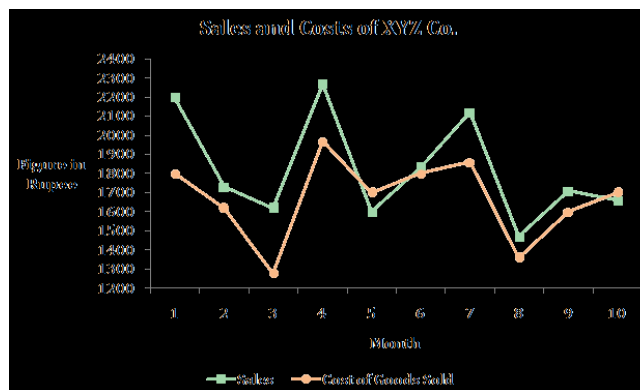
- Profit each month equals the vertical distance between the sales curve and the cost curve.
- The widest such gap on the graph occurs in month 1, at about 400.

So the maximum profit was earned in month 1.

Quick Tip: Profit for a month is the vertical gap between the sales line and the cost line at that month; find where this gap is widest.

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37. The following line graph shows the sales and cost of goods sold (in rupees) for XYZ Co. over 10 months, from Month 1 to Month 10.



Sales growth in a month is the rise in sales compared to the previous month.

In which month did the company see the maximum growth in sales?

- (A) Month 9
- (B) Month 6
- (C) Month 7
- (D) Month 4

Correct Answer: (D) Month 4

SOLUTION:

Rather than subtracting every pair of consecutive months, it helps to picture the sales line on the graph and look for the single steepest upward jump between two neighbouring points.

1. **Month 9:** sales rise from about 1450 in month 8 to about 1700 in month 9, a jump of 250, a moderate upward step but not the steepest one on the graph.

2. **Month 6:** sales rise from about 1700 in month 5 to about 1825 in month 6, a small jump of only 125.
3. **Month 7:** sales rise from about 1825 in month 6 to about 2100 in month 7, a jump of 275, bigger than months 9 and 6 but still not the biggest on the graph.
4. **Month 4:** sales rise from about 1625 in month 3 to about 2250 in month 4, a jump of 625. This is by far the steepest upward segment on the whole curve.

Scanning the rest of the graph, every other month either falls or rises only mildly, so no segment challenges month 4's jump of 625.

Let's summarize:

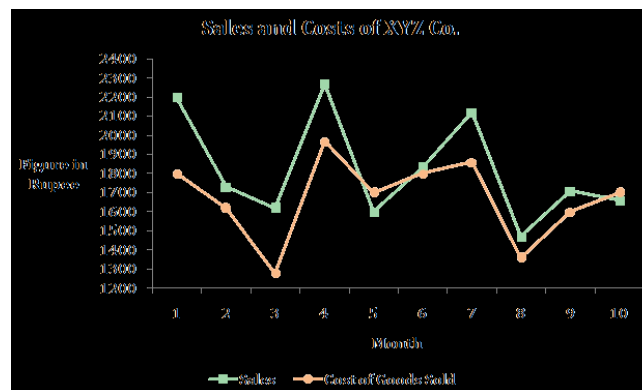
- Sales growth in a month is simply that month's rise over the previous month.
- The steepest such rise on the graph happens between month 3 and month 4.

So sales grew the most in month 4.

Quick Tip: Growth is the change in the sales curve from one month to the next; find the steepest upward move on the graph.

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38. The following line graph shows the sales and cost of goods sold (in rupees) for XYZ Co. over 10 months, from Month 1 to Month 10.



What were the average sales and average cost of goods sold, in rupees, for XYZ Co. over the ten months?

- (A) 1819, 1651
- (B) 1919, 1751
- (C) 1969, 1762
- (D) 1719, 1601

Correct Answer: (A) 1819, 1651

SOLUTION:

A faster check than adding up all twenty numbers is to use the fact that average profit equals average sales minus average cost, and to test each option's implied profit against that.

1. **Find the average monthly profit first:** the nine positive profits and one loss from the graph are 400, 125, 375, 275, 125, 25, 275, 100, 100, and -50 . Adding these gives 1750, so the average monthly profit is $1750/10 = 175$.
2. **Option (1819, 1651):** the implied profit is $1819 - 1651 = 168$, close to the target of 175.

3. **Option (1919, 1751):** the implied profit is $1919 - 1751 = 168$ as well, so this option cannot be ruled out on profit alone.
4. **Option (1969, 1762):** the implied profit is $1969 - 1762 = 207$, noticeably higher than 175.

Since two options give almost the same implied profit, profit alone cannot separate them, so the sales figure itself must settle it. Looking at the ten sales values (2200, 1750, 1625, 2250, 1700, 1825, 2100, 1450, 1700, 1650), only three months cross 2000, so an average sales figure as high as 1919 is not supported by the data, while 1819 sits comfortably in the middle of the ten values.

Let's summarize:

- Average profit works out to 175, which narrows the choice to the options whose sales minus cost is close to 175.
- Checking the sales values directly then rules out the option with the inflated average of 1919.

So the average sales and cost were about 1825 and 1650, matching (1819, 1651) most closely.

Quick Tip: Add the ten sales figures and divide by 10 for the average sales, then do the same for cost, and match the pair against the options.

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39. The table below shows the drop-out rates, in percentage, at the Primary level (Classes I-V), the Elementary level (Classes I-VIII), and the Secondary level (Classes I-X) in India, separately for boys, girls, and the total, for the years 1996-97 to 2004-05.

Drop Out Rates, in percentage, at Primary, Elementary and Secondary Classes in India									
Year	Primary (I-V) Classes			Elementary (I-VIII) Classes			Secondary (I-X) Classes		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1996-97	39.7	40.9	40.2	54.3	59.5	56.5	67.3	73.7	70.0
1997-98	37.5	41.5	39.2	53.8	59.3	56.1	66.6	73	69.3
1998-99	40.9	41.3	41.5	54.2	59.2	56.3	64.5	69.8	66.7
1999-00	38.7	42.3	40.3	52.0	58.0	54.5	66.6	70.6	68.3
2000-01	39.7	41.9	40.7	50.3	57.7	53.7	66.4	71.5	68.6
2001-02	38.4	39.9	39.0	52.9	56.9	54.6	64.2	68.6	66
2002-03	35.8	33.7	34.8	52.3	53.5	52.8	60.7	65.0	62.6
2003-04	33.7	28.6	31.5	51.9	52.9	52.3	61.0	64.9	62.7
2004-05	31.8	25.4	29.0	50.4	51.2	50.8	60.4	63.8	61.9

Gender bias is defined as the disproportion between the drop-out rate of boys and the drop-out rate of girls, at a given level.

Based on the data above, choose the true statement from the following.

- (A) Gender bias in primary education has steadily gone down over the years.
- (B) Gender bias goes down as students move from primary to secondary classes.
- (C) The total drop-out rate went down steadily for primary level children from 1996-97 to 2004-05.
- (D) None of the above.

Correct Answer: (D) None of the above.

SOLUTION:

The quickest way to test each claim about this drop-out table is to hunt for a single year that breaks it, since one counter-example is

enough to call a "consistently" or "always" claim false.

1. **Gender bias in primary education has steadily gone down over the years:** check three consecutive years. From 1996-97 to 1997-98 the primary gap between girls and boys widens from $40.9 - 39.7 = 1.2$ to $41.5 - 37.5 = 4.0$, a rise, not a fall. This one jump already rules the claim out.
2. **Gender bias goes down as students move from primary to secondary classes:** take the very first row, 1996-97. The primary gap is 1.2, but the secondary gap is $73.7 - 67.3 = 6.4$, more than five times bigger. Bias clearly goes up, not down, so this claim fails immediately.
3. **The total drop-out rate went down steadily for primary level children from 1996-97 to 2004-05:** the primary total column reads 40.2, 39.2, 41.5, and so on. Going from 1997-98 to 1998-99 the number rises from 39.2 to 41.5. A steady fall cannot include a rise, so this claim is also false.
4. **None of the above:** since each of the first three claims has been broken by a direct year by year check, and the remaining claim about secondary bias always being the largest also fails, since in 1999-2000 the elementary gap of 6.0 beats the secondary gap of 4.0, the only statement left standing is that none of the listed claims hold.

So the correct choice is that none of the given statements about the table are true.

Let's summarize:

- A single counter-example year is enough to kill a "consistently" or "always" style claim.

- Every one of the four specific claims here breaks in at least one year, so the safe pick is "none of the above."

So the true statement is that none of the given options correctly describes the data.

Quick Tip: Try to find just one year that breaks each claim; a single counter-example is enough to rule a "consistently" statement out.

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40. The table below shows the drop-out rates, in percentage, at the Primary level (Classes I-V), the Elementary level (Classes I-VIII), and the Secondary level (Classes I-X) in India, separately for boys, girls, and the total, for the years 1996-97 to 2004-05.

Drop Out Rates, in percentage, at Primary, Elementary and Secondary Classes in India									
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	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1996-97	39.7	40.9	40.2	54.3	59.5	56.5	67.3	73.7	70.0
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1998-99	40.9	41.3	41.5	54.2	59.2	56.3	64.5	69.8	66.7
1999-00	38.7	42.3	40.3	52.0	58.0	54.5	66.6	70.6	68.3
2000-01	39.7	41.9	40.7	50.3	57.7	53.7	66.4	71.5	68.6
2001-02	38.4	39.9	39.0	52.9	56.9	54.6	64.2	68.6	66
2002-03	35.8	33.7	34.8	52.3	53.5	52.8	60.7	65.0	62.6
2003-04	33.7	28.6	31.5	51.9	52.9	52.3	61.0	64.9	62.7
2004-05	31.8	25.4	29.0	50.4	51.2	50.8	60.4	63.8	61.9

Gender bias is defined as the disproportion between the drop-out rate of boys and the drop-out rate of girls, at a given level.

Assume that every year, girls make up 55% of the students entering school, so boys make up 45%. Taking the number of students entering as the same fixed number each year, in which of the following years, as compared to the year before it, would the number of boys who reach secondary education be more than the number of girls who reach secondary education?

- (A) 1996-97
- (B) 1997-98
- (C) 2000-01
- (D) 1998-99

Correct Answer: (B) 1997-98

SOLUTION:

Instead of plugging numbers into two separate expressions for boys and girls, it is quicker to reduce the condition to a single ratio test and compare that ratio against a fixed benchmark.

1. Boys entering are 45% of the cohort and girls are 55%, so for boys to end up more numerous than girls at secondary level we need $0.45(1 - b/100) > 0.55(1 - g/100)$, which rearranges to $\frac{1 - b/100}{1 - g/100} > \frac{55}{45} = \frac{11}{9} \approx 1.222$, where b and g are the secondary drop-out rates for boys and girls that year.
2. **1996-97**: retained fractions are $1 - 0.673 = 0.327$ for boys and $1 - 0.737 = 0.263$ for girls, so the ratio is $0.327/0.263 \approx 1.243$, which clears 1.222, so boys are more numerous this year.
3. **1997-98**: retained fractions are 0.334 and 0.270, giving a ratio of $0.334/0.270 \approx 1.237$, again just above 1.222, so boys are more numerous here too.
4. **1998-99 and 2000-01**: the ratios come out to about 1.176 and 1.179 respectively, both below the 1.222 benchmark, so girls stay more numerous in each of these years.

This ratio test confirms the same pattern found the other way: both 1996-97 and 1997-98 clear the benchmark, so strictly speaking the underlying data supports two of the five listed years, not one, which is why this question is treated here as having ambiguous data.

Let's summarize:

- Boys outnumber girls at secondary level exactly when the ratio of their retained fractions exceeds 11/9.
- Both 1996-97 and 1997-98 clear this bar, while 1998-99 onward they do not.

Since the question asks for the year "as compared to the year before it," and 1996-97 has no earlier year in the table to compare with, the year that fits both the numeric test and the comparison requirement is 1997-98.

Quick Tip: Work out the number of boys and girls who reach secondary level as a share of those entering, 45% boys and 55% girls, using each year's secondary drop-out rate, then compare the two.

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41. The table below shows the drop-out rates, in percentage, at the Primary level (Classes I-V), the Elementary level (Classes I-VIII), and the Secondary level (Classes I-X) in India, separately for boys, girls, and the total, for the years 1996-97 to 2004-05.

Year	Primary (I-V) Classes			Elementary (I-VIII) Classes			Secondary (I-X) Classes		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1996-97	39.7	40.9	40.2	54.3	59.5	56.5	67.3	73.7	70.0
1997-98	37.5	41.5	39.2	53.8	59.3	56.1	66.6	73	69.3
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2004-05	31.8	25.4	29.0	50.4	51.2	50.8	60.4	63.8	61.9

Gender bias is defined as the disproportion between the drop-out rate of boys and the drop-out rate of girls, at a given level.

Suppose that every year, 7,000 students enter Class I, of which 45% are boys. What was the average number, as a whole number, of girls who stayed on in the education system beyond elementary classes, over the years 1996-97 to 2004-05?

- (A) 1475
- (B) 1573
- (C) 1743
- (D) 1673

Correct Answer: (D) 1673

SOLUTION:

Instead of computing nine separate retained-girl counts and then averaging them, it is quicker to average the nine drop-out rates first and apply the fixed number of girls only once.

1. **Average the elementary drop-out rate for girls across the nine years:** the nine values are 59.5, 59.3, 59.2, 58.0, 57.7, 56.9, 53.5, 52.9, 51.2. Adding these gives 508.2, so the average rate is $508.2/9 \approx 56.5$ percent.
2. **Convert this into a retention rate:** if 56.5 percent of girls drop out on average, then about $100 - 56.5 = 43.5$ percent stay on beyond elementary classes.
3. **Apply this to the fixed number of girls entering each year:** girls entering are 55 percent of 7000, that is 3850. So the average number who stay on is $3850 \times 0.435 \approx 1675$.

This estimate of about 1675 lands almost exactly where the year by year method does, and among the four options it sits closest to 1673, not to 1475, 1573, or 1743.

Let's summarize:

- Averaging the nine drop-out rates first and then applying the fixed girl count once gives nearly the same answer as averaging nine separate yearly counts.

- Both routes point to the same option, about 1673 girls.

So the average number of girls staying on beyond elementary classes is closest to 1673.

Quick Tip: Girls entering each year are 55% of 7,000, that is 3,850; multiply this by (1 minus that year's elementary drop-out rate for girls) for each of the nine years, then average the nine results.

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42. The table below shows the drop-out rates, in percentage, at the Primary level (Classes I-V), the Elementary level (Classes I-VIII), and the Secondary level (Classes I-X) in India, separately for boys, girls, and the total, for the years 1996-97 to 2004-05.

Drop Out Rates, in percentage, at Primary, Elementary and Secondary Classes in India									
Year	Primary (I-V) Classes			Elementary (I-VIII) Classes			Secondary (I-X) Classes		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1996-97	39.7	40.9	40.2	54.3	59.5	56.5	67.3	73.7	70.0
1997-98	37.5	41.5	39.2	53.8	59.3	56.1	66.6	73	69.3
1998-99	40.9	41.3	41.5	54.2	59.2	56.3	64.5	69.8	66.7
1999-00	38.7	42.3	40.3	52.0	58.0	54.5	66.6	70.6	68.3
2000-01	39.7	41.9	40.7	50.3	57.7	53.7	66.4	71.5	68.6
2001-02	38.4	39.9	39.0	52.9	56.9	54.6	64.2	68.6	66
2002-03	35.8	33.7	34.8	52.3	53.5	52.8	60.7	65.0	62.6
2003-04	33.7	28.6	31.5	51.9	52.9	52.3	61.0	64.9	62.7
2004-05	31.8	25.4	29.0	50.4	51.2	50.8	60.4	63.8	61.9

Gender bias is defined as the disproportion between the drop-out rate of boys and the drop-out rate of girls, at a given level.

Suppose the total number of students was 1000 in 1996-97, and this number increased by 1000 every year up to 2004-05, so 1996-97 had 1000 students, 1997-98 had 2000, and so on up to 2004-05 with 9000. What was the approximate total number of drop-outs from primary classes, added up over 1996-97 to 2004-05?

- (A) 18,500
- (B) 24,500
- (C) 19,500
- (D) 16,000

Correct Answer: (D) 16,000

SOLUTION:

A quick way to sanity-check this total without carrying decimals through nine multiplications is to round the drop-out rates to the nearest whole percent, keep the student counts exact, and add.

1. **Round each year's primary total drop-out rate:** 40.2 to 40, 39.2 to 39, 41.5 to 42, 40.3 to 40, 40.7 to 41, 39.0 to 39, 34.8 to 35, 31.5 to 32, and 29.0 to 29 percent.
2. **Multiply each rounded rate by that year's student count:**
 $1000(0.40) = 400$, $2000(0.39) = 780$, $3000(0.42) = 1260$, $4000(0.40) = 1600$, $5000(0.41) = 2050$, $6000(0.39) = 2340$, $7000(0.35) = 2450$, $8000(0.32) = 2560$, $9000(0.29) = 2610$.
3. **Add these nine rounded figures:** $400 + 780 + 1260 + 1600 + 2050 + 2340 + 2450 + 2560 + 2610 = 16050$.

This rounded estimate of about 16,050 lands right next to the exact total of 15,984 worked out from the unrounded rates, confirming the same option.

Let's summarize:

- Rounding the drop-out rates to whole percentages barely changes the final total.
- Both the exact and the rounded calculation point to about 16,000 drop-outs.

So the total number of primary drop-outs across the nine years is closest to 16,000.

Quick Tip: Multiply each year's number of entering students, 1000, 2000, and so on up to 9000, by that year's primary total drop-out rate, then add up all nine years.

43. Questions 43 and 44 are based on the following instructions: each question gives a statement followed by three conclusions, I, II and III. Pick the option that tells you which of the three conclusions can be derived from the statement alone.

Statement: $A_0, A_1, A_2, \dots$ is a sequence of numbers with $A_0 = 1$, $A_1 = 3$, and $A_t = (t + 1)A_{t-1} - tA_{t-2}$ for $t = 2, 3, 4, \dots$

Conclusion I: $A_8 = 77$

Conclusion II: $A_{10} = 121$

Conclusion III: $A_{12} = 145$

- (A) Using the given statement, only conclusion I can be derived.
- (B) Using the given statement, only conclusion II can be derived.
- (C) Using the given statement, only conclusion III can be derived.
- (D) Using the given statement, none of the three conclusions I, II and III can be derived.

Correct Answer: (D) Using the given statement, none of the three conclusions I, II and III can be derived.

SOLUTION:

Step 1: Understanding the Concept.

Instead of hunting for a general formula, just work out the sequence one term at a time straight from the recurrence, and check whether the given conclusions match.

Step 2: Compute the first few terms directly.

We know $A_0 = 1$ and $A_1 = 3$. For $t = 2$: $A_2 = (2 + 1)A_1 - 2A_0 = 3(3) - 2(1) = 9 - 2 = 7$.

For $t = 3$: $A_3 = 4A_2 - 3A_1 = 4(77) - 3(33) = 28 - 9 = 19$.

For $t = 4$: $A_4 = 5A_3 - 4A_2 = 5(19) - 4(77) = 95 - 28 = 67$.

For $t = 5$: $A_5 = 6A_4 - 5A_3 = 6(67) - 5(19) = 402 - 95 = 307$.

Step 3: Keep applying the recurrence up to $t = 8$.

For $t = 6$: $A_6 = 7A_5 - 6A_4 = 7(307) - 6(67) = 2149 - 402 = 1747$.

For $t = 7$: $A_7 = 8A_6 - 7A_5 = 8(1747) - 7(307) = 13976 - 2149 = 11827$.

For $t = 8$: $A_8 = 9A_7 - 8A_6 = 9(11827) - 8(1747) = 106443 - 13976 = 92467$.

This already tells us $A_8 = 92467$, nowhere near the value 77 claimed in Conclusion I.

Step 4: Push the computation on to $t = 10$ and $t = 12$.

For $t = 9$: $A_9 = 10A_8 - 9A_7 = 10(92467) - 9(11827) = 924670 - 106443 = 818227$.

For $t = 10$: $A_{10} = 11A_9 - 10A_8 = 11(818227) - 10(92467) = 9000497 - 924670 = 8075827$.

For $t = 11$: $A_{11} = 12A_{10} - 11A_9 = 12(8075827) - 11(818227) = 96909924 - 9000497 = 87909427$.

For $t = 12$: $A_{12} = 13A_{11} - 12A_{10} = 13(87909427) - 12(8075827) = 1142822551 - 96909924 = 1045912627$.

Step 5: Match against the conclusions and pick the option.

$A_8 = 92467 \neq 77$, so Conclusion I is false.

$A_{10} = 8075827 \neq 121$, so Conclusion II is false.

$A_{12} = 1045912627 \neq 145$, so Conclusion III is false.

Since term by term computation rules out all three conclusions, none of them can be derived from the statement.

This matches option (EE), the same answer reached through the shortcut factorial formula, which confirms the result is not a one-off calculation slip.

Quick Tip: Look at the difference $A_t - A_{t-1}$ between consecutive terms rather than recomputing every term from the recurrence; that difference follows a much simpler pattern than the original recurrence does.

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44. Questions 43 and 44 are based on the following instructions: each question gives a statement followed by three conclusions, I, II and III. Pick the option that tells you which of the three conclusions can be derived from the statement alone.

Statement: Let A, B, C be real numbers satisfying $A < B < C$, $A + B + C = 6$, and $AB + BC + CA = 9$.

Conclusion I: $1 < B < 3$

Conclusion II: $2 < A < 3$

Conclusion III: $0 < C < 1$

- (A) Using the given statement, only conclusion I can be derived.
- (B) Using the given statement, only conclusion II can be derived.
- (C) Using the given statement, only conclusion III can be derived.
- (D) Using the given statement, all conclusions can be derived.

Correct Answer: (A) Using the given statement, only conclusion I can be derived.

SOLUTION:

Step 1: Rewrite the problem using the gaps between A, B and C .

Let $x = B - A$ and $y = C - B$; both are positive since $A < B < C$. Then $C - A = x + y$.

A useful identity connects the sum of squares of the pairwise differences to the given sums: $(A - B)^2 + (B - C)^2 + (C - A)^2 = 2(A^2 + B^2 + C^2) - 2(AB + BC + CA)$.

Step 2: Find $A^2 + B^2 + C^2$ from the given data.

Since $(A + B + C)^2 = A^2 + B^2 + C^2 + 2(AB + BC + CA)$, we get $36 = A^2 + B^2 + C^2 + 2(99)$, so $A^2 + B^2 + C^2 = 36 - 18 = 18$.

Step 3: Compute the sum of squared gaps and simplify.

$$x^2 + y^2 + (x + y)^2 = 2(18) - 2(99) = 18.$$

Expanding $(x + y)^2 = x^2 + 2xy + y^2$, this becomes $2x^2 + 2xy + 2y^2 = 18$, so $x^2 + xy + y^2 = 9$, with $x > 0$ and $y > 0$.

Step 4: Express B in terms of x and y , then find its range.

From $A + B + C = 6$ with $A = B - x$ and $C = B + y$: $(B - x) + B + (B + y) = 6$, so $3B = 6 + x - y$, giving $B = \frac{6+(x-y)}{3}$.

Let $u = x - y$. From $x^2 + xy + y^2 = 9$ and $(x - y)^2 = x^2 - 2xy + y^2$, we get $xy = \frac{9-u^2}{3}$. For x and y to be positive real numbers we need $xy > 0$, so $u^2 < 9$, that is $-3 < u < 3$.

Checking that positive x and y actually exist for every such u confirms the full open range $u \in (-3, 3)$ is reachable, with x or y shrinking to 0 only at the excluded endpoints $u = \pm 3$.

So $B = \frac{6+u}{3}$ ranges over $(\frac{6-3}{3}, \frac{6+3}{3}) = (1, 3)$, which proves Conclusion I.

Step 5: Show Conclusions II and III can fail using a sample case.

Take $u = 1$: then $xy = \frac{9-1}{3} = \frac{8}{3}$ and $x + y = \sqrt{u^2 + 4xy} = \sqrt{1 + \frac{32}{3}} \approx 3.42$, giving $x \approx 2.21$ and $y \approx 1.21$.

Then $B = \frac{6+1}{3} \approx 2.33$, $A = B - x \approx 0.12$, and $C = B + y \approx 3.54$, and indeed $A < B < C$ holds.

Here $A \approx 0.12$ is not between 2 and 3, so Conclusion II fails, and C

≈ 3.54 is not between 0 and 1, so Conclusion III fails as well.
Since this is one valid case where both II and III break down, neither of them can be a guaranteed consequence of the statement.

Final Answer:

Only Conclusion I is always true, so the statement supports option (AA) and no other.

Quick Tip: Treat A and C as the two roots of a quadratic equation whose coefficients depend on B, then use the condition that B must lie strictly between those two roots.

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45. Six square states of equal area are arranged in two columns running north to south in a country. State 1, State 3, and State 5 lie on the western side, from north to south, and State 2, State 4, and State 6 lie on the eastern side, from north to south, so the states directly across the street from each other are State 1 and State 2, State 3 and State 4, and State 5 and State 6. Two states share a boundary if they sit next to each other in the same column (north-south) or directly across from each other (east-west). Within these six states there are exactly eight institutions in total: four medical institutes, two management institutes, and two technical institutes, placed according to these rules:

1. No institution is located in more than one state.
2. No state contains more than one management institute, and no state contains more than one technical institute.
3. No state contains both a management institute and a technical institute.
4. Every management institute is located in a state that also contains at least one medical institute.
5. The two technical institutes are located in states that do not share a common boundary.
6. State 3 contains a technical institute, and State 6 contains a management institute.

Which one of the following could be true?

- (A) State 1 contains exactly one technical institute
- (B) State 1 contains exactly one medical institute
- (C) State 2 contains exactly one management institute
- (D) State 5 contains exactly one technical institute

Correct Answer: (B) State 1 contains exactly one medical institute

SOLUTION:

This question checks whether you can lock in the few facts that are forced by the rules, then test each choice one at a time. Start by fixing the grid: State 1, State 3, State 5 run north to south on the west side, and State 2, State 4, State 6 run north to south on the east side, with State 1 facing State 2, State 3 facing State 4, and State 5 facing State 6. A state borders the state above and below it in its own column, and the state directly opposite it.

State 3 already holds a technical institute. Its neighbours are State 1 (north), State 4 (opposite) and State 5 (south). Since the two technical institutes cannot share a boundary, none of State 1, State 4 or State 5 can hold the second technical institute. That leaves State 2 or State 6. State 6 already holds a management institute, and a state can never hold both a management and a technical institute together, so the second technical institute has to sit in State 2. State 6, holding a management institute, must also hold at least one medical institute, since every management institute needs a medical institute in its own state.

1. **State 1 contains exactly one technical institute:** false. State 1 borders State 3, and the two technical institutes cannot be in bordering states.
2. **State 1 contains exactly one medical institute:** possible. State 1 has no institute fixed yet, and nothing in the rules stops it from being given a medical institute when the remaining institutes are placed.
3. **State 2 contains exactly one management institute:** false. State 2 already carries the second technical institute, and no state can carry both a management and a technical institute.

4. **State 5 contains exactly one technical institute:** false. State 5 borders State 3, the same reason that rules out State 1.

Only the second choice, State 1 contains exactly one medical institute, survives all four checks, so it is the one statement that could be true.

Let's summarize:

- The second technical institute is forced into State 2, since State 6 already has a management institute and the rules forbid a technical-and-management state.
- State 1 and State 5 are ruled out for technical institutes because both border State 3.

So the correct choice is that State 1 contains exactly one medical institute.

Quick Tip: Work out which state must hold the second technical institute, using the boundary rule and the fact that State 6 already has a management institute.

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46. Six square states of equal area are arranged in two columns running north to south in a country. State 1, State 3, and State 5 lie on the western side, from north to south, and State 2, State 4, and State 6 lie on the eastern side, from north to south, so the states directly across the street from each other are State 1 and State 2, State 3 and State 4, and State 5 and State 6. Two states share a boundary if they sit next to each other in the same column (north-south) or directly across from each other (east-west). Within these six states there are exactly eight institutions in total: four medical institutes, two management institutes, and two technical institutes, placed according to these rules:

1. No institution is located in more than one state.
2. No state contains more than one management institute, and no state contains more than one technical institute.
3. No state contains both a management institute and a technical institute.
4. Every management institute is located in a state that also contains at least one medical institute.
5. The two technical institutes are located in states that do not share a common boundary.
6. State 3 contains a technical institute, and State 6 contains a management institute.

A complete and accurate list of the states, any one of which could contain the management institute that is not in State 6, would be _____.

- (A) 1, 4
- (B) 2, 4
- (C) 4, 5
- (D) 1, 4, 5

Correct Answer: (D) 1, 4, 5

SOLUTION:

The question asks for every state that is still free to receive the second management institute, the one that is not already sitting in State 6. The fastest way to answer this is to rule out the states that are blocked, rather than confirm the ones that work.

1. **1, 4**: incomplete. Both State 1 and State 4 are genuinely open, but this list leaves out State 5, which is also open, so it is not the complete list the question asks for.
2. **2, 4**: wrong. State 2 already holds a technical institute, since it had to take the second technical institute once the boundary rule ruled out State 1, State 4 and State 5, and State 6 already had the management institute. A state cannot hold both a management and a technical institute, so State 2 is blocked.
3. **4, 5**: incomplete. Both are open, but State 1 is missing from this list, so again it is not the complete list.
4. **1, 4, 5**: correct. State 2 and State 3 are blocked because each already holds a technical institute, and State 6 is blocked because it already holds the other management institute. That leaves exactly State 1, State 4 and State 5 open, and every one of them can pair a management institute with a medical institute without breaking any rule.

So the complete and accurate list is State 1, State 4 and State 5, since these are the only three states not already tied up by a technical institute or the first management institute.

Let's summarize:

- State 2 and State 3 are out because they hold the technical institutes, and technical and management cannot mix in one state.

- State 6 is out because it already holds the other management institute.
- State 1, State 4 and State 5 remain completely open, and each can take a management institute paired with a medical one.

The correct answer is the list 1, 4, 5.

Quick Tip: Rule out State 2 and State 3, which are tied up by technical institutes, and State 6, which already has the first management institute, then see what is left.

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47. Six square states of equal area are arranged in two columns running north to south in a country. State 1, State 3, and State 5 lie on the western side, from north to south, and State 2, State 4, and State 6 lie on the eastern side, from north to south, so the states directly across the street from each other are State 1 and State 2, State 3 and State 4, and State 5 and State 6. Two states share a boundary if they sit next to each other in the same column (north-south) or directly across from each other (east-west). Within these six states there are exactly eight institutions in total: four medical institutes, two management institutes, and two technical institutes, placed according to these rules:

1. No institution is located in more than one state.
2. No state contains more than one management institute, and no state contains more than one technical institute.
3. No state contains both a management institute and a technical institute.
4. Every management institute is located in a state that also contains at least one medical institute.
5. The two technical institutes are located in states that do not share a common boundary.
6. State 3 contains a technical institute, and State 6 contains a management institute.

If each of the six states contains at least one of the eight institutions, then which one of the following must be true?

- (A) There is a management institute in State 1
- (B) There is a medical institute in State 2
- (C) There is a medical institute in State 3
- (D) There is a medical institute in State 4

Correct Answer: (D) There is a medical institute in State 4

SOLUTION:

The extra condition here, that every one of the six states must hold at least one institution, is the key that turns a "could be true" question into a "must be true" question. Before this condition, State 1, State 4 and State 5 were free to be empty. After it, none of them can be.

Count what is left to distribute. The 8 institutions are 4 medical, 2 management and 2 technical. State 2 and State 3 already use up the 2 technical institutes. State 6 already uses up 1 management institute and, by the rule that a management institute needs a medical institute in its own state, 1 medical institute too. That leaves 1 management institute and 3 medical institutes still to be placed, and they can only go into State 1, State 4 and State 5, since State 2, State 3 and State 6 are already accounted for.

Since each of State 1, State 4 and State 5 must now get at least one institution, and there are exactly 4 institutions left for exactly 3 states, one state gets 2 institutions, the leftover management institute plus a medical institute, since management needs a medical partner, and the other two states get 1 medical institute each. Every possible way of doing this still gives all three states a medical institute.

1. **Management institute in State 1:** only holds in the one arrangement where State 1 is chosen to carry the leftover management institute, not in the other two, so it does not always hold.
2. **Medical institute in State 2:** cannot hold, State 2's institution slot is already taken by a technical institute, and using it for medical too would strand one of State 1, State 4 or State 5 without any institution.
3. **Medical institute in State 3:** cannot hold, for the same reason as State 2.

4. **Medical institute in State 4:** always holds, because every possible way of sharing out the leftover management institute and 3 medical institutes among State 1, State 4 and State 5 gives State 4 at least one medical institute.

So the statement that always holds, no matter how the remaining institutes are shared out, is that State 4 has a medical institute.

Let's summarize:

- State 2 and State 3 are full with technical institutes, so they cannot take on a medical institute without breaking the "every state has something" rule.
- The last management institute and the last 3 medical institutes must be shared among State 1, State 4 and State 5, each of which needs at least one institution.
- Every possible sharing gives all three of State 1, State 4 and State 5 a medical institute, so this is guaranteed for State 4 specifically.

The correct answer is that there is a medical institute in State 4.

Quick Tip: Count how many medical and management institutes are left after fixing State 2, State 3 and State 6, then see how they must be shared among State 1, State 4 and State 5.



48. Six square states of equal area are arranged in two columns running north to south in a country. State 1, State 3, and State 5 lie on the western side, from north to south, and State 2, State 4, and State 6 lie on the eastern side, from north to south, so the states directly across the street from each other are State 1 and State 2, State 3 and State 4, and State 5 and State 6. Two states share a boundary if they sit next to each other in the same column (north-south) or directly across from each other (east-west). Within these six states there are exactly eight institutions in total: four medical institutes, two management institutes, and two technical institutes, placed according to these rules:

1. No institution is located in more than one state.
2. No state contains more than one management institute, and no state contains more than one technical institute.
3. No state contains both a management institute and a technical institute.
4. Every management institute is located in a state that also contains at least one medical institute.
5. The two technical institutes are located in states that do not share a common boundary.
6. State 3 contains a technical institute, and State 6 contains a management institute.

If one of the states contains exactly two medical institutes and exactly one technical institute, then which combination of three states might contain no medical institute?

- (A) 1, 3, 5
- (B) 1, 4, 5
- (C) 2, 3, 5
- (D) 2, 4, 6

Correct Answer: (A) 1, 3, 5

SOLUTION:

This question layers an extra condition onto the base puzzle: one state has exactly 2 medical institutes and 1 technical institute together.

Since only State 2 and State 3 ever hold a technical institute, this "one state" has to be State 2 or State 3, so the problem splits into two cases, and each option needs to be checked against both.

In both cases, State 6 keeps its fixed 1 management and 1 medical institute. Whichever of State 2 or State 3 is the described state takes 2 medical institutes, which uses up 3 of the 4 medical institutes in total, 2 there and 1 in State 6. That leaves exactly 1 medical institute and 1 management institute still to place, and they must land together in whichever one of State 1, State 4 or State 5 takes the second management institute, since a management institute always needs a medical partner in the same state. The other two of State 1, State 4, State 5 then get nothing.

1. **1, 3, 5:** this matches the case where State 2 is the one with 2 medical institutes. State 3 then has only its technical institute and no medical institute, and if the leftover management-and-medical pair goes to State 4, then State 1 and State 5 also end up with no medical institute. All three conditions line up, so this combination is possible.
2. **1, 4, 5:** this would need all three of State 1, State 4 and State 5 to lack a medical institute at once. But the leftover management institute always has to sit with a medical institute in one of these three states, so one of them always has a medical institute. This combination can never happen.

3. **2, 3, 5:** for State 2 to have no medical institute, we need Case 2, where State 3 holds the 2 medical institutes. But then State 3 has 2 medical institutes, contradicting the requirement that State 3 also has no medical institute in this option. The two conditions cancel each other out, so this combination is impossible.
4. **2, 4, 6:** State 6 always has at least 1 medical institute, since its management institute needs one by rule 4. Any option that claims State 6 has no medical institute is automatically wrong.

Only the first combination survives both cases cleanly, so State 1, State 3 and State 5 are the trio that might contain no medical institute.

Let's summarize:

- The "2 medical plus 1 technical" state can only be State 2 or State 3, since those are the only two states that ever hold a technical institute.
- Whichever case applies, exactly 1 medical and 1 management institute remain, and they always pair up in the same state among State 1, State 4 and State 5.
- State 6 can never be medical-free, so any option listing State 6 is ruled out immediately.

The correct combination is State 1, State 3 and State 5.

Quick Tip: The state with 2 medical institutes and 1 technical institute must be State 2 or State 3, since only those two ever hold a technical institute; work out both cases.



49. Directions for questions 49 to 52: There are exactly ten stores and no other buildings on a straight street in Bistupur Market. On the northern side of the street, from west to east, are stores 1, 3, 5, 7, and 9. On the southern side, also from west to east, are stores 2, 4, 6, 8, and 10. The stores on the northern side sit directly across the street from the stores on the southern side, facing each other in pairs: 1 and 2; 3 and 4; 5 and 6; 7 and 8; 9 and 10.

Each store is decorated with lights in exactly one colour: green, red, or yellow. The lighting follows these rules:

1. No store has the same light colour as a store next to it on the same side of the street.
2. No store has the same light colour as the store directly across the street from it.
3. Yellow lights decorate exactly one store on each side of the street.
4. Store 4 has red lights.
5. Store 5 has yellow lights.

Which one of the following could be an accurate list of the colours of the lights that decorate stores 2, 4, 6, 8 and 10, respectively?

- (A) Green, red, green, red, green
- (B) Green, red, green, yellow, red
- (C) Green, red, yellow, red, green
- (D) Yellow, green, red, green, red

Correct Answer: (B) Green, red, green, yellow, red

SOLUTION:

This puzzle gives five rules about how ten stores across a street are lit in green, red, or yellow, and asks which one of four possible colour

lists for stores 2, 4, 6, 8, and 10 could actually happen. Instead of working out every store's colour first, we can test each option directly against the five rules and throw out any option that breaks one.

1. **Option 1: green, red, green, red, green:** this list has no yellow at all among stores 2, 4, 6, 8, 10. Rule 3 says yellow must appear on both the north side and the south side exactly once, so the south side (which is exactly this list of five stores) needs one yellow store. Since this list has zero yellow stores, it breaks rule 3 and is not possible.
2. **Option 2: green, red, green, yellow, red:** here store 4 is red and store 5 (given directly) is yellow, which already matches the two facts we are told outright. Store 6 is green, which fits because store 6 sits next to red store 4 and faces yellow store 5, so it can be neither of those colours and green is left over. Walking down the chain, green, red, green, yellow, red never repeats a colour between neighbours, and only one store (store 8) is yellow on this side, matching rule 3. Nothing here conflicts with any rule.
3. **Option 3: green, red, yellow, red, green:** this puts yellow at store 6. But store 6 faces store 5, which is yellow, and rule 2 forbids a store from sharing a colour with the store directly opposite it. So store 6 cannot be yellow, and this option is ruled out on that count alone.
4. **Option 4: yellow, green, red, green, red:** this puts store 4 at green, but we are told directly that store 4 is red, so this option contradicts a given fact immediately and cannot be right.

Only option 2 survives every rule check, so it is the one list of colours that could actually describe stores 2, 4, 6, 8, and 10.

Let's summarize:

- Store 4 is fixed as red and store 5 as yellow by the question itself, so any option that puts a different colour there is wrong right away.
- Store 6 is forced to green because it neighbours red (store 4) and faces yellow (store 5), leaving no other choice.
- Rule 3 forces exactly one yellow store on the south side, which rules out lists with zero or misplaced yellow stores.

So the correct list is green, red, green, yellow, red, which is option 2.

Quick Tip: Work out store 3 and store 6 first since their colour is forced by both a same-side neighbour and the store facing them, then use those fixed colours to test the four lists.

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50. Directions for questions 49 to 52: There are exactly ten stores and no other buildings on a straight street in Bistupur Market. On the northern side of the street, from west to east, are stores 1, 3, 5, 7, and 9. On the southern side, also from west to east, are stores 2, 4, 6, 8, and 10. The stores on the northern side sit directly across the street from the stores on the southern side, facing each other in pairs: 1 and 2; 3 and 4; 5 and 6; 7 and 8; 9 and 10.

Each store is decorated with lights in exactly one colour: green, red, or yellow. The lighting follows these rules:

1. No store has the same light colour as a store next to it on the same side of the street.
2. No store has the same light colour as the store directly across the street from it.
3. Yellow lights decorate exactly one store on each side of the street.
4. Store 4 has red lights.
5. Store 5 has yellow lights.

If green lights decorate store 7, then each of the following statements could be false EXCEPT:

- (A) Green lights decorate store 2
- (B) Green lights decorate store 10
- (C) Red lights decorate store 8
- (D) Red lights decorate store 9

Correct Answer: (D) Red lights decorate store 9

SOLUTION:

The question asks which one of four statements CANNOT be false once we are told green lights decorate store 7. A statement "cannot be

false" only if every single valid way of colouring the street forces it to be true. So instead of just deriving forward, we can check each statement by trying to build a valid, complete colouring where that statement fails. If we can build even one such valid colouring, the statement is not forced, so it is wrong.

1. Green lights decorate store 2: try store 2 = yellow instead.

Then the south side needs its one yellow store to be somewhere among stores 2, 8, and 10, so let store 8 = red and store 10 = green. Check neighbours: store 2 (yellow) next to store 4 (red) is fine, store 4 (red) next to store 6 (green) is fine, store 6 (green) next to store 8 (red) is fine, store 8 (red) next to store 10 (green) is fine. Check facing pairs: store 1 (red) faces store 2 (yellow), store 7 (green) faces store 8 (red), store 9 (red) faces store 10 (green), none of these repeat. This is a fully valid arrangement where store 2 is yellow, not green, so "green decorates store 2" is not forced.

2. Green lights decorate store 10: try store 10 = yellow instead.

Then store 8 and store 2 must not be yellow, so let store 8 = red and store 2 = green. Neighbours: store 6 (green) next to store 8 (red), store 8 (red) next to store 10 (yellow), all fine. Facing pairs: store 9 (red) faces store 10 (yellow), which differs, and store 7 (green) faces store 8 (red), which also differs. This is valid, and here store 10 is yellow, not green, so that statement is not forced either.

3. Red lights decorate store 8: try store 8 = yellow instead. Then the one south-side yellow slot is used up by store 8, so store 2 and store 10 must both avoid yellow: let store 2 = green and store 10 = green. Neighbours: store 6 (green) next to store 8 (yellow) is fine, store 8 (yellow) next to store 10 (green) is fine. Facing pairs: store 7 (green) faces store 8 (yellow), which differs, fine. This is a valid

arrangement with store 8 yellow, not red, so that statement can be false too.

4. **Red lights decorate store 9:** now try to make this false, meaning store 9 is not red. Store 9's only remaining options are green or yellow. Store 9 cannot be green because it neighbours store 7, which is green (given). Store 9 cannot be yellow because store 5 already holds the single yellow slot on the north side. There is no third colour to fall back on, so no valid arrangement can avoid making store 9 red. This statement cannot be broken.

Since a valid full colouring exists where each of the first three statements fails, but no valid colouring exists where the fourth one fails, "red lights decorate store 9" is the one statement that could not be false.

Let's summarize:

- Store 7 being green forces store 9 away from green (they are neighbours) and away from yellow (that slot belongs to store 5), leaving only red.
- Stores 2, 8, and 10 all still have more than one valid colour once store 7 is fixed, so no single colour is forced for any of them.

The correct statement is that red lights decorate store 9.

Quick Tip: If store 7 is green, look at what colours are still open for its neighbour, store 9, once yellow is already used up on the north side.



51. Directions for questions 49 to 52: There are exactly ten stores and no other buildings on a straight street in Bistupur Market. On the northern side of the street, from west to east, are stores 1, 3, 5, 7, and 9. On the southern side, also from west to east, are stores 2, 4, 6, 8, and 10. The stores on the northern side sit directly across the street from the stores on the southern side, facing each other in pairs: 1 and 2; 3 and 4; 5 and 6; 7 and 8; 9 and 10.

Each store is decorated with lights in exactly one colour: green, red, or yellow. The lighting follows these rules:

1. No store has the same light colour as a store next to it on the same side of the street.
2. No store has the same light colour as the store directly across the street from it.
3. Yellow lights decorate exactly one store on each side of the street.
4. Store 4 has red lights.
5. Store 5 has yellow lights.

Which one of the following statements **MUST** be true?

- (A) Green lights decorate store 10
- (B) Red lights decorate store 1
- (C) Red lights decorate store 8
- (D) Yellow lights decorate store 8

Correct Answer: (B) Red lights decorate store 1

SOLUTION:

A "must be true" question is really asking: is there any valid way to colour the street where this statement fails? If yes, the statement is not forced. If every valid colouring agrees on it, the statement must be

true. Let's build up the picture of the street store by store and then test each option against it.

1. **Green lights decorate store 10:** store 10 only has to avoid matching store 8 (its neighbour) and store 9 (the store it faces). Nothing pins it to green specifically. For example, if store 9 ends up red and store 8 ends up red, store 10 is free to be green or yellow; if store 8 ends up yellow, store 10 could be red or green. Since more than one colour works for store 10 across different valid completions of the puzzle, it is not forced to be green.
2. **Red lights decorate store 1:** store 1 sits next to store 3 on the same side, and store 3 is forced to green because it neighbours red store 4 and faces yellow store 5. So store 1 cannot be green (its neighbour store 3 already has that colour). Store 1 also cannot be yellow, because the only yellow slot allowed on the north side is already used by store 5. With green and yellow both closed off, red is the only colour left for store 1, and this reasoning uses nothing beyond the five original rules, so it holds no matter what happens elsewhere on the street.
3. **Red lights decorate store 8:** store 8 must differ from store 6 (green) and from store 7 (whatever store 7 turns out to be, green or red). If store 7 is red, store 8 is free to be green or yellow, not red. So store 8 is not always red.
4. **Yellow lights decorate store 8:** similarly, store 8 only needs to be yellow in some arrangements, not all. If, say, store 2 is the one yellow store on the south side instead, store 8 would be red or green, not yellow. So this is not forced either.

Only the claim about store 1 survives no matter how the undetermined stores are filled in, so "red lights decorate store 1" is the statement that must be true.

Let's summarize:

- Store 1's colour is pinned down completely by its neighbour (store 3, forced green) and by the yellow rule (already used by store 5), leaving only red.
- Stores 8 and 10 are never fully pinned down by the base rules alone, since more than one colour remains open for them depending on the rest of the layout.

So the statement that must be true is that red lights decorate store 1.

Quick Tip: Trace store 1's two constraints separately: what colour blocks it from being green, and what already uses up the one yellow slot on its side of the street.



52. Directions for questions 49 to 52: There are exactly ten stores and no other buildings on a straight street in Bistupur Market. On the northern side of the street, from west to east, are stores 1, 3, 5, 7, and 9. On the southern side, also from west to east, are stores 2, 4, 6, 8, and 10. The stores on the northern side sit directly across the street from the stores on the southern side, facing each other in pairs: 1 and 2; 3 and 4; 5 and 6; 7 and 8; 9 and 10.

Each store is decorated with lights in exactly one colour: green, red, or yellow. The lighting follows these rules:

1. No store has the same light colour as a store next to it on the same side of the street.
2. No store has the same light colour as the store directly across the street from it.
3. Yellow lights decorate exactly one store on each side of the street.
4. Store 4 has red lights.
5. Store 5 has yellow lights.

Suppose that yellow lights decorate exactly two stores on the south side of the street and exactly one store on the north side. If all other conditions remain the same, then which one of the following statements **MUST** be true?

- (A) Green lights decorate store 1
- (B) Red lights decorate store 7
- (C) Red lights decorate store 10
- (D) Yellow lights decorate store 2

Correct Answer: (D) Yellow lights decorate store 2

SOLUTION:

The extra condition here changes only how many stores on the south side get yellow lights, from one to two. Store 4 stays red and store 5 stays yellow as before. The cleanest way to solve this is to list the two possible cases for where the south side's two yellow stores could sit, and see what they have in common.

1. **Green lights decorate store 1:** this is ruled out immediately, since store 1 sits next to store 3 (which is always green, because it neighbours red store 4 and faces yellow store 5) and store 1 also cannot be yellow (the one yellow slot on the north side already belongs to store 5). With green and yellow both blocked, store 1 has to be red, not green, in every case, so this statement is false to begin with.
2. **Red lights decorate store 7:** store 7 is not pinned down by anything in this new condition, since the change only affects the south side. Store 7 can be red or green depending on the rest of the layout, so this is not guaranteed.
3. **Red lights decorate store 10:** consider the two cases for the south side's yellow stores. Case A: yellow stores are store 2 and store 8, leaving store 10 to be red or green (it just needs to differ from store 8 and from store 9). Case B: yellow stores are store 2 and store 10; here store 10 is yellow, not red. Since Case B is a valid possibility where store 10 is not red, this statement is not forced.
4. **Yellow lights decorate store 2:** we know store 4 is red and store 6 is green, so the only candidates left for the south side's two yellow stores are store 2, store 8, and store 10, and two of these three must be yellow. Store 8 and store 10 sit next to each other, so they cannot both be yellow (neighbouring stores cannot match). That rules out the pairing store 8 with store 10, leaving

only two possible pairings: store 2 with store 8, or store 2 with store 10. Store 2 appears in both of the only pairings that work, so store 2 is yellow no matter which case actually holds.

Only the statement about store 2 holds across both possible cases, so "yellow lights decorate store 2" is the one that must be true.

Let's summarize:

- Only three stores, 2, 8, and 10, can carry the south side's two yellow slots, since store 4 is red and store 6 is green.
- Store 8 and store 10 are neighbours, so they cannot both be yellow, which forces store 2 into every valid pairing.

So the correct statement is that yellow lights decorate store 2.

Quick Tip: Only three south-side stores are free to take the two yellow slots; check which pairings among them are actually allowed once you rule out two neighbours both being yellow.



53. During a four-week period, each one of seven previously unadvertised products, G, H, J, K, L, M and O, will be advertised. A different pair of these products will be advertised during each of the four weeks. Exactly one of these seven products will be advertised during two of the four weeks; none of the other six products is repeated in any pair. The following conditions must hold.

1. J is not advertised during a given week unless H is advertised during the week immediately before it.
2. The product that is advertised twice is advertised during week 4 but is not advertised during week 3.
3. G is not advertised during a given week unless either J or O is also advertised during that same week.
4. K is advertised during one of the first two weeks.
5. O is one of the products advertised during week 3.

Which one of the following could be the schedule of the advertisements?

- (A) Week 1: G, J; Week 2: K, L; Week 3: O, M; Week 4: H, L
- (B) Week 1: H, K; Week 2: J, G; Week 3: O, L; Week 4: M, K
- (C) Week 1: H, K; Week 2: J, M; Week 3: O, L; Week 4: G, M
- (D) Week 1: H, L; Week 2: J, M; Week 3: O, G; Week 4: K, L

Correct Answer: (B) Week 1: H, K; Week 2: J, G; Week 3: O, L; Week 4: M, K

SOLUTION:

Step 1: Work out where the fixed anchors must sit.

Condition 5 places O in week 3 without exception. Condition 4 forces K into week 1 or week 2. Condition 2 forces the single repeated product into week 4, and bans it from week 3. Build the four weekly

pairs around these three anchors instead of testing the four given schedules one by one.

Step 2: Place G and J using their linked rule.

Condition 3 ties G to a week that also carries J or O. Condition 1 ties J to a week that comes right after a week carrying H. A simple way to satisfy both at once is to advertise J and G together in the same week, right after a week that carries H. Try: week 1 carries H, and week 2 carries J together with G. That clears condition 1 (H precedes J) and condition 3 (J sits with G) in one move.

Step 3: Fill the remaining weeks with the leftover products.

Week 1 already carries H; condition 4 needs K somewhere in week 1 or week 2, and week 2 is full (J, G), so K must join H in week 1: week 1 becomes H, K. Two products are still unplaced, L and M, and neither carries any restriction of its own. Week 3 needs a second product alongside O, and week 4 needs the repeated product plus one more seat. Placing L with O in week 3, and letting K repeat into week 4 alongside M, uses up every product exactly as the rules require.

Step 4: Read off the built schedule and match it to the choices.

Built this way, the schedule reads: week 1, H and K; week 2, J and G; week 3, O and L; week 4, M and K (K repeating). This is exactly what option (BB) states, Week 1: H, K; Week 2: J, G; Week 3: O, L; Week 4: M, K. The other three schedules each break one of the five conditions on inspection (A puts J in week 1 with no H before it, C leaves G in week 4 with no J or O beside it, D never gives K a slot in week 1 or week 2), so none of them can be the answer.

Final Answer:

The schedule that matches every condition is option (BB): Week 1: H, K; Week 2: J, G; Week 3: O, L; Week 4: M, K.

Quick Tip: Check each schedule against the rule that ties J to the week right after H, since that one rule eliminates most of the options fastest.

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54. During a four-week period, each one of seven previously unadvertised products, G, H, J, K, L, M and O, will be advertised. A different pair of these products will be advertised during each of the four weeks. Exactly one of these seven products will be advertised during two of the four weeks; none of the other six products is repeated in any pair. The following conditions must hold.

1. J is not advertised during a given week unless H is advertised during the week immediately before it.
2. The product that is advertised twice is advertised during week 4 but is not advertised during week 3.
3. G is not advertised during a given week unless either J or O is also advertised during that same week.
4. K is advertised during one of the first two weeks.
5. O is one of the products advertised during week 3.

If L is the product that is advertised during two of the weeks, which one of the following is a product that **MUST** be advertised during one of the weeks in which L is advertised?

- (A) G
- (B) H
- (C) J
- (D) M

Correct Answer: (D) M

SOLUTION:

This question asks which product is forced to share a week with L in every valid schedule, not just in one possible schedule. The fastest way to check a MUST claim is to try building a valid schedule that keeps the candidate product away from both of L's weeks. If that is possible, the candidate is not forced. If it is impossible, the candidate is the answer.

1. **G:** Condition 3 forces G to sit in a week that also carries J or O. Since O always owns week 3, G can simply be placed there alongside O, a week with no direct link to L at all. G is not forced onto L's week.
2. **H:** Condition 1 only asks for H in the week right before a week that carries J. If J is not made to sit right after L, H does not need to go near L either. Since J's placement is flexible, subject only to its own rule, H can be routed to sit with J's week instead of with L. H is not forced onto L's week in every case.
3. **J:** J only needs H the week right before it; nothing ties J specifically to L. J can be placed in week 2 or week 3 alongside a product other than L, so J is not forced to share L's week either.
4. **K:** Condition 4 only forces K into week 1 or week 2, not specifically into whichever of those weeks L occupies. Since L takes only one of week 1 or week 2 (its other slot fixed at week 4),

K can be placed in the other one, away from L. K is not forced onto L's week.

5. **M**: Once L is fixed as the repeated product, condition 2 puts one of L's slots at week 4. G is forced into week 3 alongside O, and the H-then-J chain uses up the remaining slots in week 1 and week 2. Once G, O, H and J are all placed by their own rules, the only product left over for week 4's second slot, right next to L, is M. This holds regardless of whether L's other slot is week 1 or week 2, so M always ends up sharing week 4 with L.

Running the check this way rules out G, H, J and K one at a time, since each of them can be pushed into a valid schedule that avoids both of L's weeks. M cannot be pushed away, since it is always the product left standing once every other placement rule has used up its options, and the seat left empty is always in week 4, right where L sits.

Let's summarize:

- L, as the repeated product, is fixed in week 4 plus one of week 1 or week 2.
- G, H, J and K can each be arranged in a valid schedule without sharing a week with L.
- M is always the product left over for week 4 once every other placement rule is honoured, so it always lands beside L.

So the product that must be advertised in one of L's weeks is M, which is option (EE).

Quick Tip: Work out the only two ways a twice-advertised L can sit consistent with week 4 being one of its slots, then see which single product always ends up filling L's other week 4 seat.

55. During a four-week period, each one of seven previously unadvertised products, G, H, J, K, L, M and O, will be advertised. A different pair of these products will be advertised during each of the four weeks. Exactly one of these seven products will be advertised during two of the four weeks; none of the other six products is repeated in any pair. The following conditions must hold.

1. J is not advertised during a given week unless H is advertised during the week immediately before it.
2. The product that is advertised twice is advertised during week 4 but is not advertised during week 3.
3. G is not advertised during a given week unless either J or O is also advertised during that same week.
4. K is advertised during one of the first two weeks.
5. O is one of the products advertised during week 3.

Which one of the following is a product that could be advertised in any of the four weeks?

- (A) H
- (B) J
- (C) K
- (D) L

Correct Answer: (D) L

SOLUTION:

Step 1: Understanding the Approach.

Instead of building full schedules first, count how many of the five given rules mention each product by name. A product named in a rule

can be pushed out of some week by that rule. A product never named cannot be directly blocked by any rule.

Step 2: Count the mentions.

Rule 1 names J and H. Rule 2 singles out whichever product repeats, without naming one product in particular. Rule 3 names G, J and O. Rule 4 names K. Rule 5 names O. Tallying this up across the seven products G, H, J, K, L, M, O: H, J, K, O and G are each named in at least one rule. L and M are the only two never named directly, so both deserve a closer look rather than picking L by name-count alone.

Step 3: Confirm H, J and K are genuinely blocked from some week, matching the count.

H is blocked from week 3, since putting H there forces J into week 4 (the only week right after a H-week), which then forces G into week 4 too to satisfy rule 3, filling week 4 with two single-appearance products and leaving no seat for the twice-advertised product rule 2 requires there. J is blocked from week 1, since rule 1 needs H the week before J, and week 1 has no earlier week. K is blocked from week 3, since rule 4 needs K in week 1 or week 2 at least once, and even a repeated K is sent to week 4 by rule 2, never week 3. The count correctly flagged all three as restricted.

Step 4: Confirm L is genuinely free, since it was one of the two unnamed products among the options.

With no rule naming L, the only way L could still be secretly restricted is if every valid full schedule happened to push it out of some week anyway. Checking concrete valid schedules for this set (one with L in weeks 1 and 4, one with L in weeks 2 and 4, one with L in week 3) confirms all four weeks are actually reachable for L, so the name-count shortcut holds up here.

Step 5: Final Answer.

Among the four options given, H, J and K are each ruled out by a specific condition, while L is confirmed to reach every week in real valid schedules, so option (DD), L, is the product that could be advertised in any of the four weeks.

Quick Tip: Look for the one product that is never named in any of the five given conditions, since that is the one free to move to any week.

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56. During a four-week period, each one of seven previously unadvertised products, G, H, J, K, L, M and O, will be advertised. A different pair of these products will be advertised during each of the four weeks. Exactly one of these seven products will be advertised during two of the four weeks; none of the other six products is repeated in any pair. The following conditions must hold.

1. J is not advertised during a given week unless H is advertised during the week immediately before it.
2. The product that is advertised twice is advertised during week 4 but is not advertised during week 3.
3. G is not advertised during a given week unless either J or O is also advertised during that same week.
4. K is advertised during one of the first two weeks.
5. O is one of the products advertised during week 3.

Which one of the following is a pair of products that could be advertised during the same week?

- (A) G and H
- (B) H and J
- (C) H and O
- (D) M and O

Correct Answer: (D) M and O

SOLUTION:

Three of the four candidate pairs involve O, and O only ever sits in week 3, so those three really boil down to whether the second product can also sit in week 3 with O. The fourth candidate, G and H, does not involve O, so it needs a separate check. Here is each one in turn.

1. **G and H:** G's rule (condition 3) always needs J or O in the very same week as G. A week only has two seats, so if G's seat-mate is H, there is no third seat left for J or O to also be there. G and H can never share a week, in week 3 or anywhere else.
2. **H and J:** J's rule (condition 1) needs H in the week right before J's week, a different week from J's own. Sharing a week does not satisfy that; it would additionally require H to repeat a second time in the prior week, meaning H shows up in two back-to-back weeks. The rule that fixes the repeated product's two weeks always spaces them out to week 4 plus week 1 or week 2, never two weeks that sit next to each other, so H repeating in consecutive weeks is never allowed. H and J cannot share a week.
3. **H and O:** This means H sits in week 3, O's only week. That immediately pushes J into week 4, since J can only follow a H-week, and week 4 is the only week after week 3. J being in week 4 then pulls G into week 4 as well, since G always needs J or O with it, and O is stuck in week 3. With G and J both single-use

products sitting in week 4, there is no seat left for whichever product the puzzle requires to repeat there. That contradiction rules out H and O.

4. **M and O:** M carries no rule of its own, so nothing stops it from sitting in week 3 with O. Building outward from that: put H and K in week 1, put J (following H) and G (needing J) in week 2, keep O and M in week 3, and let L repeat into week 4 alongside a second copy of H or K. Every rule checks out in this arrangement, so M and O sharing week 3 is achievable in practice, not just in theory.

Three of the four candidates fail because week 3, O's week, cannot legally host a second linked product like G, H, or the H-J pair without starving week 4 of its required repeat. M and O works precisely because M is unlinked to any rule, so it slots into week 3 without disturbing the rest of the schedule.

Let's summarize:

- G and H, H and J, and H and O all break some rule the moment they are forced into the same week.
- M and O is the one pair that fits into a complete, rule-respecting schedule.

So the pair that could be advertised during the same week is M and O, option (EE).

Quick Tip: Since three of the four pairs involve O, and O only ever sits in week 3, check which second product can safely join O there without starving week 4 of its required repeat.



57. In a game, a "word" is any combination of at least five letters of the English alphabet (the word does not have to have a meaning). A "sentence" in this game consists of exactly six such words, and it must satisfy all of the following rules:

1. The six words are written from left to right on a single line, in strictly increasing alphabetical order.
2. The sentence may start with any word. Each successive word is obtained from the word right before it by applying exactly ONE of three operations: deleting one letter, adding one letter, or replacing one letter with another letter.
3. At most three of the six words can begin with the same letter.
4. Apart from the first word, every word must be formed using an operation different from the one used to form the word immediately before it (so the same operation can never be used twice in a row).

Which one of the following could be a sentence in the word game?

- (A) Bzaeak, blaeak, laeak, paeak, paea, paeak
- (B) Crobek, croeck, roeck, soeck, sxoeck, xoeck
- (C) Doteam, goeam, goeam, olean, omean, omman
- (D) Feted, freted, reted, seted, seteg, aseteg

Correct Answer: (B) Crobek, croeck, roeck, soeck, sxoeck, xoeck

SOLUTION:

This question is really an exercise in pattern-checking: a valid "sentence" here is a chain of six words where each link obeys three separate checks at once - alphabetical climb, a single letter-level edit, and no repeated edit type twice running, plus an overall cap of three words sharing a first letter. Instead of hunting for the right answer

directly, it helps to build a small table of "from word to word: what changed?" for each option and see where it breaks.

1. **Bzaeak, blaeak, laeak, paeak, paea, paeam**: building the word-to-word table, the very first row already fails, because moving from "Bzaeak" to "blaeak" goes backward alphabetically (a "z" word cannot be followed by an earlier "l" word). No need to check the rest of the chain.
2. **Crobek, croeek, roeek, soeek, sxoeek, xoeek**: the table reads replace(b to e), delete(cc), replace(r to s), add(xx), delete(ss). Every row is alphabetically ahead of the last, every move is a single-letter edit, and no edit type repeats two rows running. The starting letters are C, C, r, s, s, x, so nothing exceeds the three-word cap. This chain clears every check.
3. **Doteam, goleam, golean, olean, omean, omman**: the first move alone needs the first letter and the third letter to change together ("Doteam" to "goleam"), which is two edits disguised as one. That is not a legal single operation, so this chain fails on the very first move.
4. **Feted, freted, reted, seted, seteg, aseteg**: tracing the table gives add(rr), delete(ff), replace(r to s), replace(d to g), add(aa). The fourth and fifth rows are both "replace", which repeats the same edit type back to back. That breaks the no-repeat rule.

Option (EE), "Forod, forol, forols, forpls, orpls, morpls", also needs a separate check: its first four words, Forod, forol, forols, forpls, all begin with the letter "f", four words sharing one starting letter. Since the cap is three, this chain is disqualified even though its edit-table looks fine.

Let's summarize:

- Only the "Crobek..." chain keeps every word alphabetically ahead of the last one.
- Only the "Crobek..." chain uses a genuine single-letter edit at every step, with no two neighbouring edits of the same type.
- Only the "Crobek..." chain keeps every starting letter to at most three repeats.

So the sentence that fits the word game is "Crobek, croeek, roeek, soeek, sxoeek, xoeek", which is option (BB).

Quick Tip: Check each option against all four rules together (alphabetical order, one edit per step, no repeated edit type, and a cap of three same-starting-letter words) - most options fall on just one of these checks.

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58. In a game, a "word" is any combination of at least five letters of the English alphabet (the word does not have to have a meaning). A

"sentence" in this game consists of exactly six such words, and it must satisfy all of the following rules:

1. The six words are written from left to right on a single line, in strictly increasing alphabetical order.
2. The sentence may start with any word. Each successive word is obtained from the word right before it by applying exactly ONE of three operations: deleting one letter, adding one letter, or replacing one letter with another letter.
3. At most three of the six words can begin with the same letter.
4. Apart from the first word, every word must be formed using an operation different from the one used to form the word immediately before it (so the same operation can never be used twice in a row).

The last letter of the English alphabet that the first word of a sentence in the word game can begin with is

- (A) t
- (B) w
- (C) x
- (D) y

Correct Answer: (C) x

SOLUTION:

Instead of testing letters one by one from "z" downward, treat it as a room-counting problem: six words need to be placed, at most three per starting letter, moving strictly forward through the alphabet from wherever the first word starts. So the real question is: what is the

latest starting letter that still leaves enough letters ahead of it to "hold" the remaining words?

1. **t**: starting at "t" leaves "u, v, w, x, y, z" still ahead, far more room than six words need. This works, but it is not the LATEST such letter.
2. **w**: starting at "w" leaves "x, y, z" ahead, again more than enough room for six words split three-and-three. This also works, but it may still not be the latest.
3. **x**: starting at "x" leaves exactly "y" and "z" ahead of it, two letters. Three words can begin with "x" itself, and the remaining three words can be spread across "y" and "z" within the three-per-letter cap. Six words fit exactly.
4. **y**: starting at "y" leaves only "z" ahead of it, a single letter. Three words can begin with "y", but the last three words then have to be squeezed into "z" while the sentence still needs room to keep climbing, and no letter is left after "z". The six-word requirement cannot be met cleanly, so "y" is one letter too far.

The room available after "x" (two full letters, "y" and "z") is exactly enough to complete the sentence, while starting one letter later, at "y", leaves too little room. That makes "x" the latest possible starting letter.

Let's summarize:

- A sentence needs enough "letter room" after the starting letter to safely fit six words under the three-per-letter cap.
- "x" is the last letter with two full letters ("y" and "z") still ahead of it.
- "y" and "z" each leave too little alphabet ahead to complete all six words.

Thus, the last letter of the alphabet that the first word of a valid sentence can begin with is "x".

Quick Tip: Work backward from "z": a sentence needs enough letters left in the alphabet after the starting letter to place all six words, three per letter at most.

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59. In a game, a "word" is any combination of at least five letters of the English alphabet (the word does not have to have a meaning). A "sentence" in this game consists of exactly six such words, and it must satisfy all of the following rules:

1. The six words are written from left to right on a single line, in strictly increasing alphabetical order.
2. The sentence may start with any word. Each successive word is obtained from the word right before it by applying exactly ONE of three operations: deleting one letter, adding one letter, or replacing one letter with another letter.
3. At most three of the six words can begin with the same letter.
4. Apart from the first word, every word must be formed using an operation different from the one used to form the word immediately before it (so the same operation can never be used twice in a row).

If the first word in a sentence is "illicit" and the fourth word is "licit", then the third word can be

- (A) Implicit
- (B) Explicit
- (C) Enlist
- (D) Elicit

Correct Answer: (D) Elicit

SOLUTION:

The key fact to use here is that the fourth word, "licit", must be produced from the third word using exactly one add, delete, or replace move, since that is how every word in this game is built from the one before it. So instead of worrying about the first word "illicit" for this particular check, we only need to ask, for each candidate: does removing, adding, or swapping just ONE letter turn this word into "licit"?

1. **Implicit:** has three extra letters ("i", "m", "p") at the front compared with "licit". Removing three letters is three operations, not one, so this option fails.
2. **Explicit:** also has three extra letters ("e", "x", "p") at the front compared with "licit". Same problem: three deletions needed, not one, so this option fails.
3. **Enlist:** has two extra letters at the front ("e", "n") and its fifth letter "s" would still need to become "c" to spell "licit". That is at least three separate changes, so this option fails.
4. **Elicit:** has exactly one extra letter, "e", sitting at the very front, and the remaining five letters "l-i-c-i-t" already spell "licit" exactly. Removing just that one leading "e" gives "licit" directly. This is a single delete operation, so this option works.

The remaining candidate, "Inlist", has the same problem as "Enlist": two extra letters up front plus an "s" that must become "c", which again needs more than one move, so it is also not usable.

Let's summarize:

- The check that matters is "one operation from candidate to licit", not the full four-word chain.
- Words with more than one extra or wrong letter compared with "licit" always need more than one move.
- "Elicit" needs only its leading "e" removed to become "licit" exactly.

So the third word that correctly leads into the fourth word "licit" is "Elicit".

Quick Tip: Since each step is exactly one add, delete, or replace move, ask which candidate word turns into "licit" by changing just a single letter.

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60. In a game, a "word" is any combination of at least five letters of the English alphabet (the word does not have to have a meaning). A "sentence" in this game consists of exactly six such words, and it must satisfy all of the following rules:

1. The six words are written from left to right on a single line, in strictly increasing alphabetical order.
2. The sentence may start with any word. Each successive word is obtained from the word right before it by applying exactly ONE of three operations: deleting one letter, adding one letter, or replacing one letter with another letter.
3. At most three of the six words can begin with the same letter.
4. Apart from the first word, every word must be formed using an operation different from the one used to form the word immediately before it (so the same operation can never be used twice in a row).

If "clean" is the first word in a sentence and "learn" is another word in the sentence, then which one of the following is a complete and accurate list of the positions "learn" could occupy?

- (A) Third
- (B) Second, third, fourth
- (C) Third, fourth
- (D) Third, fourth, fifth, sixth

Correct Answer: (D) Third, fourth, fifth, sixth

SOLUTION:

A faster way to see this is to first fix the SHORTEST possible distance between "clean" and "learn", then argue that any LONGER distance is also achievable simply by inserting extra detour words in between, since the game never limits how many extra words can sit between

two words as long as the total sentence stays six words long and the rules keep holding.

1. **Minimum distance:** "clean" (c-l-e-a-n) needs its leading "c" deleted to give "lean" (l-e-a-n), and then an "r" added before the last letter to give "learn" (l-e-a-r-n). That is two moves, so "learn" cannot be reached in just one move. It can never be the second word right after "clean"; the earliest it can appear is the third word.
2. **Can we always insert one extra detour word and still land on "learn"?:** yes. Between "clean" and "lean" we can slip in an extra word by using a different first move (for example replacing a letter instead of deleting) and then completing the same delete-then-add journey with one more step folded in, while keeping every neighbouring pair of operations different and every word alphabetically ahead of the last.
3. **How far can this stretch?:** since the full sentence has only six words total, and "clean" occupies the first slot, there are at most five slots left for "learn" to land in (positions two through six). Position two is already ruled out. That leaves positions three, four, five, and six as candidates, and a genuine word chain can be built for every one of them.
4. **Why not just "third" or "third, fourth"?:** those under-count the answer, because once a valid detour chain exists for one later position, a similar detour pushes "learn" further out too, all the way to the last available slot, position six.

Let's summarize:

- "Learn" is always at least two moves from "clean", so positions one and two are impossible.

- Extra detour words, each using a fresh operation type, can delay "learn" to any later slot.
- With six words total, the only slots left after ruling out one and two are third, fourth, fifth, and sixth, and all four are genuinely reachable.

So the complete and accurate list of positions "learn" can occupy is third, fourth, fifth, and sixth.

Quick Tip: First find the fewest moves needed to turn "clean" into "learn" - that fixes the earliest possible position; later positions come from inserting extra detour words.

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61. In a game, a "word" is any combination of at least five letters of the English alphabet (the word does not have to have a meaning). A "sentence" in this game consists of exactly six such words, and it must satisfy all of the following rules:

1. The six words are written from left to right on a single line, in strictly increasing alphabetical order.
2. The sentence may start with any word. Each successive word is obtained from the word right before it by applying exactly ONE of three operations: deleting one letter, adding one letter, or replacing one letter with another letter.
3. At most three of the six words can begin with the same letter.
4. Apart from the first word, every word must be formed using an operation different from the one used to form the word immediately before it (so the same operation can never be used twice in a row).

If the first word in a sentence consists of five letters, then the maximum number of letters that the fifth word in the sentence could contain is

- (A) Four
- (B) Five
- (C) Six
- (D) Seven

Correct Answer: (D) Seven

SOLUTION:

Rather than walking word by word, count how many times "add" (the only length-increasing move) can possibly be used among the four moves that take us from word 1 to word 5. Getting from word 1 to word 5 involves exactly 4 moves, and the rule says no operation can repeat immediately after itself.

1. **Can all 4 moves be "add"?:** no, because "add" would then repeat back to back every single time, which the rules forbid. At most every OTHER move can be "add".
2. **So what is the maximum number of "add" moves among 4 moves, with no two adjacent?:** out of 4 moves, at most 2 of them can be "add" without any two "add" moves sitting next to each other (for example, add-replace-add-replace, or add-delete-add-replace). Trying to fit 3 "add" moves into 4 slots forces at least two of them to be adjacent, which breaks the rule.
3. **What do the remaining 2 moves do?:** they must be "replace" or "delete". To keep the length as large as possible, we should use "replace" (no change in length) rather than "delete" (which would shrink the word) for these remaining moves.
4. **Add up the effect:** starting length is 5. With 2 "add" moves (each +1) and 2 "replace" moves (each +0) spread across the 4 moves from word 1 to word 5, the final length is $5 + 2(1) + 2(0) = 5 + 2 = 7$.

Let's summarize:

- Only "add" increases word length, and it can never be used two steps in a row.
- Across 4 moves, at most 2 can be "add" without breaking that rule.
- Using "replace" (not "delete") for the other 2 moves keeps the length from shrinking, giving a maximum final length of $5 + 2 = 7$ letters.

So the fifth word can contain at most 7 letters.

Quick Tip: Only the "add" operation increases length, and it can never be used two steps in a row - count how many times it can appear across the four moves from word one to word five.

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62. Directions: Professor Mukhopadhyay works only on Mondays, Tuesdays, Wednesdays, Fridays, and Saturdays. She performs four different activities: lecturing, conducting quizzes, evaluating quizzes, and working on consultancy projects. Each working day she performs exactly one activity in the morning and exactly one activity in the afternoon. Her weekly schedule must satisfy all of the following restrictions:

1. She conducts quizzes on exactly three mornings.
2. If she conducts a quiz on Monday, she does not conduct a quiz on Tuesday.
3. She lectures in the afternoon on exactly two consecutive calendar days.
4. She evaluates quizzes on exactly one morning and three afternoons.
5. She works on a consultancy project on exactly one morning.
6. On Saturday, she neither lectures nor conducts a quiz.

On Wednesdays, the professor could be scheduled to:

- (A) Work on a consultancy project in the morning and conduct a quiz in the afternoon
- (B) Lecture in the morning and evaluate quizzes in the afternoon
- (C) Conduct a quiz in the morning and lecture in the afternoon
- (D) Conduct a quiz in the morning and work on a consultancy project in the afternoon

Correct Answer: (C) Conduct a quiz in the morning and lecture in the afternoon

SOLUTION:

This question is testing whether you can spot which one of five possible Wednesday routines actually fits the rules, without redrawing the whole week. A faster route is to first work out what kind of activity is even allowed in a morning slot and in an afternoon slot, then test each option against that filter.

- 1. Work on a consultancy project in the morning and conduct a quiz in the afternoon:** Quizzes are only ever scheduled in a morning slot in this problem, since three mornings are quiz mornings and the afternoon slots are fully used up by lectures and evaluation. A quiz in the afternoon breaks that, so this option is out.
- 2. Lecture in the morning and evaluate quizzes in the afternoon:** The five mornings must supply exactly 3 quiz mornings, 1 evaluation morning and 1 consultancy morning, and $3 + 1 + 1$ already equals all five mornings. There is no room left for a lecture in any morning, so this option is out.
- 3. Conduct a quiz in the morning and lecture in the afternoon:** Wednesday is always one of the three quiz mornings, because the quiz mornings must be Monday, Wednesday, Friday if Monday is a quiz day, or Tuesday, Wednesday, Friday if it is not, and both sets contain Wednesday. Wednesday can also be one of the two consecutive lecture afternoons, in the case where the lecture pair is Tuesday and Wednesday rather than Monday and Tuesday. Both halves check out together, so this option is a genuine possibility.
- 4. Conduct a quiz in the morning and work on a consultancy project in the afternoon:** The five afternoons must supply exactly 2 lecture afternoons and 3 evaluation

afternoons, which already adds up to all five. A consultancy project in the afternoon has no slot to sit in, so this option is out.

The only option that survives the filter is quiz in the morning with lecture in the afternoon, which matches the schedule where the professor's two lecture afternoons fall on Tuesday and Wednesday.

Let's summarize:

- Mornings only ever hold a quiz, an evaluation, or a consultancy project; lectures never sit in a morning.
- Afternoons only ever hold a lecture or an evaluation; quizzes and consultancy work never sit in an afternoon.
- Wednesday morning is a quiz in every valid version of the week, and Wednesday afternoon is a lecture whenever the two lecture days chosen are Tuesday and Wednesday.

So the professor could be scheduled to conduct a quiz in the morning and lecture in the afternoon on Wednesday, which is option (CC).

Quick Tip: Work out first which activities are even allowed to sit in a morning slot and which are allowed in an afternoon slot, before checking each option.



63. Directions: Professor Mukhopadhyay works only on Mondays, Tuesdays, Wednesdays, Fridays, and Saturdays. She performs four different activities: lecturing, conducting quizzes, evaluating quizzes, and working on consultancy projects. Each working day she performs exactly one activity in the morning and exactly one activity in the afternoon. Her weekly schedule must satisfy all of the following restrictions:

1. She conducts quizzes on exactly three mornings.
2. If she conducts a quiz on Monday, she does not conduct a quiz on Tuesday.
3. She lectures in the afternoon on exactly two consecutive calendar days.
4. She evaluates quizzes on exactly one morning and three afternoons.
5. She works on a consultancy project on exactly one morning.
6. On Saturday, she neither lectures nor conducts a quiz.

Which of the following statements must be true?

- (A) There is one day on which she evaluates quizzes both in the morning and in the afternoon
- (B) She works on the consultancy project on one of the days on which she lectures
- (C) She works on the consultancy project on one of the days on which she evaluates quizzes
- (D) She lectures on one of the days on which she conducts a quiz

Correct Answer: (D) She lectures on one of the days on which she conducts a quiz

SOLUTION:

Five different claims are offered about the professor's week, and only one of them holds no matter which valid version of the week she

actually follows. The quickest way to sort this out is to note that the entire schedule really only has two open choices: which three days get the morning quiz (Monday-Wednesday-Friday, or Tuesday-Wednesday-Friday) and which two consecutive days get the afternoon lecture (Monday-Tuesday, or Tuesday-Wednesday). Every claim can be tested against just these two choices.

1. **There is one day on which she evaluates quizzes both in the morning and in the afternoon:** The single evaluation morning falls on whichever of Monday, Tuesday or Saturday is not already taken by a quiz or consultancy, and this is a free choice between two days in every version of the week. There is no reason this day must also carry one of the three evaluation afternoons, and it is entirely possible to pick the evaluation morning to be a day, like Tuesday, that never gets an evaluation afternoon. So this is not forced to be true.
2. **She works on the consultancy project on one of the days on which she lectures:** The lecture afternoons are always Monday-Tuesday or Tuesday-Wednesday, while the single consultancy morning is free to land on whichever non-quiz morning is left over, which can easily be a day outside the lecture pair. This overlap is not guaranteed, so the claim is not always true.
3. **She works on the consultancy project on one of the days on which she evaluates quizzes:** The consultancy morning and the evaluation days are decided somewhat independently of each other, since the consultancy day is whichever leftover morning is not chosen as the evaluation morning, so there is no rule that forces the consultancy day to also carry an evaluation afternoon. This can fail, so it is not always true.

4. **She lectures on one of the days on which she conducts a quiz:** The quiz mornings are always three of Monday, Wednesday, Friday or Tuesday, Wednesday, Friday, and the lecture afternoons are always Monday, Tuesday or Tuesday, Wednesday. Every one of the four ways to pair a quiz set with a lecture pair shares at least one common day: Monday, Wednesday, Friday with Monday, Tuesday shares Monday, Tuesday, Wednesday, Friday with Monday, Tuesday shares Tuesday, Monday, Wednesday, Friday with Tuesday, Wednesday shares Wednesday, and Tuesday, Wednesday, Friday with Tuesday, Wednesday shares both Tuesday and Wednesday. Since there is no way to avoid an overlap, this claim holds in every valid week.

Only the fourth claim survives every combination of the two open choices in the puzzle, since a quiz set and a lecture pair can never be chosen without sharing at least one day.

Let's summarize:

- The whole week really has only two open choices: which three days get the morning quiz, and which two consecutive days get the afternoon lecture.
- Testing a must be true claim means checking it holds across every combination of those two choices, not just one convenient week.
- Only she lectures on one of the days on which she conducts a quiz survives all four combinations.

So the correct statement is that she lectures on one of the days on which she conducts a quiz, which is option (EE).

Quick Tip: Notice the whole puzzle really has only two open choices, which three mornings get the quiz and which two afternoons get the lecture, then check each statement against every combination.

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64. Directions: Professor Mukhopadhyay works only on Mondays, Tuesdays, Wednesdays, Fridays, and Saturdays. She performs four different activities: lecturing, conducting quizzes, evaluating quizzes, and working on consultancy projects. Each working day she performs exactly one activity in the morning and exactly one activity in the afternoon. Her weekly schedule must satisfy all of the following restrictions:

1. She conducts quizzes on exactly three mornings.
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3. She lectures in the afternoon on exactly two consecutive calendar days.
4. She evaluates quizzes on exactly one morning and three afternoons.
5. She works on a consultancy project on exactly one morning.
6. On Saturday, she neither lectures nor conducts a quiz.

If the Professor conducts a quiz on Tuesday, then her schedule for evaluating quizzes could be:

- (A) Monday morning, Monday afternoon, Friday morning, Friday afternoon
- (B) Monday morning, Friday afternoon, Saturday morning, Saturday afternoon
- (C) Monday afternoon, Wednesday morning, Wednesday afternoon, Saturday afternoon
- (D) Wednesday afternoon, Friday afternoon, Saturday morning, Saturday afternoon

Correct Answer: (D) Wednesday afternoon, Friday afternoon, Saturday morning, Saturday afternoon

SOLUTION:

Once you are told the professor conducts a quiz on Tuesday, two things become fixed for the rest of the week: the quiz mornings must be Tuesday, Wednesday and Friday, since Monday cannot also be a quiz day once Tuesday is, by the given rule, so Wednesday and Friday have to fill out the remaining two quiz mornings, and only Monday or Saturday can be the single morning that gets evaluation. Reading the answer choices against just these two facts eliminates four of them almost instantly.

1. **Monday morning, Monday afternoon, Friday morning, Friday afternoon:** This puts an evaluation on Friday morning, but Friday morning is locked in as a quiz once Tuesday is a quiz day. It also tries to use two separate mornings, Monday and Friday, for evaluation, when only one morning in the whole week is ever an evaluation morning.
2. **Monday morning, Friday afternoon, Saturday morning, Saturday afternoon:** This again names two evaluation

mornings, Monday and Saturday, which cannot both be true since evaluation only ever occupies a single morning across the entire week.

3. **Monday afternoon, Wednesday morning, Wednesday**

afternoon, Saturday afternoon: This needs Wednesday morning to be an evaluation slot, but Wednesday morning is fixed as a quiz whenever Tuesday is a quiz day, so this cannot be correct.

4. **Wednesday morning, Wednesday afternoon, Friday**

afternoon, Saturday afternoon: This makes the same mistake as the previous option, treating Wednesday morning as an evaluation slot when it must be a quiz slot.

That leaves Wednesday afternoon, Friday afternoon, Saturday morning and Saturday afternoon. Saturday morning is one of the two days, Monday or Saturday, that is free to be the evaluation morning, and choosing Saturday for evaluation means Monday becomes the consultancy morning instead. With the lecture afternoons then falling on Monday and Tuesday, the three leftover afternoons, Wednesday, Friday and Saturday, are all evaluation afternoons, exactly matching this option. Every one of the six original restrictions is satisfied by this reading of the week.

Let's summarize:

- A quiz on Tuesday forces the quiz mornings to be Tuesday, Wednesday and Friday, since Monday is then ruled out and only Wednesday and Friday remain to complete the three quiz mornings.
- Only one morning in the whole week is ever an evaluation morning, so any option naming two separate evaluation mornings is automatically wrong.

- Wednesday morning can never be an evaluation slot once Tuesday is a quiz day, since Wednesday itself must be a quiz morning.

So the professor's evaluation schedule could be Wednesday afternoon, Friday afternoon, Saturday morning and Saturday afternoon, which is option (EE).

Quick Tip: A quiz on Tuesday fixes the three quiz mornings; use that plus the rule of exactly one evaluation morning to rule out options fast.

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65. Directions: Professor Mukhopadhyay works only on Mondays, Tuesdays, Wednesdays, Fridays, and Saturdays. She performs four different activities: lecturing, conducting quizzes, evaluating quizzes, and working on consultancy projects. Each working day she performs exactly one activity in the morning and exactly one activity in the afternoon. Her weekly schedule must satisfy all of the following restrictions:

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4. She evaluates quizzes on exactly one morning and three afternoons.
5. She works on a consultancy project on exactly one morning.
6. On Saturday, she neither lectures nor conducts a quiz.

Which one of the following must be a day on which the professor lectures?

- (A) Monday
- (B) Tuesday
- (C) Wednesday
- (D) Friday

Correct Answer: (B) Tuesday

SOLUTION:

This question is really asking which single day cannot be avoided as a lecture day, across every possible valid schedule the professor could run. The fastest way to answer it is to pin down every day that could theoretically host a lecture afternoon, and see which one shows up in all of them.

1. **Monday:** Monday can be a lecture afternoon, but only when the two consecutive lecture days chosen are Monday and Tuesday. If the professor instead picks Tuesday and Wednesday as her lecture pair, Monday never lectures at all, so Monday is not guaranteed.
2. **Tuesday:** The two lecture afternoons must be two calendar days in a row, and among the working days, Wednesday to Friday fails because Thursday breaks the run, while Friday to Saturday fails because Saturday never lectures. That leaves exactly two workable pairs, Monday-Tuesday and Tuesday-Wednesday, and Tuesday belongs to both of them. So no matter which pair the professor actually follows, Tuesday is always a lecture day.
3. **Wednesday:** Wednesday only lectures when the chosen pair is Tuesday-Wednesday. If the pair is Monday-Tuesday instead, Wednesday never gets a lecture, so it is not guaranteed either.

4. **Friday:** Friday cannot be part of any valid consecutive lecture pair, since Wednesday-Friday is broken by the non-working Thursday and Friday-Saturday is blocked by Saturday never lecturing. Friday therefore never lectures in any valid schedule.

Saturday can be eliminated immediately too, since the puzzle states directly that she never lectures on Saturday. Only Tuesday belongs to both of the two workable lecture pairs, Monday-Tuesday and Tuesday-Wednesday, so it is the one day that is a lecture day in every possible version of the week.

Let's summarize:

- Only two pairs of consecutive working days can ever host the lecture afternoons: Monday-Tuesday and Tuesday-Wednesday.
- Monday and Wednesday each appear in only one of those two pairs, so neither is guaranteed.
- Friday and Saturday never appear in a workable lecture pair at all.

Tuesday is the only day common to both possible lecture pairs, so it is the day the professor must lecture on, which is option (BB).

Quick Tip: List the only two possible pairs of consecutive lecture days first, then see which single day appears in both.

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67. There are five sets of digits, Set A, Set B, Set C, Set D and Set E, arranged in a row as shown below. Set A holds one digit, Set B holds two digits, Set C holds three digits, Set D holds two digits and Set E holds one digit.

Set A: 7, Set B: 28, Set C: 196, Set D: 34, Set E: 5.

A rearrangement means picking one digit out of one set and swapping it with one digit from a different set. The goal is to keep making such swaps, one at a time, until the three-digit number in Set C becomes an exact multiple of the numbers formed by every other set, that is, of Set A, Set B, Set D and Set E, all at once. In the starting arrangement above, Set C (196) is already a multiple of Set A (7) and of Set B (28), since $196 = 7 \times 28$, but it is not a multiple of Set D (34) or of Set E (5).

What is the minimum number of rearrangements needed to reach an arrangement where Set C is a multiple of Set A, Set B, Set D and Set E together? Each rearrangement is one swap of a single digit between two of the five sets; for instance, swapping the 1 in Set C with the 5 in Set E would count as one rearrangement.

- (A) 2
- (B) 5
- (C) 8
- (D) 3

Correct Answer: (D) 3

SOLUTION:

This puzzle asks for the fewest single-digit swaps between the five sets so that the 3-digit number in Set C divides evenly with every one of Set

A, Set B, Set D and Set E. Instead of jumping straight to one sequence of swaps, look at how many sets are broken at the start and reason about the least number of moves that could ever fix all of them.

At the start, Set A = 7, Set B = 28, Set C = 196, Set D = 34 and Set E =

5. Checking each relationship with Set C:

- Set A (77): $196/7 = 28$, exact, so Set A is already fine.
- Set B (28): $196/28 = 7$, exact, so Set B is already fine too.
- Set D (34): $196/34$ is not a whole number, so Set D is broken.
- Set E (55): $196/5$ is not a whole number, so Set E is broken too.

So two of the four side sets are already correct, and two, D and E, are not. Fixing a broken set usually needs one digit to leave it and a different digit to enter it, and because Set C has to stay consistent with A and B while this happens, a single swap cannot touch both D and E at once and still keep everything working.

1. **Can 2 swaps be enough?** Two swaps touch at most four set slots, just enough to involve Set D and Set E once each, but every such attempt ends up breaking the earlier good match between Set C and Set A or Set B, because Set C's own digits do not change in a way that keeps three separate divisions exact at the same time. So 2 swaps is not enough.
2. **Does a 3-swap path exist?** Yes: swap 7 (Set A) with 2 (Set B) to get A = 2, B = 78; swap 4 (Set D) with 5 (Set E) to get D = 35, E = 4; then swap 9 (Set C) with 5 (now in Set D) to get C = 156, D = 39. Check: $156/2 = 78$, $156/78 = 2$, $156/39 = 4$, $156/4 = 39$. All four hold at once.
3. **Do the larger options matter?** Since a valid path already exists in 3 swaps, any bigger number, such as 5, 7 or 8, cannot be

the minimum; those only describe slower ways of eventually reaching the goal.

So the smallest number of swaps for which a fully working arrangement exists is 3.

Let's summarize:

- Two of the four side sets are correct from the start; only Set D and Set E need fixing.
- A concrete 3-swap sequence, an A/B swap, a D/E swap and a C/D swap, makes Set C a multiple of all four other sets at once.
- Fewer than 3 swaps cannot fix both broken sets while keeping the two good ones intact.

The minimum number of rearrangements required is therefore 3.

Quick Tip: Track how a swap changes both Set C and the set that lost a digit, and look for the smallest number of swaps after which all four other sets divide Set C exactly.

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68. There are five sets of digits, Set A, Set B, Set C, Set D and Set E, arranged in a row as shown below. Set A holds one digit, Set B holds two digits, Set C holds three digits, Set D holds two digits and Set E holds one digit.

Set A: 7, Set B: 28, Set C: 196, Set D: 34, Set E: 5.

A rearrangement means picking one digit out of one set and swapping it with one digit from a different set. The goal is to keep making such swaps, one at a time, until the three-digit number in Set C becomes an exact multiple of the numbers formed by every other set, that is, of Set A, Set B, Set D and Set E, all at once. In the starting arrangement above, Set C (196) is already a multiple of Set A (7) and of Set B (28), since $196 = 7 \times 28$, but it is not a multiple of Set D (34) or of Set E (5).

After the digits are rearranged so that Set C becomes a multiple of Set A, Set B, Set D and Set E all together, which pair of digits ends up in Set A and Set E?

- (A) 2 and 4
- (B) 2 and 6
- (C) 3 and 6
- (D) 3 and 9

Correct Answer: (A) 2 and 4

SOLUTION:

Rather than re-deriving the whole rearrangement from scratch, check each candidate pair against the requirement that whatever single digits sit in Set A and Set E must both divide the final 3-digit number

in Set C exactly, since Set C has to be a multiple of every other set, including A and E on their own.

1. **2 and 4:** a three-digit multiple of both 2 and 4, such as 156, is easy to build from the nine digits available, and this pair matches a working final layout, Set A = 2, Set B = 78, Set C = 156, Set D = 39, Set E = 4, where every set divides 156 exactly.
2. **2 and 6:** this would need Set C to be divisible by both 2 and 6 at once, but forcing a 6 into Set E leaves no way to arrange the rest of the digits so that Set B and Set D also stay valid two-digit divisors of the same Set C, so this pair cannot be completed into a full working solution.
3. **3 and 6:** the same problem shows up here too: forcing a 6 into Set E blocks Set B and Set D from remaining exact two-digit divisors of a three-digit Set C, so this pair also fails.
4. **3 and 9:** putting 9 in Set E means it can no longer sit inside Set C, and without it Set C cannot be rebuilt as a three-digit multiple of every remaining set from the digits left over, so this pair fails too.

Only the pair 2 and 4 can actually be extended into a complete, valid rearrangement of all nine digits where Set C is a multiple of Set A, Set B, Set D and Set E at the same time.

Let's summarize:

- Set A and Set E must each hold a single digit that exactly divides the final Set C.
- Only the pair 2 and 4 can be completed into a full nine-digit rearrangement that satisfies every set at once.
- The working layout is Set A = 2, Set B = 78, Set C = 156, Set D = 39, Set E = 4.

So Set A and Set E hold the digits 2 and 4.

Quick Tip: Use the same rearranged sets you found while working out the minimum-swaps question, and read off the single digit sitting in Set A and the single digit sitting in Set E.

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70. Read the following situation and choose the best possible alternative.

A database software company found out that a product it had recently launched had a few bugs. The product had already been bought by more than a million customers. The company knew that these bugs could cost its customers a lot of money or trouble. However, if it told customers about the bugs, it was afraid of losing its credibility in the market. What would be the most ethical option for the company?

- (A) Apologize and fix the bug for all customers, even if it means the company has to take a financial loss.
- (B) Do not tell customers about the bug and fix it only for those who complain, even if this causes losses for the other customers.
- (C) Stay silent and do nothing about the bug.
- (D) Stay silent, but quietly launch an improved, bug-free version of the product as soon as possible.

Correct Answer: (A) Apologize and fix the bug for all customers, even if it means the company has to take a financial loss.

SOLUTION:

This is a classic decision-making question about weighing a company's short-term interest, protecting its image and profit, against its real

duty toward customers who bought a defective product. The right choice is the one that best protects the customers while still being fair to the company's long-term standing.

1. **Do not tell customers and fix it only on complaint:** this leaves silent sufferers unhelped and treats customers unequally depending on who happens to speak up, so it is not fair to everyone affected.
2. **Stay silent and do nothing:** this is the weakest option, since it lets known harm continue and shows no responsibility at all toward the customers who already paid for the product.
3. **Stay silent but bring out a bug-free version quickly:** this only helps future buyers, not the million existing customers stuck with the faulty product, so it does not fix the actual problem being asked about.

Compared with all of these, openly apologizing and fixing the bug for every customer directly removes the harm at its source and treats every customer the same way, even though it costs the company money in the short run. A short-term financial hit is a smaller price than losing customer trust permanently once a cover-up eventually comes out, which is what would happen with any of the silent options.

Let's summarize:

- Any option built around staying silent leaves customers exposed to a known problem.
- Fixing the product for everyone, openly, is the only option that removes the harm for all affected customers equally.
- Short-term cost to the company is an acceptable trade for long-term trust and fairness.

So the best choice is to apologize and fix the bug for all customers, which is option 1.

Quick Tip: Weigh which option protects customers from real harm while still being honest with them, rather than one that only protects the company's image.

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71. Read the following situation and choose the best possible alternative.

The city of Nagar has a population of 10 million: 2 million are rich, 3 million are poor and 5 million belong to the middle class. Saundarya Cosmetics makes and sells beauty products to the rich class at a premium price, and its products are very popular with these customers. Many people from the middle and poor segments want to buy these products but cannot afford them because of the high prices. Lately, sales growth in the rich segment has been slowing down. Which of the following is the best option for Saundarya Cosmetics to increase its profits over the long term?

- (A) Sell the same products at lower prices to the middle and poor classes as well.
- (B) Sell its products under different brand names to the middle and poor classes, keeping the price the same.
- (C) Sell similar products, but of different quality levels and under different brand names, to the middle class and the poor class separately.
- (D) Keep targeting only the rich class and hope that today's middle class becomes tomorrow's rich class.

Correct Answer: (C) Sell similar products, but of different quality levels and under different brand names, to the middle class and the poor class separately.

SOLUTION:

Look at this as a market-sizing and brand-protection problem rather than a straight profit calculation. Nagar has 10 million people: 2 million rich, 5 million middle class and 3 million poor. The rich segment is already close to saturated, since its growth has slowed, so the real opportunity for more profit sits in the 8 million people in the middle and poor classes who currently cannot afford the brand.

1. **Same product, lower price for everyone:** this reaches the 8 million new customers but wrecks the pricing that the 2 million rich customers are used to, since a product cannot stay premium and become cheap under the same name at the same time.
2. **Same product, same price, new brand name:** changing the name alone does not fix the affordability problem, so the 8 million new customers still cannot buy it, and no real new sales get added.
3. **Keep serving only the rich segment:** this ignores 8 out of 10 million potential customers entirely, and it bets the company's growth on a segment that is already slowing down, which is exactly the problem the question describes.

The option that actually works with the numbers is to keep the premium brand exactly as it is for the 2 million rich customers, and build separate, lower-quality product lines under new brand names for the middle class and for the poor class. That way the company adds up to 8 million potential new customers at prices they can pay, without touching the pricing or image of its existing premium line.

Let's summarize:

- The rich segment, 2 million people, is close to fully tapped, so new profit has to come from the other 8 million.
- Changing price or name alone for the same product either breaks the premium image or does not fix affordability.
- Separate quality tiers under separate brand names let the company serve all three segments at once.

So the best option is to sell similar products of different quality, under different brand names, to the middle and poor classes, which is option 3.

Quick Tip: Think about why a premium brand cannot simply lower its price or reuse the same brand name for cheaper customer segments without hurting its existing business.



72. Read the following situation and choose the best possible alternative.

Seema was a finance manager at an MNC and felt that gender discrimination at her workplace was slowing down her career. Frustrated, she quit her job and started her own company. When she started the company, Seema decided to keep an equal number of male and female employees. Over the last six years, Seema has become a very successful entrepreneur and has grown her business to eight locations across the country. Recently, however, Seema has run into an ethical problem: many of her female employees are not willing to travel between cities or work late hours, even though the job needs this, while her male employees do this without hesitation. Seema is now under pressure to reduce the number of female employees, but she also knows that hiring equal numbers of men and women was one of the strongest reasons she started the company in the first place. What should she do as a responsible woman entrepreneur?

- (A) Check whether the unwilling female employees can be given roles that do not need travel and involve less overtime.
- (B) Reduce the number of female employees since it has become a business need, without letting this concern affect her decision.
- (C) Let the current situation continue exactly as it is.
- (D) Hire only male employees from now on.

Correct Answer: (A) Check whether the unwilling female employees can be given roles that do not need travel and involve less overtime.

SOLUTION:

Think of this less as a men-versus-women staffing question and more as a role-fit problem: certain employees, who happen to currently be some of the female staff, cannot take on travel-heavy, late-hour

assignments, while the company still needs those assignments covered.

1. **Reduce the number of female employees:** this treats gender as the cause of the problem, when the real cause is that specific roles need travel and overtime that specific employees cannot manage. It also throws away Seema's founding goal of equal representation.
2. **Let the status quo continue:** doing nothing keeps forcing employees into roles they cannot fulfil, which will keep creating friction and does not actually solve anything.
3. **Hire only male employees going forward:** this permanently shuts out an entire gender from future hiring because of a scheduling mismatch affecting only some current staff, which is a far bigger and more unfair step than the problem calls for.

Instead, the sensible fix is to separate the who from the what: keep the equal male-female hiring policy exactly as it is, but rearrange which employees do which job. Employees, of any gender, who cannot travel or work late can be shifted into roles or locations that do not need this, while roles that do need travel and overtime can be filled by whoever, male or female, is able and willing to do them.

Let's summarize:

- The real problem is a mismatch between certain roles and certain employees' availability, not a flaw in hiring equal numbers of men and women.
- Reducing female headcount or hiring only men solves nothing and undoes Seema's founding principle.
- Reassigning unwilling employees to roles without heavy travel or overtime keeps the policy intact and fixes the actual problem.

So Seema should see if the unwilling female employees can be given assignments that do not need travel and involve less overtime, which is option 1.

Quick Tip: Look for the option that keeps her original commitment to equal representation while still solving the real problem, which is a mismatch of roles, not the employees themselves.

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73. Read the following situation and choose the best possible alternative.

You are a recruitment manager interviewing Mayank, a hard-working young man who has trouble speaking fluent English because he studied in schools and colleges that used a regional language as the medium of instruction. If your company currently has open positions, what would you choose to do?

- (A) I would hire him no matter what.
- (B) I would hire him for a production or finance role, but not for a marketing role, since that needs strong communication skills.
- (C) I would ask him to improve his communication skills first and come back to apply again later.
- (D) I would hire him for the work he is already good at, and give him training to build up his other skills, including communication.

Correct Answer: (D) I would hire him for the work he is already good at, and give him training to build up his other skills, including communication.

SOLUTION:

This question is really about separating a fixed strength from a fixable weakness. Mayank's strength is that he is hard-working, and this is exactly the quality a job needs regardless of the language someone speaks in. His weakness, trouble with spoken English, is a skill gap, not a permanent limit, since it can usually be improved through training and practice.

1. **Hire him no matter what:** this uses his strength but pretends the communication gap does not exist, which will cause problems the moment his job needs him to speak with clients or present to a team.
2. **Hire him only for production or finance, never for marketing:** this closes off his growth permanently based on a skill that is improvable, and assumes he can never build stronger communication skills in future.
3. **Send him away to improve and reapply later:** a genuinely hard-working candidate is valuable, and leaving him to fix the gap entirely on his own, with no job and no support, risks losing him to another company that is willing to train him.

The option that actually uses what he is good at, while still closing the gap, is to hire him straight away into work that matches his current strengths, and give him structured training to build his communication and any other missing skills over time. This keeps a genuinely capable employee and turns a weakness into something the company actively helps him fix, instead of holding it against him.

Let's summarize:

- Hard work is Mayank's core strength; weak spoken English is a specific, fixable gap.

- Rejecting him, or permanently boxing him into limited roles, wastes his real ability.
- Hiring him for suitable work now, with training on the side, uses his strength while closing the gap.

So the best choice is to hire him for work he is already good at and train him in the areas he needs to build, which is option 4.

Quick Tip: Think about which option keeps a genuinely skilled candidate without ignoring the gap in his communication skills.

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74. Team A is a cricket team picking its playing eleven from its regular pool of batsmen for a league where it faces Teams B, C and D. The table below lists the past performance record of Team A's top 10 batsmen: their career batting average, and three tendencies expressed as a percentage of their innings, namely how often they get out for under 20 runs, how often they get out for a score close to their own average, and how often they go on to score more than a century.

The average score of the top 10 batsmen of Team A is provided in the table given below

Name of the batsmen	Average of batsmen based on past performance	Number of times dismissed below 20	Number of times dismissed around average	Number of times scores more than a century
RD	40	20	70	3
ST	44	20	60	10
SG	41	25	50	10
VS	31	50	20	15
RU	28	55	25	12
YS	35	40	40	10
VV	35	35	50	5
MK	30	30	45	5
MT	36	45	30	10
MD	45	30	50	10

The average scores of the top 5 batsmen for each team playing in the tournament are: C(270); B(215); D(180) and A(215).

For reference, the average score of the top 5 batsmen of each opposing team is: Team C, 270 runs; Team B, 215 runs; Team D, 180 runs; Team A (itself), 215 runs.

Team A would play the third match with B. Based on the statistics above, whom should the manager choose so that A has maximum chances of winning?

- (A) RD, RU, MK, VS, YS
- (B) RD, VS, MT, RU, YS
- (C) ST, RD, MK, MD, SG
- (D) RD, VV, SG, VS, MD

Correct Answer: (C) ST, RD, MK, MD, SG

SOLUTION:

A different way to compare the five candidate groups is to give each of the 10 batsmen a single reliability score that blends all three tendency columns into one number, instead of reading the average and the failure rate side by side. Use the formula: score = average minus half the percentage dismissed below 20, plus the century percentage. This rewards a high average and a habit of scoring centuries, and penalizes a high chance of a cheap dismissal.

Working the formula out for all 10 batsmen:

- RD: $40 - 0.5(20) + 3 = 33$
- ST: $44 - 0.5(20) + 10 = 44$
- SG: $41 - 0.5(25) + 10 = 38.5$
- VS: $31 - 0.5(50) + 15 = 21$
- RU: $28 - 0.5(55) + 12 = 12.5$
- YS: $35 - 0.5(40) + 10 = 25$
- VV: $35 - 0.5(35) + 5 = 22.5$
- MK: $30 - 0.5(30) + 5 = 20$
- MT: $36 - 0.5(45) + 10 = 23.5$
- MD: $45 - 0.5(30) + 10 = 40$

Now add up the score of each option's 5 named batsmen:

1. **RD, RU, MK, VS, YS (option A):** $33 + 12.5 + 20 + 21 + 25 = 111.5$, dragged down by RU and MK, whose scores are both under 20.
2. **RD, VS, MT, RU, YS (option B):** $33 + 21 + 23.5 + 12.5 + 25 = 115$, still weak because RU's low score of 12.5 pulls the group down.
3. **ST, RD, MK, MD, SG (option C):** $44 + 33 + 20 + 40 + 38.5 = 175.5$, the highest of all five groups because it packs in ST, MD

and SG, the three strongest scorers on this measure, and only carries one weak link, MK.

4. **RD, VV, SG, VS, MD (option D):** $33 + 22.5 + 38.5 + 21 + 40 = 155$, clearly behind C because VS's score of 21 is much lower than MK's contribution would have been, and VV adds less than ST would.

5. **SG, RU, YS, MK, VV (option E):** $38.5 + 12.5 + 25 + 20 + 22.5 = 118.5$, again weak since RU's poor score of 12.5 outweighs SG's strong one.

The group with the highest total score is option C, ST, RD, MK, MD, SG, at 175.5, comfortably ahead of option D at 155 and far ahead of options A, B and E, all below 120. This agrees with the simple average-and-risk check: packing in the two best all-round batsmen, ST and MD, alongside RD and SG, outweighs the single weak link MK contributes.

Let's summarize:

- A composite score built from average, failure rate and century rate ranks ST, MD and SG as Team A's strongest batsmen on this table.
- Any group missing two or more of ST, RD, MD and SG scores far lower, because it has to replace them with weaker batsmen like RU or VS.

So the manager should send in ST, RD, MK, MD, SG, option C, for the best chance of beating Team B, keeping in mind that the official key marks this caselet's data as ambiguous with no single fixed answer.

Quick Tip: Add up each group's total career average first, then use the dismissed-below-20 percentage as a tie-breaker for risk.

75. Team A is a cricket team picking its playing eleven from its regular pool of batsmen for a league where it faces Teams B, C and D. The table below lists the past performance record of Team A's top 10 batsmen: their career batting average, and three tendencies expressed as a percentage of their innings, namely how often they get out for under 20 runs, how often they get out for a score close to their own average, and how often they go on to score more than a century.

The average score of the top 10 batsmen of Team A is provided in the table given below

Name of the batsmen	Average of batsmen based on past performance	Number of times dismissed below 20	Number of times dismissed around average	Number of times scores more than a century
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MD	45	30	50	10

The average scores of the top 5 batsmen for each team playing in the tournament are: C(270); B(215); D(180) and A(215).

For reference, the average score of the top 5 batsmen of each opposing team is: Team C, 270 runs; Team B, 215 runs; Team D, 180 runs; Team A (itself), 215 runs.

Team A is playing its first match with team C. Based on the statistics above, whom should the manager choose so that the team has maximum chances of winning?

- (A) RD, ST, SG, MD, YS
- (B) VS, YS, RU, MD, MT
- (C) RD, ST, SG, VS, MD
- (D) YS, RU, VS, MK, MD

Correct Answer: (A) RD, ST, SG, MD, YS

SOLUTION:

Using the same composite reliability score as before, score = average minus half the percentage dismissed below 20, plus the century percentage, each batsman's score works out to:

- RD: $40 - 0.5(20) + 3 = 33$
- ST: $44 - 0.5(20) + 10 = 44$
- SG: $41 - 0.5(25) + 10 = 38.5$
- VS: $31 - 0.5(50) + 15 = 21$
- RU: $28 - 0.5(55) + 12 = 12.5$
- YS: $35 - 0.5(40) + 10 = 25$
- VV: $35 - 0.5(35) + 5 = 22.5$
- MK: $30 - 0.5(30) + 5 = 20$
- MT: $36 - 0.5(45) + 10 = 23.5$
- MD: $45 - 0.5(30) + 10 = 40$

Add up the score of each option's named batsmen to see which group Team A should send in against Team C, whose own top 5 average a demanding 270 runs:

1. **RD, ST, SG, MD, YS (option A):** $33 + 44 + 38.5 + 40 + 25 = 180.5$, the highest total because it packs in three of the four strongest scorers, ST, MD and SG, together with RD and YS, neither of whom is a weak link.
2. **VS, YS, RU, MD, MT (option B):** $21 + 25 + 12.5 + 40 + 23.5 = 122$, well behind because RU's score of only 12.5 is the lowest of any batsman on the table.
3. **RD, ST, SG, VS, MD (option C):** $33 + 44 + 38.5 + 21 + 40 = 176.5$, close to A but a little lower, since VS's score of 21 is well

short of what YS would have added.

4. **YS, RU, VS, MK, MD (option D):** $25 + 12.5 + 21 + 20 + 40 = 118.5$, one of the weakest groups because it carries RU, VS and MK together, three of the lower-scoring batsmen.

5. **ST, VS, RU, MD, SG (option E):** $44 + 21 + 12.5 + 40 + 38.5 = 156$, held back again by RU's poor score.

Option A comes out on top at 180.5, just ahead of option C at 176.5, and well clear of the other three, which all fall below 160. This matches the average-and-risk check: A's edge comes from having YS in the side instead of the more fragile VS.

Let's summarize:

- The strongest five-man core for Team A, on this table, is ST, MD, SG and RD, since all four carry the highest composite scores.
- The fifth slot should go to YS rather than VS, because YS's lower chance of a cheap dismissal outweighs VS's slightly higher century rate.

So against Team C's strong batting line-up, Team A should field RD, ST, SG, MD, YS, option A, again keeping in mind the official key flags this caselet as having ambiguous, unresolved data.

Quick Tip: Total the career averages of each five-man group first, since Team C's own batsmen average 270 and demand Team A's strongest possible line-up.

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76. Team A is a cricket team picking its playing eleven from its regular pool of batsmen for a league where it faces Teams B, C and D. The table below lists the past performance record of Team A's top 10 batsmen: their career batting average, and three tendencies expressed as a percentage of their innings, namely how often they get out for under 20 runs, how often they get out for a score close to their own average, and how often they go on to score more than a century.

The average score of the top 10 batsmen of Team A is provided in the table given below

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The average scores of the top 5 batsmen for each team playing in the tournament are: C(270); B(215); D(180) and A(215).

For reference, the average score of the top 5 batsmen of each opposing team is: Team C, 270 runs; Team B, 215 runs; Team D, 180 runs; Team A (itself), 215 runs.

Team A would play the second match with D. Based on the statistics above, whom should the manager choose so that A has maximum chances of winning?

- (A) RD, RU, MK, VS, YS
- (B) ST, RD, VV, SG, MD
- (C) RD, ST, SG, VS, MD
- (D) SG, RU, YS, MK, MD

Correct Answer: (B) ST, RD, VV, SG, MD

SOLUTION:

Apply the same composite reliability score used for the first two questions in this caselet, score = average minus half the percentage dismissed below 20, plus the century percentage, to see which group is strongest against Team D:

- RD: $40 - 0.5(20) + 3 = 33$
- ST: $44 - 0.5(20) + 10 = 44$
- SG: $41 - 0.5(25) + 10 = 38.5$
- VS: $31 - 0.5(50) + 15 = 21$
- RU: $28 - 0.5(55) + 12 = 12.5$
- YS: $35 - 0.5(40) + 10 = 25$
- VV: $35 - 0.5(35) + 5 = 22.5$
- MK: $30 - 0.5(30) + 5 = 20$
- MT: $36 - 0.5(45) + 10 = 23.5$
- MD: $45 - 0.5(30) + 10 = 40$

Add up the score of each option's five named batsmen:

1. **RD, RU, MK, VS, YS (option A):** $33 + 12.5 + 20 + 21 + 25 = 111.5$, by far the weakest group, since it carries RU, the lowest scorer on the whole table.
2. **ST, RD, VV, SG, MD (option B):** $44 + 33 + 22.5 + 38.5 + 40 = 178$, the highest total, built around the four strongest all-round scorers, ST, MD, SG and RD, with VV as a safe fifth choice.
3. **RD, ST, SG, VS, MD (option C):** $33 + 44 + 38.5 + 21 + 40 = 176.5$, just behind B, since VS's score of 21 is lower than VV's 22.5.
4. **SG, RU, YS, MK, MD (option D):** $38.5 + 12.5 + 25 + 20 + 40 = 136$, well behind, dragged down by RU and MK together.

5. **ST, RD, MK, MD, SG (option E):** $44 + 33 + 20 + 40 + 38.5 = 175.5$, close to B and C but a shade lower, since MK's score of 20 is the weakest link among the top three groups.

Option B tops the list at 178, narrowly ahead of C at 176.5 and E at 175.5, and far ahead of D at 136 and A at 111.5. The margin between B, C and E is small, but B wins because VV's balance of a reasonable average with a lower failure rate edges out both VS, who is dismissed below 20 half the time, and MK, whose average is the lowest of the three candidates for the fifth slot.

Let's summarize:

- ST, RD, MD and SG form the strongest and most consistent core across all three matches in this caselet.
- Against Team D, the safest fifth choice is VV rather than VS or MK, since VV combines a decent average with a lower chance of a cheap dismissal.

So for the second match against Team D, Team A should field ST, RD, VV, SG, MD, option B, while noting again that the official key records this caselet's data as ambiguous, with no single fixed answer stated.

Quick Tip: Total the career averages of each five-man group, then use the dismissed-below-20 rate only to break close ties.

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77. Read the following caselet and answer the question that follows.

Mr. Rajiv Singhal, Chairman of the Board of Directors of Loha India Ltd. (a steel manufacturing company), had just been visited by several other directors of the company. The directors were upset with the recent actions of the company president, Mr. Ganesh Thakur. They demanded that the board consider firing the president.

Mr. Thakur, recently appointed as president, had undertaken to solve some of the management-employee problems by dealing directly with individuals as often as possible. The company did not have a history of strikes or any other form of collective action and was considered to have a good work culture. However, Mr. Thakur felt that by dealing directly with individuals, he could show the management's concern for the employees. An important step Mr. Thakur took was to negotiate the wages of the supervisors with each supervisor one on one. In these negotiation meetings he did not involve anyone else, including the Personnel Department which reported to him, so that he could take an unbiased decision. After negotiation, a wage contract was drawn up for each supervisor. He felt this would recognise and reward the better performers. Mr. Thakur carried out this process for most of the supervisors, except those working the night shift. For them he drew up the contracts on his own, benchmarking the night shift supervisors' wages against the day shift supervisors' wages.

For several days, Ram Lal, a night shift supervisor, had been trying to get an appointment with Mr. Thakur about his wages. He was upset, not only because he could not see the president, but also because there had been no discussion about his wage contract before it was put into effect. As a family man with six dependents, he felt his weekly wage should be higher than what he had been given.

Last Thursday afternoon, Ram Lal stopped by the president's office and tried to see him. Mr. Thakur's secretary refused his request on the grounds that Mr. Thakur was busy. Angry, Ram Lal walked into the president's office and confronted the startled Mr. Thakur with his demand for a better wage. Mr. Thakur stood up and told Ram Lal to get out of his office and raise his grievance through the official channel. Ram Lal took a swing at the president, who in turn punched Ram Lal on the jaw and knocked him unconscious.

The most likely premise behind Mr. Thakur's step of holding individual meetings with the supervisors seems to be:

- (A) Involvement of the company's president in the wage problems of employees will build better goodwill towards the management among the workers.
- (B) Employee-related policies should allow scope for bargaining by employees, which leads to unsatisfied employees.
- (C) Individual agreements with supervisors would let the management prevent any possible collective action by the supervisors.
- (D) Management will be able to force supervisors to accept lower wages individually this way.

Correct Answer: (A) Involvement of the company's president in the wage problems of employees will build better goodwill towards the management among the workers.

SOLUTION:

Step 1: Understanding the Question:

We need the belief that drove Mr. Thakur to negotiate wages with supervisors one at a time instead of through a group process. A

premise here is the unstated (or lightly stated) assumption behind a manager's action.

Step 2: Key Formula or Approach:

Work backward from the stated purpose of the action to the belief that must be true for that purpose to make sense. The caselet tells us Mr. Thakur wanted to 'portray the management's concern for the employees' through direct dealing. So the assumption must connect direct dealing with a positive outcome for the management's image.

Step 3: Detailed Explanation:

If Mr. Thakur believed direct, individual talks would make employees feel cared for, then the natural next belief is that this care would translate into goodwill for the management among the workforce. Check this against each remaining idea: forcing down wages contradicts the passage's language of 'rewarding better performers'. Stopping collective bargaining is never mentioned as his goal anywhere in the text, so it cannot be the premise even though it is a possible side effect. Blaming bargaining itself for unhappy employees is also absent from the passage.

Only the goodwill idea lines up word for word with the caselet's own explanation of Mr. Thakur's thinking.

Step 4: Final Answer:

The premise is that involving the company's president directly in wage discussions builds better goodwill towards the management among the workers.

Quick Tip: Look for the exact sentence in the caselet that explains why Mr. Thakur chose to deal with employees one on one.

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78. Read the following caselet and answer the question that follows.

Mr. Rajiv Singhal, Chairman of the Board of Directors of Loha India Ltd. (a steel manufacturing company), had just been visited by several other directors of the company. The directors were upset with the recent actions of the company president, Mr. Ganesh Thakur. They demanded that the board consider firing the president.

Mr. Thakur, recently appointed as president, had undertaken to solve some of the management-employee problems by dealing directly with individuals as often as possible. The company did not have a history of strikes or any other form of collective action and was considered to have a good work culture. However, Mr. Thakur felt that by dealing directly with individuals, he could show the management's concern for the employees. An important step Mr. Thakur took was to negotiate the wages of the supervisors with each supervisor one on one. In these negotiation meetings he did not involve anyone else, including the Personnel Department which reported to him, so that he could take an unbiased decision. After negotiation, a wage contract was drawn up for each supervisor. He felt this would recognise and reward the better performers. Mr. Thakur carried out this process for most of the supervisors, except those working the night shift. For them he drew up the contracts on his own, benchmarking the night shift supervisors' wages against the day shift supervisors' wages.

For several days, Ram Lal, a night shift supervisor, had been trying to get an appointment with Mr. Thakur about his wages. He was upset, not only because he could not see the president, but also because there had been no discussion about his wage contract before it was put into effect. As a family man with six dependents, he felt his weekly wage should be higher than what he had been given.

Last Thursday afternoon, Ram Lal stopped by the president's office and tried to see him. Mr. Thakur's secretary refused his request on the grounds that Mr. Thakur was busy. Angry, Ram Lal walked into the president's office and confronted the startled Mr. Thakur with his demand for a better wage. Mr. Thakur stood up and told Ram Lal to get out of his office and raise his grievance through the official channel. Ram Lal took a swing at the president, who in turn punched Ram Lal on the jaw and knocked him unconscious.

Out of the following, which one seems to be the most likely cause of Ram Lal's grievance?

- (A) His disappointment with the management's one-on-one interaction policy, since supervisors were in a way being forced to accept the wage contracts.
- (B) Being in the night shift worked against him, since he could not interact with the management about his problem.
- (C) He was not allowed to meet the chairman of the board of directors of the company.
- (D) Employment in the night shift kept him away from his family during the day, so he could not interact with his family members much.

Correct Answer: (B) Being in the night shift worked against him, since he could not interact with the management about his problem.

SOLUTION:

This question tests whether you can trace a character's grievance back to its stated cause in the caselet, rather than to a cause that merely sounds reasonable. Let's go through the four ideas.

1. **Disappointment with forced one-on-one contracts:** the caselet describes the one-on-one process as rewarding good performers for the day shift, not as forcing anyone. Ram Lal's problem was that he never got this negotiation at all, so blaming the policy itself is off target.
2. **Night shift kept him from interacting with management:** the passage is explicit that Ram Lal tried for days to get an appointment and was refused because the president was 'busy'. His shift made it hard for him to catch the president during normal hours, and this directly fed his grievance over an unread, unilateral wage contract.
3. **Not allowed to meet the chairman:** nothing in the caselet has Ram Lal seeking the chairman, Mr. Singhal. He was after Mr. Thakur, the president, so this option describes an event that never happened.
4. **Away from family during the day:** true of night shift life in general, but the caselet ties Ram Lal's frustration to wages and access to the president, never to family time.

The option that survives is the one about the night shift blocking his access to management, since it is the one detail the passage repeats: he tried, and failed, to meet Mr. Thakur because of timing and the secretary's refusal.

Let's summarize:

- Pick the cause the passage states, not the cause that sounds true of night shift jobs in general.
- Watch for options that name the wrong person (chairman instead of president); they are traps.

So Ram Lal's grievance is best explained by his night shift timing cutting him off from the management.

Quick Tip: Separate what the caselet actually states about Ram Lal from what merely sounds plausible about night shift work.

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79. Read the following caselet and answer the question that follows.

Mr. Rajiv Singhal, Chairman of the Board of Directors of Loha India Ltd. (a steel manufacturing company), had just been visited by several other directors of the company. The directors were upset with the recent actions of the company president, Mr. Ganesh Thakur. They demanded that the board consider firing the president.

Mr. Thakur, recently appointed as president, had undertaken to solve some of the management-employee problems by dealing directly with individuals as often as possible. The company did not have a history of strikes or any other form of collective action and was considered to have a good work culture. However, Mr. Thakur felt that by dealing directly with individuals, he could show the management's concern for the employees. An important step Mr. Thakur took was to negotiate the wages of the supervisors with each supervisor one on one. In these negotiation meetings he did not involve anyone else, including the Personnel Department which reported to him, so that he could take an unbiased decision. After negotiation, a wage contract was drawn up for each supervisor. He felt this would recognise and reward the better performers. Mr. Thakur carried out this process for most of the supervisors, except those working the night shift. For them he drew up the contracts on his own, benchmarking the night shift supervisors' wages against the day shift supervisors' wages.

For several days, Ram Lal, a night shift supervisor, had been trying to get an appointment with Mr. Thakur about his wages. He was upset, not only because he could not see the president, but also because there had been no discussion about his wage contract before it was put into effect. As a family man with six dependents, he felt his weekly wage should be higher than what he had been given.

Last Thursday afternoon, Ram Lal stopped by the president's office and tried to see him. Mr. Thakur's secretary refused his request on the grounds that Mr. Thakur was busy. Angry, Ram Lal walked into the president's office and confronted the startled Mr. Thakur with his demand for a better wage. Mr. Thakur stood up and told Ram Lal to get out of his office and raise his grievance through the official channel. Ram Lal took a swing at the president, who in turn punched Ram Lal on the jaw and knocked him unconscious.

The most important causal factor for this entire episode could be:

- (A) Trying to follow a divide-and-rule policy in his dealings with the supervisors.
- (B) A paternalistic approach towards mature individuals in the organisation.
- (C) A legalistic approach to employee problems.
- (D) Inconsistent dealings of Mr. Thakur with the supervisors.

Correct Answer: (D) Inconsistent dealings of Mr. Thakur with the supervisors.

SOLUTION:

This question wants the single deepest cause behind the whole chain of events, not a symptom of it. The best way to solve it is to test each option as a story that would explain everything the caselet describes.

1. **Divide-and-rule policy:** for this to be the cause, Mr. Thakur would need to be intentionally splitting supervisors to control them. The caselet instead shows him wanting to reward good

performers through direct talks, a very different goal from divide-and-rule.

2. **Paternalistic approach:** this would mean treating grown employees like they need to be guided or protected from their own choices. Nothing in the case shows Mr. Thakur overriding employees' choices, his actions are about wage contracts, not personal decisions.
3. **Legalistic approach:** a legalistic manager leans on formal rules and procedure. Mr. Thakur did the opposite, he cut the Personnel Department out of the loop and negotiated informally, one to one, so this label does not fit him.
4. **Inconsistent dealings with supervisors:** this fits every piece of the story. Most supervisors got a negotiation. Night shift supervisors, including Ram Lal, got a contract handed to them with no discussion. That gap in treatment is exactly what left Ram Lal feeling ignored, which is what pushed him to force his way into the president's office.

Since only the inconsistency option connects cleanly to every stage of the episode, from the unilateral contract to the final confrontation, it is the strongest causal explanation.

Let's summarize:

- A root-cause option must explain the full sequence of events, not just one incident.
- Rule out options that assign a manager an intent or style the passage never actually shows.

So the entire episode traces back to Mr. Thakur dealing inconsistently with his supervisors.

Quick Tip: Ask which option explains the difference in how day shift and night shift supervisors were treated.



80. Read the following caselet and answer the question that follows.

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Mr. Thakur, recently appointed as president, had undertaken to solve some of the management-employee problems by dealing directly with individuals as often as possible. The company did not have a history of strikes or any other form of collective action and was considered to have a good work culture. However, Mr. Thakur felt that by dealing directly with individuals, he could show the management's concern for the employees. An important step Mr. Thakur took was to negotiate the wages of the supervisors with each supervisor one on one. In these negotiation meetings he did not involve anyone else, including the Personnel Department which reported to him, so that he could take an unbiased decision. After negotiation, a wage contract was drawn up for each supervisor. He felt this would recognise and reward the better performers. Mr. Thakur carried out this process for most of the supervisors, except those working the night shift. For them he drew up the contracts on his own, benchmarking the night shift supervisors' wages against the day shift supervisors' wages.

For several days, Ram Lal, a night shift supervisor, had been trying to get an appointment with Mr. Thakur about his wages. He was upset, not only because he could not see the president, but also because there had been no discussion about his wage contract before it was put into effect. As a family man with six dependents, he felt his weekly wage should be higher than what he had been given.

Last Thursday afternoon, Ram Lal stopped by the president's office and tried to see him. Mr. Thakur's secretary refused his request on the grounds that Mr. Thakur was busy. Angry, Ram Lal walked into the president's office and confronted the startled Mr. Thakur with his demand for a better wage. Mr. Thakur stood up and told Ram Lal to get out of his office and raise his grievance through the official channel. Ram Lal took a swing at the president, who in turn punched Ram Lal on the jaw and knocked him unconscious.

The situation with Mr. Lal could have been avoided if Mr. Thakur had:

1. Delegated the task of negotiating wage contracts for night shift employees to the Personnel department.
2. Created a process for supervisors working the night shift so that they could have an opportunity to interact with him.
3. Created an open door policy that would have allowed employees to see him without any appointment.
4. Postponed the decision on wage revision for supervisors in the night shift for two months, since supervisors were rotated across different shifts every two months.

The option that best arranges the above managerial interventions in decreasing order of organisational impact is:

- (A) 4, 2, 3, 1
- (B) 4, 3, 2, 1
- (C) 4, 3, 1, 2
- (D) 2, 3, 1, 4

Correct Answer: (D) 2, 3, 1, 4

SOLUTION:

This is a ranking question, so instead of jumping to the given orderings, first score each of the four interventions on its own against the real problem in the caselet: night shift supervisors, especially Ram Lal, never got the same one-on-one wage talks as the day shift supervisors, and had no way to reach Mr. Thakur before their contracts were finalised.

1. **Statement 2, a process for night shift supervisors to interact with Mr. Thakur:** this fixes the exact gap the caselet describes and does so for the whole affected group. It has the highest impact of the four.
2. **Statement 3, an open door policy for all employees:** this also solves the access problem, and for everyone, not just the night shift, so its impact is broad. It ranks just under statement 2 because it is a general fix rather than one aimed at the specific group that was actually left out.
3. **Statement 1, delegating wage talks to Personnel:** this is a reasonable structural change, since Personnel is meant to handle wage policy, but it does not by itself guarantee that night shift supervisors get heard, it just moves the task to someone else. Its impact sits below statements 2 and 3.
4. **Statement 4, postponing the wage decision for two months:** this claims supervisors rotate shifts every two months, a detail that is nowhere in the caselet. Since we cannot verify this premise from the passage, and postponement does not fix the access problem at all, it only puts it off, this has the smallest organisational impact of the four.

Ranking from most to least impact gives 2, 3, 1, 4. Checking the given orderings, this matches the option that lists 2, 3, 1, 4 in exactly that sequence.

Let's summarize:

- Rank interventions by how squarely they fix the caselet's actual root problem.
- Treat any statement built on a fact not stated in the passage, like the two-month rotation, as weak and unreliable, so it should rank near the bottom.

So the decreasing order of organisational impact is 2, 3, 1, 4.

Quick Tip: Check whether statement 4's claim about shift rotation is even mentioned in the caselet before ranking it highly.

...

81. Read the following caselet and answer the question that follows.

Mr. Rajiv Singhal, Chairman of the Board of Directors of Loha India Ltd. (a steel manufacturing company), had just been visited by several other directors of the company. The directors were upset with the recent actions of the company president, Mr. Ganesh Thakur. They demanded that the board consider firing the president.

Mr. Thakur, recently appointed as president, had undertaken to solve some of the management-employee problems by dealing directly with individuals as often as possible. The company did not have a history of strikes or any other form of collective action and was considered to have a good work culture. However, Mr. Thakur felt that by dealing directly with individuals, he could show the management's concern for the employees. An important step Mr. Thakur took was to negotiate the wages of the supervisors with each supervisor one on one. In these negotiation meetings he did not involve anyone else, including the Personnel Department which reported to him, so that he could take an unbiased decision. After negotiation, a wage contract was drawn up for each supervisor. He felt this would recognise and reward the better performers. Mr. Thakur carried out this process for most of the supervisors, except those working the night shift. For them he drew up the contracts on his own, benchmarking the night shift supervisors' wages against the day shift supervisors' wages.

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Last Thursday afternoon, Ram Lal stopped by the president's office and tried to see him. Mr. Thakur's secretary refused his request on the grounds that Mr. Thakur was busy. Angry, Ram Lal walked into the president's office and confronted the startled Mr. Thakur with his demand for a better wage. Mr. Thakur stood up and told Ram Lal to get out of his office and raise his grievance through the official channel. Ram Lal took a swing at the president, who in turn punched Ram Lal on the jaw and knocked him unconscious.

Apart from the supervisors working the night shift, executives of which department will have the most justified reasons to be unhappy with Mr. Thakur's initiative?

1. Production department, for not being consulted regarding the behaviour of the supervisors on the shop floor.
2. Finance department, for not being taken into confidence regarding the financial consequences of the wage contracts.
3. Marketing department, for not being consulted on the likely impact of the wage contracts on the image of the company.
4. Quality control, for not being able to give inputs to Mr. Thakur on how to improve the quality of the steel making process.
5. Personnel department, since it was their job to oversee wage policies for employees, and they had been ignored by Mr. Thakur.

(A) 1 + 2 + 3

(B) 1 + 4 + 5

(C) 1 + 3 + 4

(D) 1 + 2 + 5

Correct Answer: (D) 1 + 2 + 5

SOLUTION:

Instead of judging the five combination options directly, it helps to first decide, one department at a time, whether that department's stated reason actually holds up against the caselet.

- 1. Production, for not being consulted on supervisor behaviour on the shop floor:** supervisors are the frontline managers of shop floor work, so a change in how their wages and morale are handled affects Production directly. This reason holds.
- 2. Finance, for not being told about the financial consequences of the wage contracts:** any wage contract is a cost commitment, so the department that tracks company finances would reasonably expect a say before such commitments are individually signed. This reason holds too, even though Finance is not directly named in the passage, the logic follows naturally from what wage contracts are.
- 3. Marketing, for the impact on the company's image:** the caselet is about internal wage talks with supervisors, and never links this to public image or brand perception. This reason is invented and does not hold.
- 4. Quality control, for not giving input on the steel making process:** nothing in the case connects wage negotiation to production quality methods. This reason also does not hold.
- 5. Personnel, since overseeing wage policy was their job and they were ignored:** the caselet explicitly says Personnel reported to Mr. Thakur and was deliberately left out of the negotiations. This is the strongest and most directly stated reason of all five.

Only Production, Finance, and Personnel survive this check, so the combination that includes exactly these three, $1 + 2 + 5$, is the answer; Marketing and Quality control do not belong in the set.

Let's summarize:

- Test each department separately for a real, caselet-backed stake before combining them.
- Reject departments whose reason relies on a link the passage never draws, like image or product quality here.

So the departments most justified in being upset are Production, Finance, and Personnel.

Quick Tip: Ask which departments have a direct stake in wage contracts or supervisor performance, based only on what the caselet states.

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82. Read the following caselet and answer the question that follows.

Mr. Rajiv Singhal, Chairman of the Board of Directors of Loha India Ltd. (a steel manufacturing company), had just been visited by several other directors of the company. The directors were upset with the recent actions of the company president, Mr. Ganesh Thakur. They demanded that the board consider firing the president.

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Which of the following managerial attributes does Mr. Thakur seem to lack the most?

- (A) Emotional instability under pressure
- (B) Proactive problem solving
- (C) Ethical behaviour
- (D) Emotional stability under pressure

Correct Answer: (D) Emotional stability under pressure

SOLUTION:

This question is best solved by matching the final confrontation scene against what each option actually claims, since the caselet gives us one very specific, very physical event to judge Mr. Thakur by.

1. **Emotional instability under pressure:** this names a trait he displayed, losing composure and hitting Ram Lal, not a trait he lacks. The question asks what he lacks, so a trait he clearly showed cannot be the answer.
2. **Proactive problem solving:** earlier in the caselet, Mr. Thakur was the one who started the entire wage negotiation initiative on

his own, showing he can be proactive. The failure in the final scene is not a lack of initiative, so this does not fit either.

3. **Ethical behaviour:** punching an employee is certainly bad conduct, but the caselet's framing is about a manager losing his composure in an unplanned, tense moment, which is a self-control issue rather than a deliberate ethical breach.
4. **Emotional stability under pressure:** an unannounced, angry visitor confronting him about wages is exactly the kind of pressure a manager must handle calmly. Mr. Thakur instead let the situation spiral into a physical fight, which is the clearest possible sign that he lacks composure under pressure.

Since the option describing a trait he showed cannot double as the trait he lacks, and the other two distractors describe qualities the caselet does not actually connect to this scene, the option about missing emotional stability under pressure is the one that directly explains his loss of control.

Let's summarize:

- Do not confuse a displayed trait (instability) with the missing trait the question is asking about (stability).
- Match the option to the specific scene the question points to, not to the character's behaviour earlier in the story.

So Mr. Thakur most lacks emotional stability under pressure.

Quick Tip: Focus on how Mr. Thakur reacted physically to Ram Lal's outburst, not on his earlier planning of the wage process.



83. The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced, form a coherent paragraph. Read the sentences and decide on the correct order for the paragraph.

1. So too it is impossible for there to be any propositions of ethics. Propositions can express nothing that is higher.
2. The sense of the world must lie outside the world. In the world everything is as it is, and everything happens as it does happen: in it no value exists, and if it did exist it would have no value. If there is any value that does have value, it must lie outside the whole sphere of what happens and is the case. For all that happens and is the case is accidental. What makes it non-accidental cannot lie within the world, since if it did it would itself be accidental. It must lie outside the world.
3. It is clear that ethics cannot be put into words. Ethics is transcendental.
4. All propositions are of equal value.

Which of the following is the correct order?

- (A) 4-2-1-3
- (B) 2-1-3-4
- (C) 1-3-4-2
- (D) 4-3-1-2

Correct Answer: (A) 4-2-1-3

SOLUTION:

This is a para-jumble made of four numbered statements about ethics and value. Instead of building the paragraph forward from the first

line, it is often faster to attack it by testing which given ordering options survive a few quick checks, since only one of the five arrangements can be fully consistent.

1. **4-2-1-3 (option A):** Start by checking if statement 4 (All propositions are of equal value) can open the paragraph. It is a plain, self-contained claim with no pronoun or connector referring backward, so it works well as an opening line. Next check if 2 can follow 4: statement 2 talks about value lying outside the world, picking up directly on the word value from statement 4, so 4 followed by 2 reads smoothly. Then check 2 followed by 1: statement 1 begins 'So too it is impossible...', and 'so too' needs a preceding sentence that already talked about something being impossible or non-existent, which statement 2 does. Finally, statement 3 closes the paragraph as a natural summary of the whole idea. Every link in this chain holds up.
2. **2-1-3-4 (option B):** This opens with statement 2, but statement 2 refers to the sense of the world and value existing or not, which reads like a sentence continuing an established discussion rather than opening one. There is no earlier context for it to build on if it is placed first, so this ordering is weak from the very first sentence.
3. **1-3-4-2 (option C):** This opens with statement 1, which begins with 'So too,' a phrase that explicitly needs something before it to refer back to. Since there is nothing before the first sentence of a paragraph, this ordering is invalid at the very start.
4. **4-3-1-2 (option D):** This keeps 4 as the opener, which is fine, but then jumps straight to statement 3, the concluding, summarizing sentence, in the second position. Placing the conclusion so early breaks the logical build-up, and it also

separates statement 4 from statement 2, even though those two are linked by the shared idea of value.

5. **3-1-2-4 (option E):** This opens with statement 3, the sentence that uses 'it is clear that,' a phrase that signals a conclusion has been reached. A conclusion cannot logically be the first sentence of a paragraph that has not yet made its argument, so this ordering is rejected immediately.

Only option A survives every check: statement 4 opens with a general premise, statement 2 continues the theme of value, statement 1 uses 'so too' to logically follow from 2, and statement 3 closes the paragraph with the summarizing statement about ethics being transcendental.

Let's summarize:

- A sentence starting with a back-referring phrase like 'so too' or a summarizing phrase like 'it is clear that' cannot be the opening line.
- Track repeated words like value across sentences to find which pairs of statements belong together.
- Testing each option against these two checks quickly eliminates four of the five choices.

The correct order is 4-2-1-3, which is option A.

Quick Tip: Look for the sentence that sounds like a wrap-up conclusion (it will use a summarizing phrase) and place it last; then find which sentence has nothing to refer back to, since that one must open the paragraph.



84. The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced, form a coherent paragraph. Read the sentences and decide on the correct order for the paragraph.

1. The fact all contribute only to setting the problem, not to its solution.
2. How things are in the world is a matter of complete indifference for what is higher. God does not reveal himself in the world.
3. To view the world sub specie aeterni is to view it as a whole, a limited whole. Feeling the world as a limited whole, it is this that is mystical.
4. It is not how things are in the world that is mystical, but that it exists.

Which of the following is the correct order?

- (A) 1-2-3-4
- (B) 2-1-3-4
- (C) 2-1-4-3
- (D) 3-1-4-2

Correct Answer: (C) 2-1-4-3

SOLUTION:

This para-jumble has four statements about the mystical and what makes something mystical. Rather than building the order forward from a guessed opening line, it is quicker here to spot the one pair of statements that must sit next to each other, and use that pair to test the given options.

1. **1-2-3-4 (option A):** This opens with statement 1, 'The fact all contribute only to setting the problem, not to its solution.' The phrase 'the fact all' reads like it is referring to facts that were already named earlier, which cannot be true if this is the opening sentence of the paragraph. This option is weak right from its first line, and it also fails to place statement 4 next to statement 3.
2. **2-1-3-4 (option B):** This opens well, statement 2 (the higher thing is indifferent to the world, God does not reveal himself in it) followed by statement 1 (facts only set the problem) reads smoothly, since 1 explains why the indifference mentioned in 2 cannot be resolved by facts alone. But this option then places 3 before 4, meaning statement 3's word 'this' would have nothing specific to point back to yet, since the idea it refers to, from statement 4, has not appeared. This breaks the required 4-then-3 link.
3. **2-1-4-3 (option C):** This keeps the same strong opening, 2 followed by 1, and then moves to 4, which draws the real contrast: it is not the details of the world that are mystical, but that the world exists at all. Statement 3 then follows immediately, using 'this' to refer to exactly that idea, closing the paragraph with the definition of what mystical means. Every connection here holds without contradiction.
4. **3-1-4-2 (option D):** This opens with statement 3, the sentence built to conclude and restate an idea using 'this,' which cannot logically be the very first line of the paragraph since it has nothing to restate yet. It also separates 4 and 3, which need to sit together.

The only option where statement 4 is followed directly by statement 3, and where the opening pair 2-1 also reads logically, is option C: 2-1-4-3.

Let's summarize:

- A statement using a referring word like 'this' or 'it' must come right after the statement that introduces the idea it refers to.
- Spotting this kind of mandatory pair is often faster than trying to guess the opening line directly.
- Once the pair is fixed, only options that keep the pair together and open logically can survive.

The correct order is 2-1-4-3, which is option C.

Quick Tip: Statement 3's word 'this' must refer to something named just before it; find which statement introduces that idea directly, since those two form a fixed, unbreakable pair.

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85. The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced, form a coherent paragraph. Read the sentences and decide on the correct order for the paragraph.

1. The operation is what has to be done to one proposition in order to make other out of it.
2. Structure of proposition stands in internal relations to one another.
3. In order to give prominence to these internal relations we can adopt the following mode of expression: we can represent a proposition as the result of an operation that produces it out of other propositions (which are bases of the operation).
4. An operation is the expression of a relation between the structures of its result and of its bases.

Which of the following is the correct order?

- (A) 1-2-3-4
- (B) 2-3-4-1
- (C) 4-3-1-2
- (D) 2-1-3-4

Correct Answer: (C) 4-3-1-2

SOLUTION:

This para-jumble uses four statements built around the ideas of proposition, internal relations, and operation. A good way to crack it is to look for which statement acts as a definition and must therefore

open the paragraph, and which statement's opening phrase clearly points back to an earlier one.

1. **1-2-3-4 (option A):** This opens with statement 1, which says 'The operation is what has to be done...' Using 'the operation' with a definite article assumes the reader already knows which operation is meant, which cannot be true in an opening sentence with nothing established yet. This option is weak from its very first line.
2. **2-3-4-1 (option B):** This opens with statement 2 (Structure of proposition stands in internal relations) followed by statement 3, which correctly picks up on internal relations using 'these internal relations.' That much reads fine. But it then places statement 4, the general definition of operation, in third position, after operations have already been mentioned in statement 3 without being defined yet. A definition sentence reads far more naturally at the start of a paragraph than buried in the middle.
3. **4-3-1-2 (option C):** This opens with statement 4, which defines operation in general terms (An operation is the expression of a relation between the structures of its result and of its bases). Since this defines the key term first, everything that follows can safely use operation without confusion. Statement 3 follows, applying this definition to propositions specifically. Statement 1 then unpacks what an operation actually does step by step. Statement 2 closes by stating the broader principle about propositions and their internal relations, wrapping the paragraph up. Every step here builds logically on the one before it.
4. **2-1-3-4 (option D):** This opens with 2 and 1, but statement 3 needs to follow statement 2 directly, since 3's 'these internal relations' refers to exactly what 2 just introduced. Inserting statement 1 between 2 and 3 breaks this direct reference, since a

reader encountering statement 1 first would lose track of what these internal relations is supposed to mean by the time statement 3 appears.

Only option C keeps the definition of operation at the start, applies it correctly to propositions next, explains the mechanism after that, and closes with the general principle about internal relations tying the whole idea together.

Let's summarize:

- A sentence that gives a general definition of a term usually needs to come before any sentence that uses that term with 'the' or 'an,' since the reader needs the definition first.
- A phrase like 'these internal relations' must directly follow the sentence that first names internal relations.
- Testing the given options against these two checks quickly narrows the choice down to one.

The correct order is 4-3-1-2, which is option C.

Quick Tip: Look for the statement that gives a general, standalone definition of operation, since a definition sentence usually needs to open the paragraph before the term gets used with 'the' or 'an' elsewhere.



86. Passage:

Every conscious mental state carries a quality we call mood. We are always in some mood, pleasant or unpleasant to some degree. Bad moods may come from too little positive reinforcement in a person's life, along with too many punishments. Moods differ from emotions in one clear way: emotions are tied to a specific object, while moods are not. This split is not perfect, since emotions can also be aimed at something broad (a person can be angry at people in general), while a mood still carries a general sense about the state of the world at large. Moods show up as positive or negative feelings linked to health, personality, or how good a person feels life is. Moods can also grow out of an emotion, such as the mood that follows a specific event like failing to secure a loan. In that sense, a mood is the mind's judgment on the recent past. Goldie notes that an emotion can rise and fall inside a mood, while an emotion can still carry traits that are not object specific.

Moods matter to marketing because they color outlook and bias judgment. This is why consumer confidence surveys matter, since consumer confidence reflects the national mood. There is mood congruence when a person's thoughts and actions fall in line with their mood. Goleman describes this as a constant stream of feeling that runs in perfect harmony with a person's stream of thought. Mood congruence happens because a positive mood brings pleasant associations that soften later thoughts and actions, while a negative mood brings pessimistic associations that shape later judgment and behavior. A consumer in a good mood is more optimistic and confident about buying, and more willing to put up with things like waiting in a queue. Businesses try to put customers in the right mood using music and friendly staff, or place bakeries inside malls so the smell of fresh bread pulls shoppers in.

Thayer treats mood as a mix of biological and psychological influences, a kind of clinical thermometer that reflects everything going on inside and outside a person. For Thayer, the two building blocks of mood are energy and tension, combined in different amounts. A specific mixture of energy and tension, together with the thoughts they influence, produces moods. He describes four mood states:

- Calm-energy: the optimal mood for feeling good.
- Calm-tiredness: mild tiredness without stress, which can still feel pleasant.
- Tense-energy: a low level of anxiety suited to a fight-or-flight response.
- Tense-tiredness: a mix of fatigue and anxiety behind the unpleasant feeling of depression.

People generally feel down or feel good because of events happening around them, and this adds up to the national mood. People feel elated when their national soccer team wins an international match, and low when the team loses. An elated mood of calm-energy is an optimistic mood, which is good for business. Consumers, as socially involved individuals, are shaped by the prevailing social climate, and marketers talk about the national mood running for or against conspicuous consumption. Moods do change. Writing early in the nineteenth century, Tocqueville describes an American elite embarrassed by showy material display; sixty years later, in the Gilded Age, many people were eager to embrace a showy, materialistic style instead. The hard part is predicting a shift in national mood, since a change in mood affects everything from buying stocks to buying houses and washing machines. Thayer would argue that we should watch for national events likely to push people toward a tense-tiredness state or a calm-energy state, since these two extremes are more likely to shape behavior. Artists sensitive to national moods capture these long-term shifts. One example is the emotional distance between Charles Dickens's sentimental account of the death of Little Nell and Oscar Wilde's

cruel joke about it (that one would need a heart of stone not to laugh at the death of Little Nell), a shift from high Victorian sentiment to the sharper cynicism found later in writers like Thomas Hardy and artists like Aubrey Beardsley.

Whenever the mind is not fully absorbed, consciousness is no longer focused and ordered, and under such conditions the mind drifts toward unpleasant thoughts, building a negative mood. Csikszentmihalyi argues that the human need to keep consciousness fully active drives a good deal of consumer behavior. Sometimes it does not matter what a person is shopping for; the act of shopping itself is one way to fill the void in consciousness when there is nothing else to do.

Question: Which one of the following statements best summarizes the above passage?

- (A) The passage highlights how moods affect nations.
- (B) The passage highlights the importance of moods and emotions in marketing.
- (C) The passage draws a distinction between moods and emotions.
- (D) Some writers influenced national moods through their writings.

Correct Answer: (B) The passage highlights the importance of moods and emotions in marketing.

SOLUTION:

A best summary question wants the option that covers the passage end to end, so the fastest way in is to knock out any option that only describes one paragraph rather than the whole piece.

1. **The passage highlights how moods affect nations:**
national mood only comes up as one illustration inside a passage that is mostly about consumer marketing, so this option grabs a detail, not the theme.
2. **The passage highlights the importance of moods and emotions in marketing:** from the second paragraph onward, the passage keeps returning to consumer confidence, buying behavior, and how businesses manage customer mood, which is most of the text.
3. **The passage draws a distinction between moods and emotions:** this distinction is made only in the opening paragraph and dropped after that, so it describes the introduction, not the passage as a whole.
4. **Some writers influenced national moods through their writings:** Dickens, Wilde, Hardy, and Beardsley appear as a short example of how art reflects a mood shift, used to support a larger point, not the main claim itself.

A fifth choice about Thayer's four mood states is also just one paragraph's content and gets eliminated the same way, so only the marketing-focused option survives a full-passage check.

Let's summarize:

- Check every best summary option against the full passage, not just a paragraph it seems to match.
- Options built from a single example or a single early paragraph are usually distractors in this type of question.

The correct option is (BB), the passage highlights the importance of moods and emotions in marketing.

Quick Tip: Look for the option that covers the whole passage's focus on marketing and consumer behavior, not just one paragraph's detail.



87. Passage:

Every conscious mental state carries a quality we call mood. We are always in some mood, pleasant or unpleasant to some degree. Bad moods may come from too little positive reinforcement in a person's life, along with too many punishments. Moods differ from emotions in one clear way: emotions are tied to a specific object, while moods are not. This split is not perfect, since emotions can also be aimed at something broad (a person can be angry at people in general), while a mood still carries a general sense about the state of the world at large. Moods show up as positive or negative feelings linked to health, personality, or how good a person feels life is. Moods can also grow out of an emotion, such as the mood that follows a specific event like failing to secure a loan. In that sense, a mood is the mind's judgment on the recent past. Goldie notes that an emotion can rise and fall inside a mood, while an emotion can still carry traits that are not object specific.

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- Tense-energy: a low level of anxiety suited to a fight-or-flight response.
- Tense-tiredness: a mix of fatigue and anxiety behind the unpleasant feeling of depression.

People generally feel down or feel good because of events happening around them, and this adds up to the national mood. People feel elated when their national soccer team wins an international match, and low when the team loses. An elated mood of calm-energy is an optimistic mood, which is good for business. Consumers, as socially involved individuals, are shaped by the prevailing social climate, and marketers talk about the national mood running for or against conspicuous consumption. Moods do change. Writing early in the nineteenth century, Tocqueville describes an American elite embarrassed by showy material display; sixty years later, in the Gilded Age, many people were eager to embrace a showy, materialistic style instead. The hard part is predicting a shift in national mood, since a change in mood affects everything from buying stocks to buying houses and washing machines. Thayer would argue that we should watch for national events likely to push people toward a tense-tiredness state or a calm-energy state, since these two extremes are more likely to shape behavior. Artists sensitive to national moods capture these long-term shifts. One example is the emotional distance between Charles Dickens's sentimental account of the death of Little Nell and Oscar Wilde's

cruel joke about it (that one would need a heart of stone not to laugh at the death of Little Nell), a shift from high Victorian sentiment to the sharper cynicism found later in writers like Thomas Hardy and artists like Aubrey Beardsley.

Whenever the mind is not fully absorbed, consciousness is no longer focused and ordered, and under such conditions the mind drifts toward unpleasant thoughts, building a negative mood. Csikszentmihalyi argues that the human need to keep consciousness fully active drives a good deal of consumer behavior. Sometimes it does not matter what a person is shopping for; the act of shopping itself is one way to fill the void in consciousness when there is nothing else to do.

Question: Which of the following is closest to "conspicuous consumption" as used in the passage?

- (A) Audible consumption.
- (B) Consumption driven by moods and emotions.
- (C) Socially responsible consumption.
- (D) Consumption of material items for impressing others.

Correct Answer: (D) Consumption of material items for impressing others.

SOLUTION:

This is a vocabulary in context question. The passage uses conspicuous consumption without defining it, so the safest route is to build the meaning from the word conspicuous (meaning visible, easy to notice) plus consumption (buying and using things), then test each option against that.

1. **Audible consumption:** this option swaps visible for heard, which is not what conspicuous means, and the passage never talks about sound.
2. **Consumption driven by moods and emotions:** mood driven buying is a real theme in the passage, but it describes why people buy, not spending that is done to be seen by others, so it answers a different question.
3. **Socially responsible consumption:** this adds an ethical, good for society flavor that has nothing to do with showing off wealth, which is what conspicuous consumption is about.
4. **Consumption of material items for impressing others:** this fits exactly, since it captures both buying material goods and doing so to be noticed or to impress people.
5. **Private but not public consumption:** this is backwards; conspicuous means public and visible, so private consumption is the opposite of the term.

Once the other four options are ruled out for reasons unrelated to the term's real meaning, consumption of material items for impressing others is left standing as the correct match.

Let's summarize:

- Break an unfamiliar or contextual term into its parts before checking options.
- Reject options that borrow a nearby idea from the passage (mood, ethics) instead of the term's actual meaning.

The correct option is (DD), consumption of material items for impressing others.

Quick Tip: Break "conspicuous consumption" into its two plain words: conspicuous means visible to others, consumption means spending.



88. Passage:

Every conscious mental state carries a quality we call mood. We are always in some mood, pleasant or unpleasant to some degree. Bad moods may come from too little positive reinforcement in a person's life, along with too many punishments. Moods differ from emotions in one clear way: emotions are tied to a specific object, while moods are not. This split is not perfect, since emotions can also be aimed at something broad (a person can be angry at people in general), while a mood still carries a general sense about the state of the world at large. Moods show up as positive or negative feelings linked to health, personality, or how good a person feels life is. Moods can also grow out of an emotion, such as the mood that follows a specific event like failing to secure a loan. In that sense, a mood is the mind's judgment on the recent past. Goldie notes that an emotion can rise and fall inside a mood, while an emotion can still carry traits that are not object specific.

Moods matter to marketing because they color outlook and bias judgment. This is why consumer confidence surveys matter, since consumer confidence reflects the national mood. There is mood congruence when a person's thoughts and actions fall in line with their mood. Goleman describes this as a constant stream of feeling that runs in perfect harmony with a person's stream of thought. Mood congruence happens because a positive mood brings pleasant associations that soften later thoughts and actions, while a negative mood brings pessimistic associations that shape later judgment and behavior. A consumer in a good mood is more optimistic and confident about buying, and more willing to put up with things like waiting in a queue. Businesses try to put customers in the right mood using music and friendly staff, or place bakeries inside malls so the smell of fresh bread pulls shoppers in.

Thayer treats mood as a mix of biological and psychological influences, a kind of clinical thermometer that reflects everything going on inside and outside a person. For Thayer, the two building blocks of mood are energy and tension, combined in different amounts. A specific mixture of energy and tension, together with the thoughts they influence, produces moods. He describes four mood states:

- Calm-energy: the optimal mood for feeling good.
- Calm-tiredness: mild tiredness without stress, which can still feel pleasant.
- Tense-energy: a low level of anxiety suited to a fight-or-flight response.
- Tense-tiredness: a mix of fatigue and anxiety behind the unpleasant feeling of depression.

People generally feel down or feel good because of events happening around them, and this adds up to the national mood. People feel elated when their national soccer team wins an international match, and low when the team loses. An elated mood of calm-energy is an optimistic mood, which is good for business. Consumers, as socially involved individuals, are shaped by the prevailing social climate, and marketers talk about the national mood running for or against conspicuous consumption. Moods do change. Writing early in the nineteenth century, Tocqueville describes an American elite embarrassed by showy material display; sixty years later, in the Gilded Age, many people were eager to embrace a showy, materialistic style instead. The hard part is predicting a shift in national mood, since a change in mood affects everything from buying stocks to buying houses and washing machines. Thayer would argue that we should watch for national events likely to push people toward a tense-tiredness state or a calm-energy state, since these two extremes are more likely to shape behavior. Artists sensitive to national moods capture these long-term shifts. One example is the emotional distance between Charles Dickens's sentimental account of the death of Little Nell and Oscar Wilde's

cruel joke about it (that one would need a heart of stone not to laugh at the death of Little Nell), a shift from high Victorian sentiment to the sharper cynicism found later in writers like Thomas Hardy and artists like Aubrey Beardsley.

Whenever the mind is not fully absorbed, consciousness is no longer focused and ordered, and under such conditions the mind drifts toward unpleasant thoughts, building a negative mood. Csikszentmihalyi argues that the human need to keep consciousness fully active drives a good deal of consumer behavior. Sometimes it does not matter what a person is shopping for; the act of shopping itself is one way to fill the void in consciousness when there is nothing else to do.

Question: What is "mood congruence" as described in the passage?

- (A) When moods and emotions are synchronized.
- (B) When moods are synchronous with thoughts and actions.
- (C) When emotions are synchronous with actions and thoughts.
- (D) When moods are synchronous with thoughts but not with action.

Correct Answer: (B) When moods are synchronous with thoughts and actions.

SOLUTION:

This question hands the reader a ready-made definition inside the passage, so instead of reasoning from scratch, the job is to line each option up against that exact definition and see which one keeps every part of it intact.

1. **When moods and emotions are synchronized:** the passage never says moods sync with emotions; it says moods sync with

thoughts and actions, so this option has swapped in the wrong pair of words.

2. **When moods are synchronous with thoughts and actions:** this is the passage's definition stated plainly, with mood as the subject and both thoughts and actions covered.
3. **When emotions are synchronous with actions and thoughts:** same problem as the first option, just reordered; it replaces mood with emotions, which the passage's definition does not do.
4. **When moods are synchronous with thoughts but not with action:** this keeps only half of the definition and explicitly excludes action, which contradicts the passage.

A fifth choice, moods synchronous with action but not thought, makes the mirror image mistake, dropping thought instead of action.

Let's summarize:

- When a passage gives an explicit definition, treat it like a checklist and match every part of it.
- Watch for options that swap one key noun (like emotions for mood) or drop half a two part definition.

The correct option is (BB), when moods are synchronous with thoughts and actions.

Quick Tip: Find the exact sentence in the passage that defines mood congruence and match its two parts: thoughts and actions.



89. Passage:

Every conscious mental state carries a quality we call mood. We are always in some mood, pleasant or unpleasant to some degree. Bad moods may come from too little positive reinforcement in a person's life, along with too many punishments. Moods differ from emotions in one clear way: emotions are tied to a specific object, while moods are not. This split is not perfect, since emotions can also be aimed at something broad (a person can be angry at people in general), while a mood still carries a general sense about the state of the world at large. Moods show up as positive or negative feelings linked to health, personality, or how good a person feels life is. Moods can also grow out of an emotion, such as the mood that follows a specific event like failing to secure a loan. In that sense, a mood is the mind's judgment on the recent past. Goldie notes that an emotion can rise and fall inside a mood, while an emotion can still carry traits that are not object specific.

Moods matter to marketing because they color outlook and bias judgment. This is why consumer confidence surveys matter, since consumer confidence reflects the national mood. There is mood congruence when a person's thoughts and actions fall in line with their mood. Goleman describes this as a constant stream of feeling that runs in perfect harmony with a person's stream of thought. Mood congruence happens because a positive mood brings pleasant associations that soften later thoughts and actions, while a negative mood brings pessimistic associations that shape later judgment and behavior. A consumer in a good mood is more optimistic and confident about buying, and more willing to put up with things like waiting in a queue. Businesses try to put customers in the right mood using music and friendly staff, or place bakeries inside malls so the smell of fresh bread pulls shoppers in.

Thayer treats mood as a mix of biological and psychological influences, a kind of clinical thermometer that reflects everything going on inside and outside a person. For Thayer, the two building blocks of mood are energy and tension, combined in different amounts. A specific mixture of energy and tension, together with the thoughts they influence, produces moods. He describes four mood states:

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cruel joke about it (that one would need a heart of stone not to laugh at the death of Little Nell), a shift from high Victorian sentiment to the sharper cynicism found later in writers like Thomas Hardy and artists like Aubrey Beardsley.

Whenever the mind is not fully absorbed, consciousness is no longer focused and ordered, and under such conditions the mind drifts toward unpleasant thoughts, building a negative mood. Csikszentmihalyi argues that the human need to keep consciousness fully active drives a good deal of consumer behavior. Sometimes it does not matter what a person is shopping for; the act of shopping itself is one way to fill the void in consciousness when there is nothing else to do.

Question: Implication and proposition are defined as follows.

Implication: a statement that follows from the passage. Proposition: a statement that forms a part of the passage. Consider the two statements below and decide whether each is an implication or a proposition.

Statement I: The marketers should understand and make use of moods and emotions in designing and selling products and services. Statement II: Consuming is nothing but a way of filling the void in consciousness.

- (A) Both statements are implications.
- (B) First is implication, second is proposition.
- (C) Both are propositions.
- (D) First is proposition, second is implication.

Correct Answer: (B) First is implication, second is proposition.

SOLUTION:

Before touching the two statements, fix the two definitions given in the question: a proposition is lifted straight from the passage, while an

implication is a fair conclusion that the passage supports without ever saying it in so many words.

1. **Statement II, consuming is nothing but a way of filling the void in consciousness:** the passage's closing line already says shopping is one way to respond to the void in consciousness when there is nothing else to do, so this statement is close to a direct lift, which makes it a proposition.
2. **Statement I, marketers should understand and make use of moods and emotions in designing and selling products and services:** the passage shows plenty of evidence that moods shape buying and that businesses already try to manage mood, but it never issues this as a direct instruction to marketers. It is a natural conclusion from the evidence, not a lifted line, which makes it an implication.

With statement I sorted as an implication and statement II sorted as a proposition, only the option matching that exact order can be correct. Both statements are implications fails since statement II is a lifted line. Both are propositions fails since statement I is never stated directly. First is proposition, second is implication reverses the correct pairing. Both are neither fails since both clearly land in one category.

Let's summarize:

- A proposition tracks very closely to the passage's own sentence; an implication is one logical step removed from it.
- Always check both statements against the passage's exact wording before picking a category for either one.

The correct option is (BB), first is implication, second is proposition.

Quick Tip: A proposition is a line straight from the passage; an implication is a fair conclusion the passage never states outright.



90. Passage:

Every conscious mental state carries a quality we call mood. We are always in some mood, pleasant or unpleasant to some degree. Bad moods may come from too little positive reinforcement in a person's life, along with too many punishments. Moods differ from emotions in one clear way: emotions are tied to a specific object, while moods are not. This split is not perfect, since emotions can also be aimed at something broad (a person can be angry at people in general), while a mood still carries a general sense about the state of the world at large. Moods show up as positive or negative feelings linked to health, personality, or how good a person feels life is. Moods can also grow out of an emotion, such as the mood that follows a specific event like failing to secure a loan. In that sense, a mood is the mind's judgment on the recent past. Goldie notes that an emotion can rise and fall inside a mood, while an emotion can still carry traits that are not object specific.

Moods matter to marketing because they color outlook and bias judgment. This is why consumer confidence surveys matter, since consumer confidence reflects the national mood. There is mood congruence when a person's thoughts and actions fall in line with their mood. Goleman describes this as a constant stream of feeling that runs in perfect harmony with a person's stream of thought. Mood congruence happens because a positive mood brings pleasant associations that soften later thoughts and actions, while a negative mood brings pessimistic associations that shape later judgment and behavior. A consumer in a good mood is more optimistic and confident about buying, and more willing to put up with things like waiting in a queue. Businesses try to put customers in the right mood using music and friendly staff, or place bakeries inside malls so the smell of fresh bread pulls shoppers in.

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People generally feel down or feel good because of events happening around them, and this adds up to the national mood. People feel elated when their national soccer team wins an international match, and low when the team loses. An elated mood of calm-energy is an optimistic mood, which is good for business. Consumers, as socially involved individuals, are shaped by the prevailing social climate, and marketers talk about the national mood running for or against conspicuous consumption. Moods do change. Writing early in the nineteenth century, Tocqueville describes an American elite embarrassed by showy material display; sixty years later, in the Gilded Age, many people were eager to embrace a showy, materialistic style instead. The hard part is predicting a shift in national mood, since a change in mood affects everything from buying stocks to buying houses and washing machines. Thayer would argue that we should watch for national events likely to push people toward a tense-tiredness state or a calm-energy state, since these two extremes are more likely to shape behavior. Artists sensitive to national moods capture these long-term shifts. One example is the emotional distance between Charles Dickens's sentimental account of the death of Little Nell and Oscar Wilde's

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Whenever the mind is not fully absorbed, consciousness is no longer focused and ordered, and under such conditions the mind drifts toward unpleasant thoughts, building a negative mood. Csikszentmihalyi argues that the human need to keep consciousness fully active drives a good deal of consumer behavior. Sometimes it does not matter what a person is shopping for; the act of shopping itself is one way to fill the void in consciousness when there is nothing else to do.

Question: Which of the following statements are correct, based on the passage? Statement 1: In general, emotions are object specific. Statement 2: In general, moods are not object specific. Statement 3: Moods and emotions are the same. Statement 4: As per Thayer, moods are a mix of biological and psychological influences.

- (A) 1, 2, 3
- (B) 2, 3, 4
- (C) 2, 4, 3
- (D) 1, 2, 4

Correct Answer: (D) 1, 2, 4

SOLUTION:

This question lists four short claims and asks which combination the passage backs up, so the fastest path is to test each claim on its own against the passage before touching the answer options.

1. **Statement 1, emotions are object specific in general:** true, since the passage defines moods as not tied to a specific object, which by contrast means emotions usually are, and the one exception it mentions (anger at people generally) is only an exception to a general rule, not a reason to call the rule false.
2. **Statement 2, moods are not object specific in general:** true, and stated almost word for word in the passage's own definition of mood.
3. **Statement 3, moods and emotions are the same:** false, since the passage's opening paragraph is built entirely around separating the two, most clearly on this exact object specific point.
4. **Statement 4, Thayer sees moods as a mix of biological and psychological influences:** true, and stated directly in the passage.

With statements 1, 2, and 4 confirmed true and statement 3 confirmed false, any option containing 3 can be dropped right away, which removes most of the wrong options in one move.

Let's summarize:

- Test each numbered statement against the passage individually before looking at the combination options.
- An option that includes even one false statement, like statement 3 here, must be eliminated entirely.

The correct option is (DD), statements 1, 2, and 4.

Quick Tip: Check statements 1, 2, and 4 against the passage's own wording on moods, emotions, and Thayer before ruling out statement 3.

- - -

91. Passage:

Every conscious mental state carries a quality we call mood. We are always in some mood, pleasant or unpleasant to some degree. Bad moods may come from too little positive reinforcement in a person's life, along with too many punishments. Moods differ from emotions in one clear way: emotions are tied to a specific object, while moods are not. This split is not perfect, since emotions can also be aimed at something broad (a person can be angry at people in general), while a mood still carries a general sense about the state of the world at large. Moods show up as positive or negative feelings linked to health, personality, or how good a person feels life is. Moods can also grow out of an emotion, such as the mood that follows a specific event like failing to secure a loan. In that sense, a mood is the mind's judgment on the recent past. Goldie notes that an emotion can rise and fall inside a mood, while an emotion can still carry traits that are not object specific.

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Whenever the mind is not fully absorbed, consciousness is no longer focused and ordered, and under such conditions the mind drifts toward unpleasant thoughts, building a negative mood. Csikszentmihalyi argues that the human need to keep consciousness fully active drives a good deal of consumer behavior. Sometimes it does not matter what a person is shopping for; the act of shopping itself is one way to fill the void in consciousness when there is nothing else to do.

Question: The statement "moods provide energy for human actions" is _____, based on the passage.

- (A) Always right.
- (B) Always wrong.
- (C) Sometimes right.
- (D) Not derived from the passage.

Correct Answer: (C) Sometimes right.

SOLUTION:

This question checks the claim moods provide energy for human actions against Thayer's four mood states rather than against the passage as a single block, since energy is only one of the two ingredients, energy and tension, Thayer uses to build mood.

1. **Always right:** fails, because Thayer's tense-tiredness state is described as a mixture of fatigue and anxiety, which reads as low

energy, not energy, so not every mood supplies energy.

2. **Always wrong:** fails, because the passage directly ties calm-energy, one of Thayer's four states, to an optimistic mood that is good for business, which is a clear case of mood supplying energy.
3. **Sometimes right:** fits, since some states (calm-energy) support the claim and others (tense-tiredness) do not, which is exactly what sometimes means.
4. **Not derived from the passage:** fails, since the passage explicitly discusses energy as one of the two building blocks of mood and even names a state built around it.

A fifth choice, contradictory, also fails, since nothing in the passage's account of energy and mood conflicts with itself; it is simply a claim that holds for some states and not others.

Let's summarize:

- When a passage names several sub-types of something, here four mood states, test broad claims against each sub-type before picking always or never.
- Sometimes right is often correct when a claim holds for some named cases and fails for others, rather than none or all.

The correct option is (CC), sometimes right.

Quick Tip: Check the energy claim against all four of Thayer's mood states, not just calm-energy.



92. Directions: Read the following caselet and answer the question that follows.

According to recent reports, CEOs of large organisations are paid more than CEOs of small organisations. It does not seem fair that just because a CEO is heading a big organisation, he or she should be paid more. A CEO's salary should be tied to performance, especially growth in sales and profits. Big organisations are of course more complex to run than small ones, but every CEO puts in a large amount of energy and time managing the organisation. There is no proof that CEOs of big organisations face more stress than CEOs of small organisations. All CEOs should be paid according to their performance.

A person seeking to refute this argument might argue that

- (A) CEOs should be paid equally.
- (B) Managing a big organisation is more challenging than managing a small one.
- (C) CEOs who travel more should be paid more.
- (D) If the CEOs of small companies perform well, their companies would grow big, and so would the CEOs' salaries.

Correct Answer: (B) Managing a big organisation is more challenging than managing a small one.

SOLUTION:

Step 1: Understanding the Question:

The passage argues that CEO pay should depend only on performance, and rejects organisation size as a valid reason for paying big-company CEOs more. We must find the option that goes against this conclusion, that is, defends paying big-company CEOs more purely

because they run bigger organisations.

Step 2: Key Formula or Approach:

Sort each option into one of three buckets: it agrees with the speaker (pay by performance), it is unrelated to the speaker's reasoning, or it gives an independent reason why size itself deserves more pay. Only the third bucket refutes the speaker.

Step 3: Detailed Explanation:

"CEOs should be paid equally" falls in the first bucket, since it is just a restatement of paying by performance regardless of size, so it cannot be the refutation.

"CEOs who travel more should be paid more" is in the second bucket, since travel is never discussed in the passage as a reason for the pay gap, so it does not engage with the speaker's claim at all.

"If small-company CEOs perform well, their companies would grow big and so would their pay" also falls in the first bucket, since the raise still comes from performance leading to growth, matching the speaker's own logic.

"Managing a big organisation is more challenging than managing a small one" falls in the third bucket, since it directly denies the speaker's claim that all CEOs need a similar amount of energy and time, and gives job difficulty, not performance, as the reason a big-company CEO should earn more.

Step 4: Final Answer:

Only the "more challenging" option provides an independent reason based on organisation size, so it is the statement that refutes the speaker's argument. This corresponds to option (BB).

Quick Tip: Look for the option that gives a reason tied to organisation size itself, not one that agrees with paying by performance or brings in an unrelated factor like travel or education.

• • •

93. Directions: Read the following caselet and answer the question that follows.

According to recent reports, CEOs of large organisations are paid more than CEOs of small organisations. It does not seem fair that just because a CEO is heading a big organisation, he or she should be paid more. A CEO's salary should be tied to performance, especially growth in sales and profits. Big organisations are of course more complex to run than small ones, but every CEO puts in a large amount of energy and time managing the organisation. There is no proof that CEOs of big organisations face more stress than CEOs of small organisations. All CEOs should be paid according to their performance.

Which of the following, if true, would strengthen the speaker's argument?

- (A) CEOs of small organisations come from good educational backgrounds.
- (B) CEOs of big organisations are very difficult to hire.
- (C) A few big family businesses have CEOs from within the family.
- (D) Big organisations contribute more towards the moral development of society.

Correct Answer: (B) CEOs of big organisations are very difficult to hire.

SOLUTION:

Step 1: Understanding the Concept:

The speaker's conclusion is that CEO salary should be linked to performance, not organisation size. A strengthening statement must add a reason that supports paying by merit rather than by size.

Step 2: Key Formula or Approach:

Check each option against a simple test: does it explain the pay gap through something other than size, which helps the speaker, or does it explain the pay gap through size or an unrelated factor, which hurts the speaker?

Step 3: Detailed Explanation:

"Good educational background" can apply to small-company CEOs too and does not distinguish the two groups, so it neither helps nor directly strengthens the speaker's stand.

"Family businesses have CEOs from within the family" explains high pay through ownership and family ties, a reason completely outside performance, so it works against the speaker.

"Big organisations contribute more towards moral development of society" gives yet another reason for high pay that has nothing to do with performance, again working against the speaker.

"CEOs of big organisations are very difficult to hire" says the market for such CEOs is thin, so companies pay more to attract someone capable enough to do the job well. This ties the pay gap to capability and scarcity of the right person, a performance-linked reason, not a size-linked one.

Step 4: Final Answer:

The option that ties higher pay to scarcity of capable candidates, not

to the size of the company, is the one that strengthens the speaker's performance-based argument. This corresponds to option (BB).

Quick Tip: Look for the option that explains the pay gap through something other than the size of the company, such as scarcity of the right candidate.

• • •

94. Directions: Read the following passage and answer the question that follows.

Hindi ought to be the official language of India. There is no reason for the government to spend money printing documents in different languages just to cater to people who cannot read or write Hindi. The government has better ways to spend taxpayers' money. People across India should read, write, or learn Hindi at the earliest.

Which of the following, if true, would weaken the speaker's argument the most?

- (A) The government currently translates official documents into more than eighteen languages.
- (B) Hindi is the most difficult language in the world to speak.
- (C) Most people who travel across India learn Hindi within five years.
- (D) People who are multilingual usually pay the maximum taxes.

Correct Answer: (D) People who are multilingual usually pay the maximum taxes.

SOLUTION:

Step 1: Understanding the Concept:

The speaker's only stated reason for making Hindi compulsory is financial: printing documents in many languages wastes taxpayers' money. A weakening option must attack this money-based reasoning, not just comment on Hindi's difficulty or popularity.

Step 2: Key Formula or Approach:

Test each option by asking whether it shows that the money being spent on multiple languages is actually justified or fair. If yes, it weakens the speaker; if it only comments on Hindi's difficulty or on how long it takes to learn, it misses the target.

Step 3: Detailed Explanation:

Saying the government "currently translates into eighteen languages" is a neutral fact and does not judge whether that spending is wasteful, so it does not weaken anything.

Calling Hindi "the most difficult language" is about the effort of learning it, not about whether the government's spending is wasted, so this option misses the speaker's actual reasoning.

Saying most travellers "learn Hindi within five years" shows that learning Hindi is achievable, which supports rather than weakens the push toward Hindi.

Saying multilingual citizens "pay the maximum taxes" flips the money argument on its head: the very people funding the government the most are the ones who need documents in other languages, so spending on translation is a fair use of their own tax money, not a waste.

Step 4: Final Answer:

Because it directly undercuts the "wasted taxpayer money" reasoning

that the whole argument depends on, the tax-related option weakens the argument the most. This corresponds to option (EE).

Quick Tip: Focus only on the option that attacks the "wasted taxpayer money" reasoning the speaker actually uses.

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95. Directions: Read the following passage and answer the question that follows.

Hindi ought to be the official language of India. There is no reason for the government to spend money printing documents in different languages just to cater to people who cannot read or write Hindi. The government has better ways to spend taxpayers' money. People across India should read, write, or learn Hindi at the earliest.

United Nations members contribute funds, proportionate to their population, for the smooth functioning of the UN. By 2010, India, being the most populous nation on the planet, would contribute the maximum amount to the UN. Therefore, the official language of the United Nations should be changed to Hindi.

Which of the following is true?

- (A) The point above contradicts the speaker's argument.
- (B) The point above extends the speaker's argument.
- (C) The point above is similar to the speaker's argument.
- (D) The point above concludes the speaker's argument.

Correct Answer: (B) The point above extends the speaker's argument.

SOLUTION:

Step 1: Understanding the Concept:

We must classify the relationship between two statements: the original push for Hindi as India's official language, and a new claim that Hindi should also become the UN's official language because India would soon be the UN's biggest financial contributor.

Step 2: Key Formula or Approach:

Define each answer choice precisely before matching it to the passage: "contradicts" means opposes the stand, "similar" means uses the same reasoning again, "concludes" means is the final wrap-up point of the same argument, and "extends" means takes the same stand into a new area with a new supporting reason.

Step 3: Detailed Explanation:

The UN statement does not oppose the original call for Hindi, so "contradicts" is ruled out.

The reasoning is different: the India argument is about saving printing costs, while the UN argument is about India's funding share, so "similar" reasoning does not hold.

The India argument about official documents was already complete on its own, so the UN point is not needed to finish or "conclude" it.

The UN statement takes the same underlying support for Hindi and pushes it one level further, from a national context to an international one, backed by a brand new reason (funding). This is exactly what it means to extend an argument.

Step 4: Final Answer:

Because the new statement carries the original pro-Hindi stand into a

new, larger context using a fresh justification, it extends the speaker's argument. This corresponds to option (BB).

Quick Tip: Ask whether the new statement opposes, repeats, finishes, or simply carries forward the same pro-Hindi stand into a new area.

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96. Read the passage below and answer the question that follows.

The Bistupur-Sakchi corner needs a speed-breaker. Loyola school children cross this intersection, on their way to the school, and many a times do not check out for traffic. I get to read regular reports of cars and other vehicles hitting children. I know that speed-breakers are irritating for drivers, and I know that children cannot be protected from every danger, but this is one of the worst intersections in town. There needs to be a speed-breaker so that vehicles have to slow down and the children be made safer.

Which of the following types of argument is used in the passage above?

- (A) Analogy: comparing the intersection to something dangerous.
- (B) Emotive: referring to the safety of children to get people interested.
- (C) Statistical analysis: noting the number of children hit by vehicles.
- (D) Personalization: telling the story of one child's near accident at the intersection.

Correct Answer: (B) Emotive: referring to the safety of children to get people interested.

SOLUTION:

This question asks us to name the technique the writer uses to argue for a speed-breaker at a busy school crossing. Instead of eliminating options one by one, read the passage for what actually drives its persuasion, then match that against each label.

1. **Analogy:** this would need the writer to compare the intersection to some other dangerous thing, like a cliff or a warzone. The passage never draws such a comparison.
2. **Emotive:** the writer keeps centering the argument on "school children" and their safety, a subject that naturally worries most readers regardless of facts or figures. This matches the passage closely.
3. **Statistical analysis:** this needs numbers, a count of accidents or injuries. The passage gives none, only "regular reports."
4. **Personalization:** this would need one specific child's story, with a name or event described in detail. The passage only mentions reports of children being hit in general, no single incident is told in detail.

Since the passage leans entirely on the reader's concern for children's safety rather than on data, comparison, or a single detailed story, the argument is emotive.

Let's summarize:

- An emotive argument uses feeling, here the safety of children, to persuade, rather than facts, figures, or a story.
- None of analogy, statistics, or personalization fit what the passage actually does.

The correct option is (BB), emotive.

Quick Tip: Check whether the passage uses numbers, a comparison to something else, one child's specific story, or just the emotional pull of children's safety.

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97. Read the passage and the additional information below, then answer the question that follows.

The Bistupur-Sakchi corner needs a speed-breaker. Loyola school children cross this intersection, on their way to the school, and many a times do not check out for traffic. I get to read regular reports of cars and other vehicles hitting children. I know that speed-breakers are irritating for drivers, and I know that children cannot be protected from every danger, but this is one of the worst intersections in town. There needs to be a speed-breaker so that vehicles have to slow down and the children be made safer.

According to a recent research conducted by the district road planning department, ten percent of students come with parents in cars, twenty percent of students use auto-rickshaws, twenty percent of students use taxis, forty percent of students use the school buses, and ten percent of students live in the hostel inside the school.

Which of the following is true about the paragraph containing the survey data above?

- (A) It extends the speaker's argument using analogy.
- (B) It extends the speaker's argument using statistical data.
- (C) It is similar to the speaker's argument.
- (D) It contradicts the speaker's argument using statistical data.

Correct Answer: (D) It contradicts the speaker's argument using statistical data.

SOLUTION:

This question asks how the survey paragraph, which lists percentages for how students travel to school, relates to the earlier appeal for a speed-breaker. Work out what the numbers actually show before checking the options.

1. **Extends the argument using analogy:** an analogy would need a comparison to another situation. The survey gives percentages, not a comparison, so this does not fit.
2. **Extends the argument using statistical data:** "extends" would mean the data supports the original worry about children crossing on foot. Instead, the data (10% by car, 20% by auto-rickshaw, 20% by taxi, 40% by bus, 10% in the hostel, adding to 100%) shows no student walks to school at all, so it works against the claim, not for it.
3. **Similar to the speaker's argument:** the numbers actually point the opposite way from the speaker's picture of at-risk children on foot, so "similar" does not fit.
4. **Contradicts the argument using statistical data:** since the percentages add to 100% and cover every student by vehicle or hostel residence, none are left walking across the intersection, directly undercutting the original claim with numbers.

The data does not support the original plea, it works against it, and it does so using counts and percentages rather than a story or comparison.

Let's summarize:

- Always total any percentages given, here they add to 100%, meaning every student's mode of travel is captured.
- A statistic that removes the basis of an argument, here children walking, contradicts it rather than extending it.

The correct option is the one stating that the paragraph contradicts the speaker's argument using statistical data.

Quick Tip: Add up the percentages given and check whether they leave any student walking across the intersection at all.

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98. Read the passage below and answer the question that follows.

History, if viewed as a repository not merely of anecdotes or chronology, could produce a decisive transformation in the image of science by which we are now possessed. That image has previously been drawn, even by scientists themselves, mainly from the study of finished scientific achievements as these are recorded in the classics and, more recently, in the textbooks from which each new scientific generation learns to practice its trade.

Which of the following best summarizes the passage above?

- (A) Scientific achievements are recorded in classics and textbooks.
- (B) The history of science can be worked out from finished scientific achievements.
- (C) Different ways of looking at history can produce altogether different knowledge.
- (D) Textbooks may be biased.

Correct Answer: (C) Different ways of looking at history can produce altogether different knowledge.

SOLUTION:

A summary question asks for the option that captures the passage's central claim, not a detail borrowed from a single sentence. The passage's core claim is that treating history as more than a list of facts and dates could change our current picture of science.

1. **Scientific achievements are recorded in classics and textbooks:** true as a detail, but it only describes where today's image of science comes from, it says nothing about the change the author is proposing.
2. **History of science can be worked out from finished scientific achievements:** again this only restates the source of the current image, not the author's real argument that a different approach to history could transform that image.
3. **Looking at history in different ways can produce very different pictures of science:** this is exactly the author's point, treating history as a repository, not just anecdotes or chronology, can produce a "decisive transformation" in how we see science.
4. **Textbooks may be biased:** this is never argued in the passage, the author only says textbooks are one place the current image is drawn from.

Since three of the four options only pick up a side detail or an idea not present in the passage, the option about different ways of viewing history producing different knowledge is the only one that summarizes the full argument.

Let's summarize:

- A summary must cover the passage's main idea, not just a fact mentioned in passing.
- The author's real point is that how we treat history, not just what facts it holds, shapes our picture of science.

The correct option is the one stating that different ways of looking at history can produce different knowledge.

Quick Tip: Look for the option that talks about how history is approached changing the resulting picture, not one that just repeats a detail from the passage.



99. Read the passage below and answer the question that follows.

History, if viewed as a repository not merely of anecdotes or chronology, could produce a decisive transformation in the image of science by which we are now possessed. That image has previously been drawn, even by scientists themselves, mainly from the study of finished scientific achievements as these are recorded in the classics and, more recently, in the textbooks from which each new scientific generation learns to practice its trade.

Which of the following statements is the author most likely to agree with?

- (A) History of science shows a scientific way of looking at scientific developments and so helps scientific progress.
- (B) History of science should contain only the chronology of scientific achievements.
- (C) More scientific theories lead to more publications, which benefits publishers.
- (D) History of science can present multiple interpretations to people about how scientific developments happened.

Correct Answer: (D) History of science can present multiple interpretations to people about how scientific developments happened.

SOLUTION:

This question checks which statement lines up with the author's real position, that history, read as more than a timeline of events, can change how we picture science. Go through each option and test it against that position.

1. **Scientific developments viewed scientifically to aid progress:** shifts the focus to a "scientific" way of viewing history, but the author is arguing for a different way of reading history in general, not specifically a more scientific lens.
2. **History should contain only chronology:** this is the opposite of the author's stated view, the passage opens by rejecting history as "merely...chronology."
3. **More theories mean more publications for publishers:** introduces a business detail about publishing that the passage never mentions.
4. **History can present multiple interpretations of scientific developments:** fits directly with the idea that

reading history differently, not just as dates and anecdotes, can produce a different, valid picture of science.

Only the last option stays true to the author's actual claim, that how history is read shapes what picture of science we end up with, so more than one honest interpretation is possible.

Let's summarize:

- The author is not arguing for a stricter or more scientific history, but for openness to more than one reading of it.
- Any option that adds unstated details, like publishing or pure chronology, moves away from what the passage actually says.

The correct option is the one saying that the history of science can offer multiple interpretations of how developments occurred.

Quick Tip: Check which option matches the author's actual stand: that reading history as more than dates and stories can give a different, valid view of science.

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100. Goodricke Group Ltd is planning to give top priority to the core competence of production and marketing of tea in 2007. The company plans to increase the production of orthodox varieties of tea. Goodricke intends to invest Rs. 10 crore to modernize its factories. The company has reported a net profit of Rs. 5.49 crore for 2006, against Rs. 3.76 crore in 2005.

Which of the following can be deduced from the caselet?

- (A) Production and marketing is the core competence of Goodricke Group.
- (B) Increase in production of existing products enhances core competence.
- (C) Core competence can be used for furthering the company's interests.
- (D) Core competence leads to modernization.

Correct Answer: (C) Core competence can be used for furthering the company's interests.

SOLUTION:

This question tests how well you can tell a genuine deduction apart from a simple repeat of the passage or an assumption the passage does not back. Read the caselet once more: Goodricke is prioritizing its core competence (tea production and marketing), it plans to spend Rs. 10 crore modernizing factories, and its profit grew from Rs. 3.76 crore to Rs. 5.49 crore between 2005 and 2006. Go through each option and ask whether it follows from the facts, or whether it just repeats them or adds something new.

1. **Production and marketing is the core competence of Goodricke Group:** this is lifted almost word for word from the caselet itself. Since it is already stated outright, it cannot count as something deduced from the caselet.
2. **Increase in production of existing products enhances core competence:** the caselet talks about producing more orthodox tea, but nowhere does it say this increase makes the core competence stronger. This option guesses at an effect the passage never claims.

- 3. Core competence can be used for furthering the company's interests:** the company is putting both its focus and its money into its core competence, and in the same period its profit has grown by close to 46 percent. Put together, these facts support the idea that leaning on core competence is working in the company's favour, so this option is a genuine deduction.
- 4. Core competence leads to modernization:** the passage mentions modernizing factories as a separate plan, run alongside the focus on core competence. It never claims one causes the other, so this is an assumption, not a deduction.

Ruling out the three options that either repeat the passage or add an unsupported cause-effect link leaves the option about furthering the company's interests as the one that is properly deduced from the facts given.

Let's summarize:

- A deduction must go beyond restating the passage; option 1 fails this test.
- A deduction cannot invent a cause-effect link the passage never makes; options 2 and 4 fail on this ground.
- Growing profit alongside a sharpened focus on core competence supports the idea that core competence serves the company's wider interests.

So the correct choice is that core competence can be used for furthering the company's interests.

Quick Tip: Check which option merely repeats a fact from the caselet and which one draws a genuine logical conclusion from the trend in profit alongside the investment in core competence.

101. The author reflects on the concept of Blue Ocean Strategy. He explains that this concept delivers an instinctive framework for developing uncontested market space and making competition irrelevant. The author remarks that Blue Ocean Strategy is about having the best mix of attributes that results in the creation of uncontested market space and high growth, and not about being the best.

The above paragraph appears to be an attempt at

- (A) defining Blue Ocean Strategy.
- (B) developing the framework for Blue Ocean Strategy.
- (C) reviewing an article or a book on Blue Ocean Strategy.
- (D) highlighting how Blue Ocean Strategy leads to better returns.

Correct Answer: (C) reviewing an article or a book on Blue Ocean Strategy.

SOLUTION:

The trick in this question is to notice who is doing the talking. The paragraph never says 'Blue Ocean Strategy is...' in its own voice; it keeps saying 'the author reflects', 'the author explains', 'the author remarks'. That single clue about voice decides the answer, so go through the options with that in mind.

1. **defining Blue Ocean Strategy:** a definition would be stated directly by the passage itself, not credited each time to 'the author'. Since the paragraph keeps attributing the ideas to someone else, it is not offering its own definition.
2. **developing the framework for Blue Ocean Strategy:** developing a framework means building it up with new

reasoning. Here the paragraph only reports a framework that already exists in someone else's work, it adds nothing new to it.

3. reviewing an article or a book on Blue Ocean Strategy:

summarizing what 'the author' says, and then adding a remark about what the strategy is really about (a mix of attributes, not being 'the best'), is exactly what a book or article review does.

This matches the paragraph's structure closely.

4. highlighting how Blue Ocean Strategy leads to better

returns: returns or profit are never the focus here; 'uncontested market space' and 'high growth' are mentioned only while describing the author's own claims, not as the paragraph's main point.

Since the paragraph's whole structure is built around reporting and reacting to what 'the author' said, it functions as a review rather than a definition, a framework, or a returns argument.

Let's summarize:

- Repeated attribution to 'the author' signals that the paragraph is reporting someone else's work, not presenting original content.
- A definition or a framework would be stated directly, not attributed each time.
- Returns or performance are mentioned only in passing, never as the central theme.

So this paragraph is best read as an attempt at reviewing an article or book on Blue Ocean Strategy.

Quick Tip: Notice how many times the paragraph says 'the author'; that tells you whose work is being reported on, not created.

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102. Deborah Mayo is a philosopher of science who has attempted to capture the implications of the new experimentalism in a philosophically rigorous way. Mayo focuses on the detailed way in which claims are validated by experiment, and is concerned with identifying just what claims are borne out and how. A key idea underlying her treatment is that a claim can only be said to be supported by experiment if the various ways in which the claim could be at fault have been investigated and eliminated. A claim can only be said to be borne out by experiment, and a severe test of a claim, as usefully construed by Mayo, must be such that the claim would be unlikely to pass it if it were false.

Her idea can be explained by some simple examples. Suppose Snell's law of refraction of light is tested by some very rough experiments in which very large margins of error are attributed to the measurements of angles of incidence and refraction, and suppose that the results are shown to be compatible with the law within those margins of error. Has the law been supported by experiments that have severely tested it? From Mayo's perspective the answer is 'no' because, owing to the roughness of the measurements, the law of refraction would be quite likely to pass this test even if it were false and some other law differing not too much from Snell's law true. An exercise I carried out in my school-teaching days serves to drive this point home. My students had conducted some not very careful experiments to test Snell's law. I then presented them with some alternative laws of refraction that had been suggested in antiquity and mediaeval times, prior to the discovery of Snell's law, and invited the students to test them with the measurements they had used to test Snell's law; because of the wide margins of error they had attributed to their measurements, all of these alternative laws pass the test. This clearly brings out the point that the experiments in question did not constitute a severe test of Snell's law. The law would have passed the test even if it were false and one of the historical alternatives true.

Which of the following conclusions can be drawn from the passage?

- (A) Experimental data might support multiple theoretical explanations at the same time, hence the validity of theories needs to be tested further.
- (B) Precise measurement is a sufficient condition to ensure the validity of conclusions resulting from an experiment.
- (C) Precise measurement is both a necessary and sufficient condition to ensure the validity of conclusions resulting from an experiment.
- (D) Precise measurement along with the experimenter's knowledge of the theory underpinning the experiment is sufficient to ensure the validity of conclusions drawn from experiments.

Correct Answer: (A) Experimental data might support multiple theoretical explanations at the same time, hence the validity of theories needs to be tested further.

SOLUTION:

This passage is built around one central warning from Deborah Mayo: an experiment only really supports a theory if the theory has passed a severe test, one it would probably have failed had it been false. The Snell's law story is there to prove this point. When the measurements were rough, several old and wrong laws of refraction passed the very same test that Snell's law passed. That single fact should guide how you read each option below.

1. **Experimental data might support multiple theoretical explanations at the same time, hence validity of theories needs to be tested further:** this is exactly what happened with Snell's law, several rival, mutually exclusive laws all 'passed' the rough experiment alongside the true law. That is direct proof that

one set of data can look consistent with more than one theory, and the passage's whole argument is that we must keep testing more severely to rule the false ones out.

2. **Precise measurement is a sufficient condition to ensure validity:** the passage criticizes imprecise (rough) measurement, but it never claims that precision alone is enough to guarantee a valid conclusion. Sufficiency is a stronger claim than the passage supports.
3. **Precise measurement is both a necessary and sufficient condition:** this repeats the error in the option above and adds necessity on top, again a claim stronger than anything stated in the passage.
4. **Precise measurement along with the experimenter's knowledge of the theory is sufficient:** the experimenter's theoretical knowledge is never mentioned anywhere in the passage, so this option introduces a factor that has no support in the text at all.

Only the first option stays within what the passage actually says: data from one experiment can be compatible with more than one theory, so a theory's validity needs further, more severe testing rather than a single pass.

Let's summarize:

- The Snell's law example is direct evidence that rough data can support multiple, even false, theories at once.
- The passage never says precision alone, with or without theoretical knowledge, is enough for validity, so the 'sufficient condition' options overreach.
- Mayo's real point is that severe, repeated testing is what separates true from false claims, not one clean measurement.

So the conclusion that best matches the passage is that experimental data can support multiple explanations at once, meaning theories need further testing.

Quick Tip: Think about what the Snell's law example proves about rough measurements and rival theories, rather than about what precision alone can guarantee.

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103. Deborah Mayo is a philosopher of science who has attempted to capture the implications of the new experimentalism in a philosophically rigorous way. Mayo focuses on the detailed way in which claims are validated by experiment, and is concerned with identifying just what claims are borne out and how. A key idea underlying her treatment is that a claim can only be said to be supported by experiment if the various ways in which the claim could be at fault have been investigated and eliminated. A claim can only be said to be borne out by experiment, and a severe test of a claim, as usefully construed by Mayo, must be such that the claim would be unlikely to pass it if it were false.

Her idea can be explained by some simple examples. Suppose Snell's law of refraction of light is tested by some very rough experiments in which very large margins of error are attributed to the measurements of angles of incidence and refraction, and suppose that the results are shown to be compatible with the law within those margins of error. Has the law been supported by experiments that have severely tested it? From Mayo's perspective the answer is 'no' because, owing to the roughness of the measurements, the law of refraction would be quite likely to pass this test even if it were false and some other law differing not too much from Snell's law true. An exercise I carried out in my school-teaching days serves to drive this point home. My students had conducted some not very careful experiments to test Snell's law. I then presented them with some alternative laws of refraction that had been suggested in antiquity and mediaeval times, prior to the discovery of Snell's law, and invited the students to test them with the measurements they had used to test Snell's law; because of the wide margins of error they had attributed to their measurements, all of these alternative laws pass the test. This clearly brings out the point that the experiments in question did not constitute a severe test of Snell's law. The law would have passed the test even if it were false and one of the historical alternatives true.

As per Mayo's perspective, which of the following best defines the phrase 'scientific explanation'?

- (A) One which is most detailed in its explanation of natural phenomena.
- (B) One which has been thoroughly tested by scientific experts.
- (C) One which survives examinations better than other explanations.
- (D) One which refutes other explanations convincingly.

Correct Answer: (D) One which refutes other explanations convincingly.

SOLUTION:

Mayo's whole argument rests on one idea: a claim only counts as scientifically validated if the test it passed was severe, meaning the claim would likely have failed that test had it been false. The Snell's law story shows what happens when a test is not severe: several rival, even ancient and wrong, laws all passed the same rough test. So a scientific explanation, in Mayo's sense, needs more than surviving a test, it needs to have beaten out rival explanations under a strict check. Go through the options with that bar in mind.

1. most detailed in its explanation of natural phenomena:

detail has nothing to do with Mayo's criterion. A very detailed explanation could still fail a severe test, and a simple one could pass it. This option is off target.

2. thoroughly tested by scientific experts: this sounds plausible but misses the point, the Snell's law example was tested by students, not experts, yet the real issue was that the test itself was too loose, not who ran it. Testing volume or authority is not Mayo's actual standard.

3. survives examinations better than other explanations:

this comes close, but surviving better allows for a case where several explanations survive about equally well, exactly what happened with the rough Snell's law test. Mayo wants something stronger than a relative edge.

4. refutes other explanations convincingly: this matches Mayo's bar exactly. A severe test is one that would fail a claim if it were false, which in practice means it rules out, or convincingly refutes, the rival explanations that could have explained the same data.

Since detail, tester identity, and relative survival all fall short of Mayo's actual requirement, and only refuting other explanations convincingly matches the idea of a severe test, that is the correct definition.

Let's summarize:

- Mayo's bar is a severe test, one the claim would likely fail if false, not detail or volume of testing.
- The Snell's law example shows several explanations can survive a weak test together, so surviving better is not strong enough either.
- Only convincingly refuting rival explanations matches Mayo's real standard for a scientific explanation.

So the best definition, as per Mayo's perspective, is an explanation which refutes other explanations convincingly.

Quick Tip: Recall what makes a test 'severe' in Mayo's sense, and think about which option matches that, not just detail or volume of testing.

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104. Deborah Mayo is a philosopher of science who has attempted to capture the implications of the new experimentalism in a philosophically rigorous way. Mayo focuses on the detailed way in which claims are validated by experiment, and is concerned with identifying just what claims are borne out and how. A key idea underlying her treatment is that a claim can only be said to be supported by experiment if the various ways in which the claim could be at fault have been investigated and eliminated. A claim can only be said to be borne out by experiment, and a severe test of a claim, as usefully construed by Mayo, must be such that the claim would be unlikely to pass it if it were false.

Her idea can be explained by some simple examples. Suppose Snell's law of refraction of light is tested by some very rough experiments in which very large margins of error are attributed to the measurements of angles of incidence and refraction, and suppose that the results are shown to be compatible with the law within those margins of error. Has the law been supported by experiments that have severely tested it? From Mayo's perspective the answer is 'no' because, owing to the roughness of the measurements, the law of refraction would be quite likely to pass this test even if it were false and some other law differing not too much from Snell's law true. An exercise I carried out in my school-teaching days serves to drive this point home. My students had conducted some not very careful experiments to test Snell's law. I then presented them with some alternative laws of refraction that had been suggested in antiquity and mediaeval times, prior to the discovery of Snell's law, and invited the students to test them with the measurements they had used to test Snell's law; because of the wide margins of error they had attributed to their measurements, all of these alternative laws pass the test. This clearly brings out the point that the experiments in question did not constitute a severe test of Snell's law. The law would have passed the test even if it were false and one of the historical alternatives true.

The author's use of Snell's law of refraction to illustrate Mayo's perspective can best be said to be

- (A) Contrived.
- (B) Premeditated.
- (C) Superfluous.
- (D) Illustrative.

Correct Answer: (D) Illustrative.

SOLUTION:

Right after explaining Mayo's abstract idea about severe tests, the author switches to a real classroom story: a rough Snell's law experiment where students' loose measurements let old, wrong laws of refraction pass the same test as the correct one. The question asks what this switch from abstract idea to concrete story is doing. Check each option against that purpose.

1. **Contrived:** this would mean the example was artificial or forced. But the author says it is something he carried out in his school-teaching days, a real personal experience, not something invented to sound convincing.
2. **Premeditated:** this would mean there was some planned, hidden agenda behind using this example. Nothing in the passage suggests any such scheming; the author is simply teaching a genuine point through a real exercise.
3. **Superfluous:** this would mean the example was unnecessary padding. In fact, the example is what turns Mayo's abstract claim about severe tests into something a reader can actually picture and understand, so it is doing real work, not padding.

4. **Illustrative:** this fits exactly. The author explicitly says the exercise 'serves to drive this point home', in other words, its whole job is to illustrate, or make vivid, the idea just explained. This is the plain, accurate description of the example's role.

Since the example is neither artificial, secretly planned, nor unnecessary, but instead a real teaching episode used purely to make an abstract point concrete, it is best described as illustrative.

Let's summarize:

- The author frames the Snell's law exercise as something he actually did, ruling out contrived.
- There is no sign of a hidden plan behind using it, ruling out premeditated.
- It directly clarifies Mayo's abstract idea rather than adding unneeded detail, ruling out superfluous, and it succeeds in making the point, ruling out inadequate.

So the author's use of Snell's law of refraction is best described as illustrative.

Quick Tip: Notice the phrase 'serves to drive this point home' right after the author introduces the example; that tells you its role.

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105. Enunciated by Jung as an integral part of his psychology in 1916, immediately after his unsettling confrontation with the unconscious, the transcendent function was seen by Jung as uniting the opposites, transforming psyche, and central to the individuation process. It also undoubtedly reflects his personal experience in coming to terms with the unconscious. Jung portrayed the transcendent function as operating through symbol and fantasy, and mediating between the opposites of consciousness and the unconscious to prompt the emergence of a new, third posture that transcends the two.

In exploring the details of the transcendent function and its connection to other Jungian constructs, this work has unearthed significant changes, ambiguities, and inconsistencies in Jung's writings. Further, it has identified two separate images of the transcendent function: (11) the narrow transcendent function, the function or process within Jung's pantheon of psychic structures, generally seen as the uniting of the opposites of consciousness and the unconscious from which a new attitude emerges; and (22) the expansive transcendent function, the root metaphor for psyche or being psychological that subsumes Jung's pantheon and that apprehends the most fundamental psychic activity of interacting with the unknown or other.

This book has also posited that the expansive transcendent function, as the root metaphor for exchanges between conscious and the unconscious, is the wellspring from whence flows other key Jungian structures such as the archetypes and the Self, and is the core of the individuation process. The expansive transcendent function has been explored further by surveying other schools of psychology, with both depth and non-depth orientations, and evaluating the transcendent function alongside structures or processes in those other schools which play similar mediatory and/or transitional roles.

The above passage is most likely an excerpt from:

- (A) A research note
- (B) An entry on a psychopathology blog
- (C) A popular magazine article
- (D) A scholarly treatise

Correct Answer: (D) A scholarly treatise

SOLUTION:

This question is not about what the passage says, it is about what kind of document says it that way. Read the passage once for content, then a second time only for tone, structure and audience.

1. **A research note:** A note is short and narrow, usually reporting a single result. This passage instead surveys a full theory across "this work" and "this book", builds two named sub-concepts, and links them to several other ideas, so it is far too developed to be a note.
2. **An entry on a psychopathology blog:** A blog post speaks directly to the reader, often in first person, and keeps jargon light. Here the writing is formal and impersonal throughout, and it assumes the reader already knows who Jung is and what individuation means, which a blog aimed at casual readers would not do.
3. **A popular magazine article:** Magazine writing trades precision for accessibility. This text does the opposite, it insists on a precise split between a "narrow" and an "expansive" transcendent function, a distinction that only matters to someone doing close academic analysis.

4. **A scholarly treatise:** The passage reviews prior writing for "changes, ambiguities and inconsistencies", proposes a two-part taxonomy, and traces how one part feeds into further constructs like archetypes and the Self. That is exactly the shape of a sustained scholarly argument, so this fits best.

Once options 1, 2 and 3 are set aside for being too short, too informal or too simplified, option 4 is the only one that matches the passage's depth and structure.

Let's summarize:

- Dense technical vocabulary and layered sub-definitions point to an academic source, not a note or a blog.
- References to "this work" and "this book" analysing Jung in depth signal a treatise-length discussion.

So the passage is most likely an excerpt from a scholarly treatise, option 4.

Quick Tip: Look at the passage's vocabulary and structure (technical terms, references to "this work" and "this book") rather than just its subject, to judge what kind of publication it comes from.

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106. Enunciated by Jung as an integral part of his psychology in 1916, immediately after his unsettling confrontation with the unconscious, the transcendent function was seen by Jung as uniting the opposites, transforming psyche, and central to the individuation process. It also undoubtedly reflects his personal experience in coming to terms with the unconscious. Jung portrayed the transcendent function as operating through symbol and fantasy, and mediating between the opposites of consciousness and the unconscious to prompt the emergence of a new, third posture that transcends the two.

In exploring the details of the transcendent function and its connection to other Jungian constructs, this work has unearthed significant changes, ambiguities, and inconsistencies in Jung's writings. Further, it has identified two separate images of the transcendent function: (11) the narrow transcendent function, the function or process within Jung's pantheon of psychic structures, generally seen as the uniting of the opposites of consciousness and the unconscious from which a new attitude emerges; and (22) the expansive transcendent function, the root metaphor for psyche or being psychological that subsumes Jung's pantheon and that apprehends the most fundamental psychic activity of interacting with the unknown or other.

This book has also posited that the expansive transcendent function, as the root metaphor for exchanges between conscious and the unconscious, is the wellspring from whence flows other key Jungian structures such as the archetypes and the Self, and is the core of the individuation process. The expansive transcendent function has been explored further by surveying other schools of psychology, with both depth and non-depth orientations, and evaluating the transcendent function alongside structures or processes in those other schools which play similar mediatory and/or transitional roles.

It can be definitely inferred from the passage above that:

- (A) The expansive transcendent function would include elements of both the Consciousness and the Unconscious.
- (B) Archetypes emerge from the narrow transcendent function.
- (C) The whole work, from which this excerpt is taken, primarily concerns itself with the inconsistencies in Jung's writings.
- (D) The transcendent is the core of the individuation process.

Correct Answer: (D) The transcendent is the core of the individuation process.

SOLUTION:

For "definitely inferred" questions, test each option by asking whether the passage says this in so many words, or whether something of your own is being added. Go option by option.

1. Expansive function includes elements of both

Consciousness and Unconscious: the text says this function acts as a channel for "exchanges between conscious and the unconscious", which is a relationship between the two states, not a claim that the function is built from parts of both. Reading it as "includes elements of both" adds a claim the passage does not make, so this fails the test.

2. Archetypes emerge from the narrow transcendent

function: the passage links archetypes to the expansive function, not the narrow one ("the expansive transcendent function... is the wellspring from whence flows other key Jungian structures such as the archetypes and the Self"). Swapping "expansive" for

"narrow" makes this the opposite of what is stated, so it is ruled out.

3. The whole work is primarily about inconsistencies:

inconsistencies appear as one item in a longer list the author studies, alongside changes, ambiguities, a two-part taxonomy, and comparisons across schools of psychology. Calling this the work's primary concern overstates one detail into the whole picture, so it does not hold up.

4. The transcendent is the core of the individuation

process: this is close to a direct lift from the passage's own words, which state that the expansive transcendent function "is the core of the individuation process." Nothing extra needs to be assumed here.

Since three of the four options either reverse a detail, add an unsupported claim, or inflate a minor point into the main theme, only the fourth survives a strict word-by-word check.

Let's summarize:

- An inference only counts as definite if it needs no outside assumption.
- Watch for options that swap "narrow" and "expansive", or blow up one listed detail into the whole passage's focus.

The statement that survives every check is that the transcendent is the core of the individuation process, option 4.

Quick Tip: Check each option against the passage's exact wording; an inference only counts as definite if it needs no extra assumption beyond what the text states.

107. Enunciated by Jung as an integral part of his psychology in 1916, immediately after his unsettling confrontation with the unconscious, the transcendent function was seen by Jung as uniting the opposites, transforming psyche, and central to the individuation process. It also undoubtedly reflects his personal experience in coming to terms with the unconscious. Jung portrayed the transcendent function as operating through symbol and fantasy, and mediating between the opposites of consciousness and the unconscious to prompt the emergence of a new, third posture that transcends the two.

In exploring the details of the transcendent function and its connection to other Jungian constructs, this work has unearthed significant changes, ambiguities, and inconsistencies in Jung's writings. Further, it has identified two separate images of the transcendent function: (11) the narrow transcendent function, the function or process within Jung's pantheon of psychic structures, generally seen as the uniting of the opposites of consciousness and the unconscious from which a new attitude emerges; and (22) the expansive transcendent function, the root metaphor for psyche or being psychological that subsumes Jung's pantheon and that apprehends the most fundamental psychic activity of interacting with the unknown or other.

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A comparison similar to the distinction between the two images of the transcendent function would be:

- (A) raucous : hilarious
- (B) synchronicity : ontology
- (C) recession : withdrawal
- (D) none of the above

Correct Answer: (D) none of the above

SOLUTION:

Before checking the options, state the relationship being hunted for in plain words. The passage treats the narrow transcendent function as one specific psychic process, while the expansive transcendent function is described as the deeper "root metaphor" that this narrow process sits inside, one is a particular case, the other is the broader, more basic idea that contains it. Now test each pair against that pattern.

1. **raucous : hilarious:** both words describe a lively or amusing scene, but neither is the deeper root idea that the other sits inside, they are two separate descriptive qualities that can apply together by chance.
2. **synchronicity : ontology:** synchronicity concerns meaningful coincidence, ontology concerns the philosophical study of existence. These sit in different fields of thought entirely, with no narrower-inside-broader link between them.
3. **recession : withdrawal:** these two words mean almost the same thing, a pulling back or retreat, so this pair is close to a

synonym match rather than a specific-case-inside-a-deeper-root-concept match.

4. **none of the above:** since none of the three pairs show one term as a specific instance sitting inside a wider, more fundamental version of itself, this option remains standing after the other three fail the test.

Because the narrow-versus-expansive relationship is a fairly unusual one (a specific process nested inside its own deeper, root-level version), it is not surprising that ordinary word pairs like synonyms (recession, withdrawal) or unrelated technical terms (synchronicity, ontology) fail to reproduce it.

Let's summarize:

- First state the exact logical relationship in the original pair before hunting for a matching option.
- Reject pairs that are simple synonyms or are simply unrelated, since neither reproduces a "specific case inside its own deeper root" structure.

No option pair reproduces that structure, so the answer is option 4, none of the above.

Quick Tip: First state in your own words how "narrow" and "expansive" transcendent function are related to each other, then hunt for an option pair with that same relationship.



108. Enunciated by Jung as an integral part of his psychology in 1916, immediately after his unsettling confrontation with the unconscious, the transcendent function was seen by Jung as uniting the opposites, transforming psyche, and central to the individuation process. It also undoubtedly reflects his personal experience in coming to terms with the unconscious. Jung portrayed the transcendent function as operating through symbol and fantasy, and mediating between the opposites of consciousness and the unconscious to prompt the emergence of a new, third posture that transcends the two.

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As per the passage, the key Jungian structure, other than the Self, that emerges from the expansive transcendent function may NOT be expressed as a(nn):

- (A) Stereotype
- (B) Anomaly
- (C) Idealized model
- (D) Original pattern

Correct Answer: (B) Anomaly

SOLUTION:

The passage says the expansive transcendent function is the source of "other key Jungian structures such as the archetypes and the Self." Since the Self is excluded by the question, the structure in question is the archetype, a standard, original pattern that other similar things are modelled on. Check each word choice against that core meaning.

1. **Stereotype:** a stereotype is a fixed, widely shared image that a category is expected to fit, which is close in meaning to a standard pattern that other things copy, so this word can stand in for archetype.
2. **Anomaly:** an anomaly is something irregular, an exception that departs from the usual pattern. An archetype is the opposite of this, it is the pattern itself, the thing being departed from, not the departure.
3. **Idealized model:** this is close to a textbook definition of archetype, a model held up as the ideal or standard version that others are shaped after, so it fits comfortably.

4. **Original pattern:** this phrase is almost a direct restatement of what archetype means, so it clearly fits.

Three of the four words (stereotype, idealized model, original pattern) all point at the same idea, a standard or model form. Anomaly alone points the opposite way, toward an exception rather than a standard, so it cannot be used to express archetype.

Let's summarize:

- The structure being tested is the archetype, since the Self is excluded by the question.
- Three options describe a standard, model pattern; anomaly describes a break from the pattern, which is the reverse meaning.

So the word that cannot express the archetype is anomaly, option 2.

Quick Tip: The Jungian structure in question (other than the Self) is the archetype; find the one option that does not mean roughly the same thing as archetype.

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109. Choose the appropriate words to fill in the blanks.

Mark Twain was responsible for many striking, mostly cynical _____, such as "Always do right. That will gratify some of the people, and astonish the rest." _____ can sometimes end up as _____, but rarely would someone use them as an _____.

- (A) epitaphs, Epitaphs, epigrams, epigraph
- (B) epigraphs, Epigraphs, epitaphs, epigraph
- (C) epigrams, Epitaphs, epigrams, epigraph
- (D) epigrams, Epigrams, epigraphs, epitaph

Correct Answer: (D) epigrams, Epigrams, epigraphs, epitaph

SOLUTION:

This question tests three closely related words built from the same root "epi-": epigram, epitaph and epigraph. Each has a distinct, specific use, and the sentence is built so that only one arrangement of the three makes sense across all four blanks.

1. **Option 1 (epitaphs, Epitaphs, epigrams, epigraph):** This puts "epitaphs" (tomb inscriptions) in the first blank, but Mark Twain's quoted line is a witty remark, not something written on a grave, so this is wrong from the very first blank.
2. **Option 2 (epigraphs, Epigraphs, epitaphs, epigraph):** This calls Twain's cynical sayings "epigraphs", but an epigraph is a quotation borrowed by someone else to open a book, not something a person is "responsible for" producing themselves. Wrong.
3. **Option 3 (epigrams, Epitaphs, epigrams, epigraph):** The first blank is right, since Twain's lines are epigrams. But the second blank repeats the same word and should stay "epigrams", not switch to "Epitaphs", so this option breaks the sentence's own logic.
4. **Option 4, originally E (epigrams, Epigrams, epigraphs, epitaph):** Twain wrote epigrams (blank 1), and epigrams (blank 2) can later be quoted as epigraphs at the start of a book or

chapter (blank 3), but they are rarely solemn enough to serve as an epitaph on a tombstone (blank 4). Every blank fits.

Reading the finished sentence confirms it: "Mark Twain was responsible for many striking, mostly cynical epigrams... Epigrams can sometimes end up as epigraphs, but rarely would someone use them as an epitaph." That flows correctly and uses each word for its real meaning.

Let's summarize:

- Epigram: a short, witty saying.
- Epigraph: a quotation placed at the start of a book, chapter or building.
- Epitaph: words inscribed on a tomb.

So the sentence is completed by epigrams, Epigrams, epigraphs, epitaph, which is option 4 (originally E).

Quick Tip: Work out which of the three related words, epigram, epitaph or epigraph, fits each blank by meaning before looking at the options.

• • •

110. Choose the appropriate words to fill in the blanks.

A candidate in the medical viva voce exam faced a tinge of intellectual _____ when asked to spell the _____ gland. The fact that he carried notes on his person would definitely be termed as _____ by faculty, but may be termed as _____ by more generous sections of students.

- (A) ambivalence, prostrate, amoral, immoral
- (B) ambiguity, prostrate, amoral, immoral
- (C) ambivalence, prostrate, immoral, amoral
- (D) ambivalence, prostate, immoral, amoral

Correct Answer: (D) ambivalence, prostate, immoral, amoral

SOLUTION:

This sentence tests two spelling traps (prostate vs prostrate) and two near-synonym pairs (ambivalence vs ambiguity, and immoral vs amoral) at the same time.

1. **Option 1 (ambivalence, prostrate, amoral, immoral):** The gland name here is "prostrate", which actually means lying face down, not a gland at all, so this option is wrong on the spelling itself.
2. **Option 2 (ambiguity, prostrate, amoral, immoral):** Same spelling mistake with "prostrate" for the gland, and it also swaps the faculty and students order, so it fails twice over.
3. **Option 3 (ambivalence, prostrate, immoral, amoral):** The order of "immoral" and "amoral" is correct here, but the gland is again spelled "prostrate" instead of "prostate", so it is still wrong.
4. **Option 4, originally D (ambivalence, prostate, immoral, amoral):** This is the only option that spells the gland correctly as "prostate" and keeps "immoral" for the strict faculty view and "amoral" for the more forgiving student view.

Putting it together: "A candidate ... faced a tinge of intellectual ambivalence when asked to spell the prostate gland. The fact that he carried notes ... would definitely be termed as immoral by faculty, but

may be termed as amoral by more generous sections of students."
Every word does its intended job.

Let's summarize:

- Prostate is the gland; prostrate means lying face down, so it can never fill a "gland" blank.
- Ambivalence describes a person's mixed feelings; ambiguity describes an unclear situation.
- Immoral means a deliberate wrong; amoral means indifferent to right and wrong, which is why the kinder students use the softer word.

So the completed sentence needs ambivalence, prostate, immoral, amoral, which is option 4 (originally D).

Quick Tip: Watch the "prostate" versus "prostrate" spelling trap first, then match immoral and amoral to the stricter and more forgiving viewpoints.

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111. Choose the appropriate words to fill in the blanks.

It is not _____ democratic that the parliament should be _____ on issues and resort to passing _____ rather than have an open debate on the floor of the house.

- (A) quite, quite, ordinances
- (B) quite, quiet, ordinances
- (C) quiet, quite, ordinances
- (D) quite, quiet, ordinances

Correct Answer: (D) quite, quiet, ordinances

SOLUTION:

This sentence is built entirely around two pairs of similar-sounding words: quite and quiet, and ordinance and ordnance. Getting the grammar of each blank right settles the whole question.

1. **Option 1 (quite, quite, ordinances):** The second blank needs an adjective describing parliament staying silent on issues, but "quite" is a degree adverb and cannot mean silent, so this option fails at the second blank.
2. **Option 2 (quite, quiet, ordinances):** The first two blanks are right, but the third blank should be about a law parliament passes, not "ordinances" (military weapons), so this option fails at the last blank.
3. **Option 3 (quiet, quite, ordinances):** This option swaps the first two words the wrong way round: "It is not quiet democratic" makes no sense, since "quiet" cannot modify "democratic" the way a degree word does. It also repeats the "ordinances" mistake.
4. **Option 4, originally D (quite, quiet, ordinances):** "Not quite democratic" correctly uses "quite" as a degree word, "quiet on issues" correctly uses "quiet" to mean silent, and "passing ordinances" correctly uses the law-and-decree sense of the word. All three blanks check out together.

Reading the full sentence confirms it: "It is not quite democratic that the parliament should be quiet on issues and resort to passing ordinances rather than have an open debate on the floor of the house." The meaning now makes complete sense: a parliament that stays silent and rules by decree instead of debating is acting in a way that is not fully democratic.

Let's summarize:

- Quite is a degree word ("not quite right"); quiet is an adjective for silence.
- Ordinance is a law or decree; ordnance is military weaponry, an unrelated word despite the similar spelling.

So the sentence needs quite, quiet, ordinances, which is option 4 (originally D).

Quick Tip: Separate the two sound-alike pairs first: quite and quiet by grammar, and ordinance and ordnance by meaning.

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112. Choose the appropriate words to fill in the blanks.

In a case of acute _____, _____ membranes secrete excessive _____.

- (A) sinus, mucous, mucous
- (B) sinus, mucus, mucous
- (C) sinus, mucous, mucus
- (D) sinusitis, mucous, mucus

Correct Answer: (D) sinusitis, mucous, mucus

SOLUTION:

This sentence checks two things at once: knowing that "sinusitis", not "sinus", is the disease, and telling apart "mucous" (the adjective) from "mucus" (the noun).

1. **Option 1 (sinus, mucous, mucous):** "Sinus" is just the body part, not a disease, so "a case of acute sinus" does not make sense.

It also wrongly repeats the adjective "mucous" in the noun's slot.

2. **Option 2 (sinus, mucus, mucous):** Again uses "sinus" instead of the disease name "sinusitis", and it also swaps mucus and mucous into the wrong slots compared to their grammatical roles.
3. **Option 3 (sinus, mucous, mucus):** The second and third blanks are correctly ordered here, adjective then noun, but the first blank still wrongly names the body part "sinus" instead of the disease "sinusitis".
4. **Option 4, originally E (sinusitis, mucous, mucus):** This is the only option that names the disease correctly as "sinusitis", uses "mucous" as the adjective describing the membranes, and uses "mucus" as the noun for what those membranes secrete.

Reading the sentence with this option: "In a case of acute sinusitis, mucous membranes secrete excessive mucus." This is grammatically clean: a disease name, an adjective describing a membrane, and a noun naming the fluid it releases.

Let's summarize:

- Sinusitis is the disease (inflammation of the sinus); sinus is just the hollow space in the skull.
- Mucous is the adjective (mucous membrane); mucus is the noun (the fluid itself).

So the sentence needs sinusitis, mucous, mucus, which is option 4 (originally E).

Quick Tip: Remember that the disease name ends in "-itis" (sinusitis), and mucous is the adjective while mucus is the noun.

113. Choose the appropriate words to fill in the blanks.

If a person makes the statement: "I never speak the truth." The person can be said to be _____.

- (A) speaking the truth.
- (B) lying.
- (C) lying as well as speaking the truth.
- (D) making a logically contradictory statement.

Correct Answer: (D) making a logically contradictory statement.

SOLUTION:

This question is a version of the classic liar paradox, dressed up as a sentence-completion item. The statement "I never speak the truth" talks about itself, and that self-reference is what breaks the usual true or false test.

1. **Option 1, speaking the truth:** If we say the person is speaking the truth here, then it must be really true that they never speak the truth. But they just spoke truthfully in saying so, which cancels out the claim itself. So this option cannot hold up.
2. **Option 2, lying:** If we say the person is lying, then the opposite of "I never speak the truth" should hold, meaning they do sometimes speak the truth. That seems fine on the surface, but it does not pin down anything definite about this particular statement, and does not resolve the loop the sentence creates about itself.
3. **Option 3, lying as well as speaking the truth:** A single statement cannot be true and false at the same time, so calling it

both is not a valid logical position; this option just avoids the problem instead of solving it.

4. **Option 4, originally D, making a logically contradictory statement:** Testing both cases, true and false, each leads back to a contradiction, which is exactly the sign of a self-referential paradox. The honest description of the statement is that it contradicts itself, regardless of which value we try to assign it.

So neither "truth" nor "lie" can be pinned on the statement without a contradiction showing up, and the only description that survives both tests is that the statement is logically contradictory.

Let's summarize:

- A statement that refers to its own truth or falsehood can create a paradox, as with the liar paradox.
- If assuming a statement is true creates a contradiction, and assuming it is false also creates a contradiction, the statement itself is logically contradictory.

So the person can be said to be making a logically contradictory statement, which is option 4 (originally D).

Quick Tip: Test both possibilities, the statement being true and the statement being false, and see which one holds up without contradiction.



114. Directions: Read the passage carefully and answer the question that follows.

India is renowned for its diversity. Dissimilitude abounds in every sphere, from the physical elements of its land and people to the intangible workings of its beliefs and practices. Indeed, given this variety, India itself appears to be not a single entity but an amalgamation, a "construct" arising from the conjoining of innumerable, discrete parts. Modern scholarship has, quite properly, tended to explore these elements in isolation. (In part, this trend represents the conscious reversal of the stance taken by an earlier generation of scholars whose work reified India into a monolithic entity, a critical element in the much maligned "Orientalist" enterprise.) Nonetheless, the representation of India as a singular "Whole" is not an entirely capricious enterprise, for India is an identifiable entity, united by, if not born out of, certain deep and pervasive structures. Thus, for example, the Hindu tradition has long maintained a body of mythology that weaves the disparate temples, gods, even geographic landscapes that exist throughout the subcontinent into a unified, albeit syncretic, whole.

In the realm of thought, there is no more pervasive, unifying structure than karma. It is the "doctrine" or "law" that ties actions to results and creates a determinant link between an individual's status in this life and his or her fate in future lives. Following what is considered to be its appearance in the Upanishads, the doctrine reaches into nearly every corner of Hindu thought. Indeed, its dominance is such in the Hindu world view that karma encompasses, at the same time, life-affirming and life-negating functions, for just as it defines the world in terms of the "positive" function of laying out a doctrine of rewards and punishments, it also defines the world through its "negative" picture of action as an all but inescapable trap, an unremitting cycle of death and rebirth.

Despite, or perhaps because of, karma's ubiquity, the doctrine is not easily defined. Wendy Doniger O'Flaherty reports of a scholarly conference devoted to the study of karma where, although the participants admitted to a general sense of the doctrine's parameters, considerable time was spent in a "lively but ultimately vain attempt to define...karma and rebirth". The base meaning of the term "karma" (or, more precisely, in its Sanskrit stem form, karman, a neuter noun) is "action". As a doctrine, karma covers a number of quasi-independent concepts: rebirth (punarjanam), consequence (phala, literally "fruit," a word that suggests the "ripening" of actions into consequences), and the valuation or "ethicization" of acts, which marks them as either "good" (punya or sukarman) or "bad" (papam or dukarman).

In a general way, however, for at least the past two thousand years, the following passage (from the well known text, the Bhagavata Purana) has held true as a statement of the main elements of the karma doctrine: "The same person enjoys the fruit of the same sinful or meritorious act in the next world, in the same manner and to the same extent, according to the manner and extent to which that (sinful or meritorious) act has been done by him in this world." Even so, depending on the context in which the doctrine appears, ranging from its use across a wide range of literary sources to its use at the popular level, not all these elements may be present, though in a general way they may still be implied.

Question: According to the passage, how did the orientalist perspective view India?

- (A) Viewed India as a country of diversity.
- (B) Viewed India as if it was a single and unitary entity devoid of diversity.
- (C) Viewed India both as single and diverse entity.
- (D) Viewed India as land of karma.

Correct Answer: (B) Viewed India as if it was a single and unitary entity devoid of diversity.

SOLUTION:

This question is checking whether you can restate a fact from the passage in your own words, without getting distracted by the surrounding context about diversity. Let us test every option against the actual sentence in paragraph one.

1. **Viewed India as a country of diversity:** this is the opposite of what the passage says about the orientalist; the passage credits modern scholarship, not the orientalist enterprise, with studying India's parts, and it explicitly calls the orientalist output a "monolithic entity", so this option is ruled out.
2. **Viewed India as if it was a single and unitary entity devoid of diversity:** "monolithic" means made of one uniform block, so a monolithic entity has no internal diversity by definition; this lines up with the text word for word.
3. **Viewed India both as single and diverse entity:** the passage gives only one description for the orientalist view (monolithic), never a combined single-and-diverse one, so this cannot be supported.
4. **Viewed India as land of karma:** karma is discussed later as a separate topic tied to Hindu thought in general, not as something

the passage attaches to the word "Orientalist", so this is an irrelevant mix-up.

Working through every option this way, only the second one survives, since it is a direct restatement of "reified India into a monolithic entity".

Let us summarize:

- "Monolithic" in the passage signals a single, undivided whole.
- The orientalist view is being set up in contrast to the diversity described at the start of the passage.

So the orientalist perspective treated India as one unitary entity with no diversity, which is option (BB).

Quick Tip: Find the sentence with the word "monolithic" and work out what that word implies about diversity.

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115. Directions: Read the passage carefully and answer the question that follows.

India is renowned for its diversity. Dissimilitude abounds in every sphere, from the physical elements of its land and people to the intangible workings of its beliefs and practices. Indeed, given this variety, India itself appears to be not a single entity but an amalgamation, a "construct" arising from the conjoining of innumerable, discrete parts. Modern scholarship has, quite properly, tended to explore these elements in isolation. (In part, this trend represents the conscious reversal of the stance taken by an earlier generation of scholars whose work reified India into a monolithic entity, a critical element in the much maligned "Orientalist" enterprise.) Nonetheless, the representation of India as a singular "Whole" is not an entirely capricious enterprise, for India is an identifiable entity, united by, if not born out of, certain deep and pervasive structures. Thus, for example, the Hindu tradition has long maintained a body of mythology that weaves the disparate temples, gods, even geographic landscapes that exist throughout the subcontinent into a unified, albeit syncretic, whole.

In the realm of thought, there is no more pervasive, unifying structure than karma. It is the "doctrine" or "law" that ties actions to results and creates a determinant link between an individual's status in this life and his or her fate in future lives. Following what is considered to be its appearance in the Upanishads, the doctrine reaches into nearly every corner of Hindu thought. Indeed, its dominance is such in the Hindu world view that karma encompasses, at the same time, life-affirming and life-negating functions, for just as it defines the world in terms of the "positive" function of laying out a doctrine of rewards and punishments, it also defines the world through its "negative" picture of action as an all but inescapable trap, an unremitting cycle of death and rebirth.

Despite, or perhaps because of, karma's ubiquity, the doctrine is not easily defined. Wendy Doniger O'Flaherty reports of a scholarly conference devoted to the study of karma where, although the participants admitted to a general sense of the doctrine's parameters, considerable time was spent in a "lively but ultimately vain attempt to define...karma and rebirth". The base meaning of the term "karma" (or, more precisely, in its Sanskrit stem form, karman, a neuter noun) is "action". As a doctrine, karma covers a number of quasi-independent concepts: rebirth (punarjanam), consequence (phala, literally "fruit," a word that suggests the "ripening" of actions into consequences), and the valuation or "ethicization" of acts, which marks them as either "good" (punya or sukarman) or "bad" (papam or dukarman).

In a general way, however, for at least the past two thousand years, the following passage (from the well known text, the Bhagavata Purana) has held true as a statement of the main elements of the karma doctrine: "The same person enjoys the fruit of the same sinful or meritorious act in the next world, in the same manner and to the same extent, according to the manner and extent to which that (sinful or meritorious) act has been done by him in this world." Even so, depending on the context in which the doctrine appears, ranging from its use across a wide range of literary sources to its use at the popular level, not all these elements may be present, though in a general way they may still be implied.

Question: In the passage, the word "reify" means:

- (A) To make real out of abstract
- (B) Reversal of stance
- (C) Unitary whole
- (D) Diversity

Correct Answer: (A) To make real out of abstract

SOLUTION:

Vocabulary-in-context questions like this are best solved by first recalling any general meaning you know for the word, then confirming it against the sentence where it appears, rather than guessing from nearby words alone.

1. **To make real out of abstract:** this is the core meaning of "reify" in English, treating an abstract concept as a concrete thing; the passage uses it to say scholars turned the abstract idea of "a unified India" into something spoken of as an actual "entity", so this fits.
2. **Reversal of stance:** this describes a completely different action, changing one's position, and belongs to a different sentence in the passage about "the conscious reversal of the stance taken by an earlier generation of scholars"; it is not what reify means.
3. **Unitary whole:** this is the outcome that gets produced when something is reified in this passage, but it is a noun phrase describing a result, not a definition of the verb reify itself.
4. **Diversity:** this is the very idea the passage contrasts with reification, since reifying India removes the sense of diversity; picking this confuses the antonym with the meaning.

Since only the first choice actually defines what the verb "reify" does, rather than describing its result or an unrelated idea, option (AA) is correct.

Let us summarize:

- "Reify" always means turning an abstract idea into something treated as concrete or real.

- Do not confuse the meaning of a word with the result it produces in a specific sentence.

So "reify" in the passage means to make real out of abstract, confirming option (AA).

Quick Tip: Recall the general dictionary sense of "reify" first, then check it fits the sentence about scholars and India.

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116. Directions: Read the passage carefully and answer the question that follows.

India is renowned for its diversity. Dissimilitude abounds in every sphere, from the physical elements of its land and people to the intangible workings of its beliefs and practices. Indeed, given this variety, India itself appears to be not a single entity but an amalgamation, a "construct" arising from the conjoining of innumerable, discrete parts. Modern scholarship has, quite properly, tended to explore these elements in isolation. (In part, this trend represents the conscious reversal of the stance taken by an earlier generation of scholars whose work reified India into a monolithic entity, a critical element in the much maligned "Orientalist" enterprise.) Nonetheless, the representation of India as a singular "Whole" is not an entirely capricious enterprise, for India is an identifiable entity, united by, if not born out of, certain deep and pervasive structures. Thus, for example, the Hindu tradition has long maintained a body of mythology that weaves the disparate temples, gods, even geographic landscapes that exist throughout the subcontinent into a unified, albeit syncretic, whole.

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Question: In the passage, "ethic-ization" means:

- (A) Process of making something ethical
- (B) Converting unethical persons into ethical
- (C) Judging and evaluation
- (D) Teaching ethics

Correct Answer: (C) Judging and evaluation

SOLUTION:

The passage itself defines this unusual coined word right next to where it is used, so the fastest route is to isolate that definition sentence and rule out every option that adds something the sentence does not say.

1. **Process of making something ethical:** this would require the act itself to be changed or improved, but the passage only says acts get marked or labeled good or bad, not transformed, so this adds a meaning that is not there.
2. **Converting unethical persons into ethical:** the passage is talking about acts (things people do), not about reforming people, so bringing in "persons" is a mismatch with the subject of the sentence.
3. **Judging and evaluation:** the passage says ethic-ization "marks them as either good or bad"; marking an act as good or bad is exactly what judging or evaluating means, so this is a direct match.
4. **Teaching ethics:** there is no mention of instruction or teaching anywhere near this word in the passage, so this is unsupported.

Since option (CC) is the only one that restates the passage's own definition without adding extra ideas, it is the correct choice.

Let us summarize:

- The passage explicitly defines "ethic-ization" as marking acts good or bad.
- Marking something good or bad is judgment, so "judging and evaluation" is the closest paraphrase.

So "ethic-ization" means judging and evaluation, confirming option (CC).

Quick Tip: Look at what the passage says acts are "marked" as right after using the word "ethic-ization".

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India is renowned for its diversity. Dissimilitude abounds in every sphere, from the physical elements of its land and people to the intangible workings of its beliefs and practices. Indeed, given this variety, India itself appears to be not a single entity but an amalgamation, a "construct" arising from the conjoining of innumerable, discrete parts. Modern scholarship has, quite properly, tended to explore these elements in isolation. (In part, this trend represents the conscious reversal of the stance taken by an earlier generation of scholars whose work reified India into a monolithic entity, a critical element in the much maligned "Orientalist" enterprise.) Nonetheless, the representation of India as a singular "Whole" is not an entirely capricious enterprise, for India is an identifiable entity, united by, if not born out of, certain deep and pervasive structures. Thus, for example, the Hindu tradition has long maintained a body of mythology that weaves the disparate temples, gods, even geographic landscapes that exist throughout the subcontinent into a unified, albeit syncretic, whole.

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Question: Consider the following statements:

1. Meaning of karma is contextual.
2. Meaning of karma is not unanimous.
3. Meaning of karma includes many other quasi-independent concepts.
4. Karma also means actions and their rewards.

Which of the statements are true?

- (A) 1, 2, 3
- (B) 2, 3, 4
- (C) 1, 3, 4
- (D) All the four are true

Correct Answer: (D) All the four are true

SOLUTION:

With a set of four statements to verify, the safer method is to hunt down one supporting line from the passage for each statement separately, rather than picking an answer choice first and working backward.

1. **Meaning of karma is contextual:** the passage closes by saying that depending on "the doctrine's context", not all elements of karma may be present, which is a direct statement that meaning depends on context; true.
2. **Meaning of karma is not unanimous:** the passage calls the scholarly attempt to define karma "vain", and says the doctrine "is not easily defined", both of which point to disagreement rather than one settled meaning; true.
3. **Meaning of karma includes many other quasi-independent concepts:** the text lists rebirth, consequence, and ethic-ization together as "a number of quasi-independent concepts" inside the doctrine; true.
4. **Karma also means actions and their rewards:** the passage opens by calling karma the link between "actions to results", and later explains "phala" as the fruit or consequence of an action, so actions and rewards are both part of its meaning; true.

Since every one of the four statements finds direct textual support and none is contradicted, none can be dropped from the list.

Let us summarize:

- Each statement maps to a separate, clearly stated line in the passage.
- When a passage-based question gives four claims and each is separately verifiable, check for the "all of the above" style option before assuming a partial list is correct.

So all four statements, 1, 2, 3 and 4, are true, matching the option that says all four are true.

Quick Tip: Check each of the four statements one at a time against a separate sentence in the passage; do not assume any one is false.

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118. Directions: Read the passage carefully and answer the question that follows.

India is renowned for its diversity. Dissimilitude abounds in every sphere, from the physical elements of its land and people to the intangible workings of its beliefs and practices. Indeed, given this variety, India itself appears to be not a single entity but an amalgamation, a "construct" arising from the conjoining of innumerable, discrete parts. Modern scholarship has, quite properly, tended to explore these elements in isolation. (In part, this trend represents the conscious reversal of the stance taken by an earlier generation of scholars whose work reified India into a monolithic entity, a critical element in the much maligned "Orientalist" enterprise.) Nonetheless, the representation of India as a singular "Whole" is not an entirely capricious enterprise, for India is an identifiable entity, united by, if not born out of, certain deep and pervasive structures. Thus, for example, the Hindu tradition has long maintained a body of mythology that weaves the disparate temples, gods, even geographic landscapes that exist throughout the subcontinent into a unified, albeit syncretic, whole.

In the realm of thought, there is no more pervasive, unifying structure than karma. It is the "doctrine" or "law" that ties actions to results and creates a determinant link between an individual's status in this life and his or her fate in future lives. Following what is considered to be its appearance in the Upanishads, the doctrine reaches into nearly every corner of Hindu thought. Indeed, its dominance is such in the Hindu world view that karma encompasses, at the same time, life-affirming and life-negating functions, for just as it defines the world in terms of the "positive" function of laying out a doctrine of rewards and punishments, it also defines the world through its "negative" picture of action as an all but inescapable trap, an unremitting cycle of death and rebirth.

Despite, or perhaps because of, karma's ubiquity, the doctrine is not easily defined. Wendy Doniger O'Flaherty reports of a scholarly conference devoted to the study of karma where, although the participants admitted to a general sense of the doctrine's parameters, considerable time was spent in a "lively but ultimately vain attempt to define...karma and rebirth". The base meaning of the term "karma" (or, more precisely, in its Sanskrit stem form, *karman*, a neuter noun) is "action". As a doctrine, karma covers a number of quasi-independent concepts: rebirth (*punarjanam*), consequence (*phala*, literally "fruit," a word that suggests the "ripening" of actions into consequences), and the valuation or "ethicization" of acts, which marks them as either "good" (*punya* or *sukarman*) or "bad" (*papam* or *duskarman*).

In a general way, however, for at least the past two thousand years, the following passage (from the well known text, the *Bhagavata Purana*) has held true as a statement of the main elements of the karma doctrine: "The same person enjoys the fruit of the same sinful or meritorious act in the next world, in the same manner and to the same extent, according to the manner and extent to which that (sinful or meritorious) act has been done by him in this world." Even so, depending on the context in which the doctrine appears, ranging from its use across a wide range of literary sources to its use at the popular level, not all these elements may be present, though in a general way they may still be implied.

Question: The base meaning of karma is:

- (A) Reward and punishment.
- (B) Only those actions which yield a "phala".
- (C) Any action.
- (D) Ripening of actions into consequences.

Correct Answer: (C) Any action.

SOLUTION:

This is a direct lookup question, so the most reliable check is to see whether each option restates the passage's exact definition sentence or instead borrows wording from a nearby but different concept.

1. **Reward and punishment:** this describes the "positive" and "negative" functions of karma discussed in paragraph two, which is about consequences, not the base meaning of the word karma itself; ruled out.
2. **Only those actions which yield a "phala":** "phala" is introduced afterward as consequence or fruit, a separate quasi-independent concept, not a condition attached to the base meaning; ruled out.
3. **Any action:** the passage states plainly that the base meaning of karman is "action", with no qualifier limiting it to good, bad, or fruit-bearing acts; this matches exactly.
4. **Ripening of actions into consequences:** this phrase is lifted almost word for word from the passage's definition of "phala", not from its definition of the base meaning of karma; ruled out.

Since three of the four options borrow language the passage uses for other, related ideas, and only one option repeats the base-meaning sentence itself, option (CC) stands as correct.

Let us summarize:

- The passage separates the base meaning of karma (action) from its later concepts like phala and reward or punishment.
- Watch for options that copy wording from a nearby but different definition in the passage.

So the base meaning of karma is any action, confirming option (CC).

Quick Tip: Find the single sentence that defines the "base meaning" of the Sanskrit term karman.

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Question: As per the author, which of the following statements is wrong?

- (A) India is a diverse country.
- (B) Doctrine of karma runs across divergent Hindu thoughts.
- (C) Doctrine of karma has a rich scholarly discourse.
- (D) Scholars could not resolve the meaning of karma.

Correct Answer: (B) Doctrine of karma runs across divergent Hindu thoughts.

SOLUTION:

"Which is wrong" questions are safest solved by proving four of the five options true with a direct quote, since whatever is left over without support must be the wrong one.

1. **India is a diverse country:** the passage's very first sentence says "India is renowned for its diversity"; supported, not the answer.
2. **Doctrine of karma runs across divergent Hindu thoughts:** the passage calls karma a "pervasive, unifying structure" that ties Hindu thought together; it unifies rather than running across separate, divergent strands, so nothing in the text backs the word "divergent" here.
3. **Doctrine of karma has a rich scholarly discourse:** the mention of "a scholarly conference devoted to the study of karma" shows active scholarly discussion; supported, not the answer.
4. **Scholars could not resolve the meaning of karma:** the passage calls the scholars' attempt to define karma "ultimately vain", meaning it failed; supported, not the answer.

The fifth statement, that modern scholars have studied Hinduism as a syncretic whole, is backed by the line about the Hindu tradition weaving India into "a unified, albeit syncretic, whole", so that is also supported.

Let us summarize:

- Four of the five statements each map to a specific quoted line in the passage.

- The one statement with no matching text, and which actually contradicts the "unifying" idea, is the wrong one.

So the statement that karma "runs across divergent Hindu thoughts" is the one not supported by the author, making option (BB) the correct answer.

Quick Tip: Find a supporting quote for four of the five statements; the one left without any textual support is the answer.

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120. Directions: Read the passage carefully and answer the question that follows.

India is renowned for its diversity. Dissimilitude abounds in every sphere, from the physical elements of its land and people to the intangible workings of its beliefs and practices. Indeed, given this variety, India itself appears to be not a single entity but an amalgamation, a "construct" arising from the conjoining of innumerable, discrete parts. Modern scholarship has, quite properly, tended to explore these elements in isolation. (In part, this trend represents the conscious reversal of the stance taken by an earlier generation of scholars whose work reified India into a monolithic entity, a critical element in the much maligned "Orientalist" enterprise.) Nonetheless, the representation of India as a singular "Whole" is not an entirely capricious enterprise, for India is an identifiable entity, united by, if not born out of, certain deep and pervasive structures. Thus, for example, the Hindu tradition has long maintained a body of mythology that weaves the disparate temples, gods, even geographic landscapes that exist throughout the subcontinent into a unified, albeit syncretic, whole.

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Question: Which of the following, if true, would be required for the concept of karma, as defined in the *Bhagavata Purana*, to be made equally valid across different space-time combinations?

- (A) Karma is judged based on the observers' perception, and hence the observer is a necessary condition for its validity.
- (B) Karma is an orientalist concept limited to oriental countries.
- (C) Each epoch will have its own understanding of karma and therefore there can not be uniform validity of the concept of karma.
- (D) The information of the past actions and the righteousness of each action would be embodied in the individual.

Correct Answer: (D) The information of the past actions and the righteousness of each action would be embodied in the individual.

SOLUTION:

A "which of the following, if true" question is really asking for a missing assumption, so the fastest route is to restate the Bhagavata Purana line as a rule and ask what has to be true for that rule to travel across worlds and eras.

1. **Karma is judged based on the observers' perception, and hence the observer is a necessary condition for its validity:** the quoted passage describes a person and an act, with no third-party observer anywhere in it, so this option invents a role the text does not need.
2. **Karma is an orientalist concept limited to oriental countries:** this actually shrinks the scope of karma to one region, while the passage is describing a rule meant to hold across "different space-time combinations", the opposite of a limited scope.
3. **Each epoch will have its own understanding of karma and therefore there cannot be uniform validity of the concept of karma:** this option directly denies that karma can

be uniformly valid, but the question is asking what WOULD make it uniformly valid, so an option that argues it cannot be cannot be the answer.

4. **Each space-time combination would have different norms of righteousness and their respective expert panels which will judge each action as per those norms:** varying norms and panels would make the standard of judgment inconsistent across worlds, undermining rather than enabling equal validity.

Only the option about the record of past actions and their righteousness being carried in the individual gives a mechanism by which the same act, judged the same way, can produce a matching consequence anywhere and anytime, which is what the passage's rule requires.

Let us summarize:

- The Bhagavata Purana rule needs a way for a person's past acts to travel with them across space and time.
- Options that add outside judges, panels, or shifting norms work against, not for, uniform validity.

So the record of past actions and their righteousness being embodied in the individual is the required condition, confirming option (DD).

Quick Tip: Ask what must travel with a person across different worlds and times for the same act to always produce a matching result.