

General Instructions

- (i) This booklet contains 150 questions, each provided with a complete, step-by-step solution.
- (ii) It comprises 150 single-correct multiple-choice questions.
- (iii) Attempt each question on your own before reviewing the given solution.

1. If $11^{10-2x} = 1$, find the value of x .

- (A) 10
- (B) 5
- (C) 2
- (D) None of these

Correct Answer: (B) 5

SOLUTION:

Step 1: Take log on both sides.

The equation is $11^{10-2x} = 1$. Instead of reasoning about the base, we apply a logarithm to both sides to bring the exponent down.

Step 2: Apply the log rule.

Taking log to base 11 on both sides gives $\log_{11} (11^{10-2x}) = \log_{11}(1)$.

Using the rule $\log_a(a^n) = n$, the left side simplifies to $10 - 2x$.

Using the rule $\log_a(1) = 0$ for any valid base a , the right side becomes 0.

Step 3: Solve the resulting linear equation.

The equation reduces to $10 - 2x = 0$.

Rearranging, $2x = 10$, so $x = 5$.

Step 4: Verify by substitution.

Put $x = 5$ back into the exponent: $10 - 2(5) = 10 - 10 = 0$.

The expression becomes 11^0 , which equals 1, matching the right side of the original equation and confirming the answer.

Final Answer:

The value of x is confirmed to be 5.

$$x = 5$$

Quick Tip: A nonzero base raised to the power 0 always gives 1, so set the exponent $10 - 2x$ equal to 0.

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2. Two trains moving in opposite directions cross a man standing on a platform in 25 seconds and 15 seconds respectively, and they cross each other in 21 seconds. Find the ratio of the speeds of the trains.

- (A) 21 : 10
- (B) 1 : 2
- (C) 3 : 2
- (D) 5 : 3

Correct Answer: (C) 3 : 2

SOLUTION:

Step 1: Assume a single ratio variable.

Let the speed of the first train be r times the speed of the second train, so if the second train's speed is b , the first train's speed is $a = rb$. We only need to find r .

Step 2: Write the lengths in terms of r and b .

The length of the first train, using its own crossing time of 25 seconds, is $25a = 25rb$.

The length of the second train, using its own crossing time of 15 seconds, is $15b$.

Step 3: Use the combined crossing condition.

When they cross each other, the combined length divided by the combined speed gives 21 seconds.

$$\frac{25rb + 15b}{rb + b} = 21$$

Factor b out of the numerator and denominator, and cancel it since $b \neq 0$.

$$\frac{25r + 15}{r + 1} = 21$$

Step 4: Solve for r .

$$25r + 15 = 21r + 21$$

$$4r = 6$$

$$r = \frac{3}{2}$$

Since $a = rb$, the ratio $a : b$ is the same as $r : 1$, which is 3:2.

Final Answer:

The speeds of the two trains are in the ratio 3 : 2.

3 : 2

Quick Tip: A train crossing a stationary man covers its own length; when two trains cross each other, they cover the sum of both lengths at the sum of both speeds.

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3. A girl sells two bags at Rs. 600 each. If she makes a profit of 20% on one of the bags and incurs a loss of 25% on the other, find the resultant gain or loss in the transaction.

- (A) Rs. 100 loss
- (B) Rs. 200 loss
- (C) Rs. 130 gain
- (D) Rs. 240 gain

Correct Answer: (A) Rs. 100 loss

SOLUTION:

Step 1: Convert each percentage into a simple ratio.

For the bag sold at 20% profit, selling price to cost price is in the ratio

120 : 100, which simplifies to 6 : 5. So cost price is $\frac{5}{6}$ of the selling price.

For the bag sold at 25% loss, selling price to cost price is in the ratio 75 : 100, which simplifies to 3 : 4. So cost price is $\frac{4}{3}$ of the selling price.

Step 2: Apply the ratios to find each cost price.

$$CP_1 = 600 \times \frac{5}{6} = 500$$

$$CP_2 = 600 \times \frac{4}{3} = 800$$

These match what a direct percentage calculation would give, confirming the ratio approach works.

Step 3: Add up the cost prices and selling prices separately.

Total cost price = $500 + 800 = 1300$.

Total selling price = $600 + 600 = 1200$.

Step 4: Find the difference.

Since cost price exceeds selling price, there is a loss.

$$\text{Loss} = 1300 - 1200 = 100$$

Final Answer:

The girl incurs a net loss of Rs. 100 on the whole transaction.

Rs. 100 loss

Quick Tip: When the selling prices are equal but the profit and loss percentages differ, work out each cost price separately and then compare the totals.

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4. If $-1 \leq x \leq 2$ and $1 \leq y \leq 3$, find the least possible value of $2y - 3x$.

- (A) -1
- (B) -3
- (C) 0
- (D) -4

Correct Answer: (D) -4

SOLUTION:

Step 1: Treat the problem as checking the corners of a rectangle.

Since x ranges over $[-1, 2]$ and y ranges over $[1, 3]$ independently, the pair (x, y) can be thought of as a point inside a rectangle with four corners: $(-1, 1)$, $(-1, 3)$, $(2, 1)$, and $(2, 3)$.

For an expression like $2y - 3x$, which changes steadily (linearly) with x and y , the smallest and largest values always occur at one of these four corners, not somewhere in the middle.

Step 2: Evaluate the expression at each corner.

At $(-1, 1)$: $2(1) - 3(-1) = 2 + 3 = 5$.

At $(-1, 3)$: $2(3) - 3(-1) = 6 + 3 = 9$.

At $(2, 1)$: $2(1) - 3(2) = 2 - 6 = -4$.

At $(2, 3)$: $2(3) - 3(2) = 6 - 6 = 0$.

Step 3: Pick the smallest value from the list.

Comparing 5, 9, -4 and 0, the smallest is -4 , occurring at the corner $(x, y) = (2, 1)$.

Final Answer:

Checking all four corner combinations confirms the least possible value of $2y - 3x$ is -4 .

$$\boxed{-4}$$

Quick Tip: To minimize a subtraction like $2y - 3x$, take the smallest value for the term being added and the largest value for the term being subtracted.

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5. A person incurs a loss of 40% when he sells 32 oranges at Rs. 1,000. In order to make a profit of 20%, how many oranges should he sell at Rs. 1,000?

- (A) 12
- (B) 14
- (C) 16
- (D) 18

Correct Answer: (C) 16

SOLUTION:

Step 1: Work with the selling price per orange directly.

When 32 oranges are sold for Rs. 1,000, the selling price per orange is $\frac{1000}{32} = 31.25$.

This price represents a 40% loss, so it equals 60% of the true cost price per orange.

Step 2: Recover the cost price per orange from this single value.

$$CP = \frac{31.25}{0.6} = 52.08$$

This matches what a total-cost calculation would give, confirming the per-unit approach is consistent.

Step 3: Find the required selling price per orange for a 20% profit.

A 20% profit means the new selling price is 1.2 times the cost price.

$$SP_{\text{new}} = 52.08 \times 1.2 = 62.5$$

Step 4: Divide the total money by the new price per orange.

Since each orange now sells for Rs. 62.5, the number of oranges that together make Rs. 1,000 is:

$$x = \frac{1000}{62.5} = 16$$

Final Answer:

Working through the price per single orange also confirms that 16 oranges must be sold for Rs. 1,000 to earn a 20% profit.

16

Quick Tip: First find the cost price of one orange from the loss situation, then find the selling price per orange needed for the target profit, and divide

Rs. 1,000 by that price.

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6. If the mean of five numbers 25, 30, 35, 40 and 45 is 35, find the variance.

- (A) 200
- (B) 250
- (C) 100
- (D) 150

Correct Answer: (B) 250

SOLUTION:

Step 1: Use the raw-moment formula for variance instead.

An equivalent way to compute variance is $\sigma^2 = \frac{\sum X^2}{N} - \bar{X}^2$, meaning the average of the squares of the numbers, minus the square of the mean. This avoids working with negative deviations.

Step 2: Square each number and add them up.

$$25^2 = 625, 30^2 = 900, 35^2 = 1225, 40^2 = 1600, 45^2 = 2025.$$

Adding these: $625 + 900 + 1225 + 1600 + 2025 = 6375$.

Step 3: Divide by N to get the average of the squares.

$$\frac{6375}{5} = 1275$$

Step 4: Subtract the square of the mean.

The mean is 35, so $\bar{X}^2 = 35^2 = 1225$.

$$\sigma^2 = 1275 - 1225 = 50$$

This matches the value found by the deviation method, confirming variance is genuinely 50.

Step 5: Compare with the choices.

Since none of 200, 250, 100 or 150 equal 50, no option in this question is correct, and the answer is left unmarked as disputed rather than forcing a wrong choice.

Final Answer:

Both methods agree the variance is 50, a value absent from the given options, so the question has no valid listed answer.

$$\sigma^2 = 50 \text{ (not listed)}$$

Quick Tip: Variance is the average of the squared deviations from the mean; work it out fully before checking it against the options, since one option may be a common miscalculation.

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7. If $2x^2 - 7x + 6 = 0$, what is the largest value of x which satisfies the equation?

- (A) 2
- (B) $\frac{3}{2}$
- (C) 3
- (D) None of these

Correct Answer: (A) 2

SOLUTION:

Step 1: Identify the coefficients for the quadratic formula.

For $2x^2 - 7x + 6 = 0$, matching with the standard form $ax^2 + bx + c = 0$, we get $a = 2$, $b = -7$, $c = 6$.

Step 2: Write the quadratic formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Step 3: Substitute the values and simplify the discriminant.

$$b^2 - 4ac = (-7)^2 - 4(2)(6) = 49 - 48 = 1.$$

Since the discriminant is 1, a positive perfect square, the equation has two distinct real roots.

$$x = \frac{7 \pm \sqrt{1}}{4} = \frac{7 \pm 1}{4}$$

Step 4: Work out both roots.

$$\text{Taking the plus sign: } x = \frac{7+1}{4} = \frac{8}{4} = 2.$$

$$\text{Taking the minus sign: } x = \frac{7-1}{4} = \frac{6}{4} = 1.5.$$

Step 5: Choose the larger root.

Between 2 and 1.5, 2 is larger, so this is the answer, matching what factoring gave as well.

Final Answer:

Using the quadratic formula also confirms the largest root is 2.

$$x = 2$$

Quick Tip: Factor the quadratic into two linear factors, find both roots, and pick the larger one.

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8. A person reaches his office just in time when he travels at a speed of 48 kmph. When he moves at a speed of 36 kmph, he gets late by 15 minutes. Find the distance of the journey.

- (A) 48 km
- (B) 36 km
- (C) 30 km
- (D) 44 km

Correct Answer: (B) 36 km

SOLUTION:

Step 1: Compare the two speeds as a ratio.

The speeds are 48 kmph and 36 kmph. Dividing both by 12, the ratio of speeds is $48 : 36 = 4 : 3$.

Step 2: Convert the speed ratio into a time ratio.

For a fixed distance, time taken is inversely proportional to speed, so a speed ratio of $4 : 3$ corresponds to a time ratio of $3 : 4$ (the faster speed takes the smaller share of time).

Let the time at 48 kmph be $3k$ hours and the time at 36 kmph be $4k$ hours, for some constant k .

Step 3: Use the 15 minute delay to find k .

The difference between the two times is 15 minutes, which is $\frac{1}{4}$ hour.

$$4k - 3k = \frac{1}{4}$$

$$k = \frac{1}{4}$$

Step 4: Find the actual time and then the distance.

Time at 48 kmph is $3k = 3 \times \frac{1}{4} = \frac{3}{4}$ hour, which is 45 minutes.

Distance = speed $\times$ time = $48 \times \frac{3}{4} = 36$ km.

Final Answer:

Using the speed-to-time ratio method also gives a journey distance of 36 km.

36 km

Quick Tip: Write the travel time at each speed in terms of the unknown distance, and set their difference equal to 15 minutes converted into hours.

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9. A fraction becomes $\frac{1}{2}$ when 1 is added to its numerator and denominator, and becomes $\frac{1}{4}$ when 1 is subtracted from its numerator and denominator. Find the fraction.

- (A) $\frac{4}{9}$
- (B) $\frac{3}{5}$
- (C) $\frac{4}{13}$
- (D) $\frac{2}{5}$

Correct Answer: (D) $\frac{2}{5}$

SOLUTION:

Step 1: Write both conditions as linear equations.

Let the fraction have numerator x and denominator y . Adding 1 to both parts gives $\frac{1}{2}$:

$$2(x + 1) = 1(y + 1)$$

$$2x - y = -1$$

Step 2: Write the second condition the same way.

Subtracting 1 from both parts gives $\frac{1}{4}$:

$$4(x - 1) = 1(y - 1)$$

$$4x - y = 3$$

Step 3: Eliminate y by subtracting the equations.

Both equations have the same $-y$ term, so subtract the first from the second:

$$(4x - y) - (2x - y) = 3 - (-1)$$

$$2x = 4$$

$$x = 2$$

Step 4: Find y using either equation.

Using $2x - y = -1$:

$$2(2) - y = -1$$

$$4 - y = -1$$

$$y = 5$$

So the fraction is $\frac{2}{5}$.

Step 5: Verify quickly.

Adding 1: $\frac{3}{6} = \frac{1}{2}$, matches. Subtracting 1: $\frac{1}{4}$, matches. Both conditions hold, so no other option needs checking.

$$\boxed{\frac{2}{5}}$$

Quick Tip: Write the fraction as $\frac{x}{y}$ and turn each condition into a linear equation in x and y .

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10. When Sonu's age 3 years ago is doubled and subtracted from twice his age 2 years hence, the resultant is exactly half of his present age. Find his present age (in years).

- (A) 15
- (B) 20
- (C) 24
- (D) None of these

Correct Answer: (B) 20

SOLUTION:

Step 1: Test the given options directly in the word statement.

Instead of building the equation first, we can check each candidate age against the sentence: "twice his age 2 years hence minus twice his age 3 years ago equals half his present age."

Step 2: Try option (a), $x = 15$.

Age 3 years ago = 12, doubled = 24. Age 2 years hence = 17, twice = 34.

$34 - 24 = 10$. Half of present age = 7.5. Since $10 \neq 7.5$, this option fails.

Step 3: Try option (b), $x = 20$.

Age 3 years ago = 17, doubled = 34. Age 2 years hence = 22, twice = 44.

$44 - 34 = 10$. Half of present age = 10. Since $10 = 10$, this option satisfies the condition exactly.

Step 4: Try option (c), $x = 24$, to confirm it fails.

Age 3 years ago = 21, doubled = 42. Age 2 years hence = 26, twice = 52.

$52 - 42 = 10$. Half of present age = 12. Since $10 \neq 12$, this option fails.

Step 5: Notice the pattern and conclude.

In every case, twice the future age minus twice the past age equals a constant value of 10, since the x terms always cancel. So the only age that can work is the one where half the present age also equals 10, which is $x = 20$. Option (d) is therefore not required.

20 years

Quick Tip: Write $2(x + 2) - 2(x - 3)$ and notice the x terms cancel, leaving a fixed number equal to $\frac{x}{2}$.

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11. Sum of the present ages of a father and his son is 48 years. If the product of their ages 5 years back is 165, what is the present age of the father?

- (A) 38 years
- (B) 36 years
- (C) 31 years
- (D) 28 years

Correct Answer: (A) 38 years

SOLUTION:

Step 1: Work with the ages 5 years back as a pair of numbers.

Let the father's age 5 years back be p and the son's age 5 years back be q . Their present ages are $p + 5$ and $q + 5$.

Step 2: Turn both given facts into equations in p and q .

The present ages add up to 48:

$$(p + 5) + (q + 5) = 48$$

$$p + q = 38$$

The product of the ages 5 years back is 165:

$$pq = 165$$

Step 3: Find p and q as roots of a quadratic.

Any two numbers with a known sum and known product are the roots of $t^2 - (\text{sum})t + (\text{product}) = 0$:

$$t^2 - 38t + 165 = 0$$

Step 4: Solve this quadratic.

$$t = \frac{38 \pm \sqrt{38^2 - 4(165)}}{2} = \frac{38 \pm \sqrt{1444 - 660}}{2} = \frac{38 \pm \sqrt{784}}{2} = \frac{38 \pm 28}{2}$$

So $t = 33$ or $t = 5$. These are the two ages 5 years back, one for the father and one for the son.

Step 5: Convert back to present ages and pick the father's.

Adding 5 to each root gives present ages of $33 + 5 = 38$ and $5 + 5 = 10$. Since the father is the older of the two, his present age is 38. This matches the sum check ($38 + 10 = 48$) and the product check ($33 \times 5 = 165$).

38 years

Quick Tip: Let the father's age be f and the son's age be $48 - f$, then form a quadratic from the product of their ages 5 years back.

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12. If $\frac{P}{Q} = 8$, then find the value of $\frac{P^2+Q^2}{P^2-Q^2}$.

- (A) $\frac{22}{21}$
- (B) $\frac{9}{7}$
- (C) $\frac{65}{63}$
- (D) $\frac{50}{47}$

Correct Answer: (C) $\frac{65}{63}$

SOLUTION:

Step 1: Divide the whole expression by Q^2 instead of substituting a value for P .

Start from the target expression:

$$\frac{P^2 + Q^2}{P^2 - Q^2}$$

Divide every term, top and bottom, by Q^2 :

$$\frac{\frac{P^2}{Q^2} + 1}{\frac{P^2}{Q^2} - 1}$$

Step 2: Rewrite $\frac{P^2}{Q^2}$ as $\left(\frac{P}{Q}\right)^2$.

This is a useful identity since it lets us plug in the given ratio directly:

$$\frac{P^2}{Q^2} = \left(\frac{P}{Q}\right)^2$$

Step 3: Substitute the known ratio $\frac{P}{Q} = 8$.

$$\left(\frac{P}{Q}\right)^2 = 8^2 = 64$$

So the expression becomes

$$\frac{64 + 1}{64 - 1}$$

Step 4: Simplify.

$$\frac{64 + 1}{64 - 1} = \frac{65}{63}$$

Step 5: Confirm this cannot be reduced further.

Since $65 = 5 \times 13$ and $63 = 9 \times 7$ share no common factor, $\frac{65}{63}$ is already in its simplest form, matching option (c).

$$\boxed{\frac{65}{63}}$$

Quick Tip: Substitute $P = 8Q$ into the expression and cancel Q^2 from top and bottom.

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13. If $\frac{a}{b} = \frac{4}{3}$, then find the value of $\frac{9a+4b}{9a-4b}$.

(A) 2

(B) $\frac{8}{5}$

(C) $\frac{16}{9}$

(D) 3

Correct Answer: (A) 2

SOLUTION:

Step 1: Divide the target expression by b instead of introducing a multiplier.

Start from

$$\frac{9a + 4b}{9a - 4b}$$

Divide every term, top and bottom, by b :

$$\frac{9\frac{a}{b} + 4}{9\frac{a}{b} - 4}$$

Step 2: Substitute the known ratio $\frac{a}{b} = \frac{4}{3}$.

First work out $9 \times \frac{a}{b}$:

$$9 \times \frac{4}{3} = \frac{36}{3} = 12$$

Step 3: Plug this value into the expression.

$$\frac{9\frac{a}{b} + 4}{9\frac{a}{b} - 4} = \frac{12 + 4}{12 - 4}$$

Step 4: Simplify the fraction.

$$\frac{12 + 4}{12 - 4} = \frac{16}{8} = 2$$

Step 5: Sanity check.

This matches the value obtained by putting real numbers, say $a = 4$ and $b = 3$: $9(4) + 4(3) = 48$ and $9(4) - 4(3) = 24$, giving $\frac{48}{24} = 2$ again, so the answer is confirmed independent of method.

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Quick Tip: Write $a = 4k$ and $b = 3k$, substitute, then cancel k from the final ratio.

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14. If 40% of $\frac{2}{5}$ th of a number is 24, find the value of the number.

(A) 200

(B) 100

(C) 250

(D) 150

Correct Answer: (D) 150

SOLUTION:

Step 1: Undo the outer operation first instead of combining the multipliers.

Let the number be N , and let $M = \frac{2}{5}$ of N . The problem says 40% of M is 24:

$$0.4 \times M = 24$$

Step 2: Solve for M first.

$$M = \frac{24}{0.4} = 60$$

So $\frac{2}{5}$ of the number is 60.

Step 3: Now undo the inner operation to find N .

Since $\frac{2}{5} \times N = 60$, multiply both sides by the reciprocal $\frac{5}{2}$:

$$N = 60 \times \frac{5}{2}$$

Step 4: Work out the multiplication.

$$N = \frac{60 \times 5}{2} = \frac{300}{2} = 150$$

Step 5: Double check by reversing the whole chain.

$\frac{2}{5}$ of 150 is 60, and 40% of 60 is 24, which matches the given information exactly. Working backward this way, one operation at a time, avoids any error in multiplying the two fractions together at once.

150

Quick Tip: Combine 40% and $\frac{2}{5}$ into one multiplier (0.16) and divide 24 by it.

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15. A bag contains 6 white and 4 black balls. If 2 balls are drawn from the bag, what is the probability that both are white?

- (A) 0.25
- (B) 0.33
- (C) 0.4
- (D) None of these

Correct Answer: (B) 0.33

SOLUTION:

Step 1: Treat the two draws one after another instead of using combinations.

There are 10 balls in total, 6 white and 4 black. We draw one ball, do not replace it, then draw a second ball.

Step 2: Find the probability the first ball is white.

Out of 10 balls, 6 are white:

$$P(\text{first white}) = \frac{6}{10}$$

Step 3: Find the probability the second ball is also white, given the first was white.

After removing one white ball, 9 balls remain, of which 5 are white:

$$P(\text{second white} \mid \text{first white}) = \frac{5}{9}$$

Step 4: Multiply the two probabilities, since both events must happen in sequence.

$$P(\text{both white}) = \frac{6}{10} \times \frac{5}{9} = \frac{30}{90}$$

Step 5: Simplify and compare with the options.

$$\frac{30}{90} = \frac{1}{3} \approx 0.33$$

This is the same result as the combinations approach, confirming the answer without needing to count total pairs directly.

0.33

Quick Tip: Use $\frac{\binom{6}{2}}{\binom{10}{2}}$ to find the chance both balls drawn are white.

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16. If a card is drawn from a pack of cards, what is the probability that it is either a club or a jack?

- (A) $\frac{17}{52}$
- (B) $\frac{1}{52}$
- (C) $\frac{7}{13}$
- (D) $\frac{4}{13}$

Correct Answer: (D) $\frac{4}{13}$

SOLUTION:

Step 1: List the favourable cards directly instead of using the addition rule.

We want cards that are a club, a jack, or both. Rather than adding and subtracting probabilities, we can count the distinct cards that satisfy this directly.

Step 2: Count all 13 clubs first.

All 13 cards of the club suit qualify, since each one is a club: spades, hearts, diamonds and clubs each have 13 cards, and we take the full club group. This gives 13 cards so far.

Step 3: Add the jacks that are not already clubs.

There are 4 jacks in total: jack of clubs, jack of spades, jack of hearts, jack of diamonds. The jack of clubs is already included in the 13 clubs counted above, so we only add the remaining 3 jacks (spades, hearts, diamonds) that were not counted yet.

Step 4: Add up the distinct favourable cards.

$$13 \text{ clubs} + 3 \text{ new jacks} = 16 \text{ favourable cards}$$

Step 5: Divide by the total number of cards.

$$P(\text{club or jack}) = \frac{16}{52} = \frac{4}{13}$$

Counting the distinct cards this way naturally avoids double counting the jack of clubs, since it is placed in only one of the two groups, and gives the same result as the formula-based approach.

$$\boxed{\frac{4}{13}}$$

Quick Tip: Add the probability of a club and a jack, then subtract the overlap, the jack of clubs, once.

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17. Find the area of an equilateral triangle whose height is 12 cm.

- (A) $24\sqrt{3} \text{ cm}^2$
- (B) 48 cm^2
- (C) $48\sqrt{3} \text{ cm}^2$
- (D) $36\sqrt{3} \text{ cm}^2$

Correct Answer: (C) $48\sqrt{3} \text{ cm}^2$

SOLUTION:

Step 1: Build a direct height to area shortcut.

Rather than finding the side first and then the area in two separate calculations, we can combine both formulas into one shortcut that works for any equilateral triangle once the height is known. Start from $h = \frac{\sqrt{3}}{2}a$, which gives $a = \frac{2h}{\sqrt{3}}$.

Step 2: Substitute this side into the area formula.

The area formula is $A = \frac{\sqrt{3}}{4}a^2$. Replacing a with $\frac{2h}{\sqrt{3}}$:

$$A = \frac{\sqrt{3}}{4} \left(\frac{2h}{\sqrt{3}} \right)^2 = \frac{\sqrt{3}}{4} \times \frac{4h^2}{3}$$

$$A = \frac{\sqrt{3}h^2}{3} = \frac{h^2}{\sqrt{3}}$$

This gives a reusable rule: area equals height squared divided by $\sqrt{3}$.

Step 3: Plug in the given height.

Here $h = 12 \text{ cm}$, so $h^2 = 144$.

$$A = \frac{144}{\sqrt{3}} = \frac{144\sqrt{3}}{3} = 48\sqrt{3} \text{ cm}^2$$

Step 4: Sanity check the size of the answer.

Using $\sqrt{3} \approx 1.732$, this area is about 83.1 cm^2 , which is reasonable for a triangle with a 12 cm height. Comparing with the four choices, only option (c) has both the right coefficient and the $\sqrt{3}$ factor together; the rest either lose the $\sqrt{3}$ or scale it wrong.

Final Answer:

The area comes out to $48\sqrt{3} \text{ cm}^2$, matching option (c).

$$48\sqrt{3} \text{ cm}^2$$

Quick Tip: First find the side using $h = \frac{\sqrt{3}}{2}a$, then use $A = \frac{\sqrt{3}}{4}a^2$.

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18. 10 women can complete a piece of work in 8 days and 10 children can do the work in 16 days. In how many days can 5 women and 10 children complete the work?

- (A) 8 days
- (B) 12 days
- (C) 12.5 days
- (D) 16 days

Correct Answer: (A) 8 days

SOLUTION:

Step 1: Convert women into an equivalent number of children.

From the given data, $10 \text{ women} \times 8 \text{ days} = 80 \text{ women-days}$ of total work, and $10 \text{ children} \times 16 \text{ days} = 160 \text{ child-days}$ of total work. Since both expressions equal the same job,

$$80 \text{ women-days} = 160 \text{ child-days}$$

which means 1 woman-day of work equals 2 child-days of work, so one woman works at the same rate as two children.

Step 2: Rewrite the group in terms of children only.

The group we care about is 5 women and 10 children. Using the equivalence above, 5 women are worth $5 \times 2 = 10$ children in terms of work rate. So the whole group behaves exactly like

$$10 \text{ (converted)} + 10 \text{ (actual)} = 20 \text{ children working together}$$

Step 3: Use the total work in child-days to find the time.

The total work is 160 child-days (from Step 1). With 20 children working together, the number of days needed is

$$\frac{160}{20} = 8 \text{ days}$$

Step 4: Confirm the result makes sense.

This matches what we would expect: since 5 women alone would take $80/5 = 16$ days, and 10 children alone take 16 days too, when both work side by side the finishing time should be noticeably less than 16 days, and 8 days fits that pattern well.

Final Answer:

Converting women into equivalent children also gives 8 days, matching option (a).

8 days

Quick Tip: Find each group's one-day work rate, add them, then take the reciprocal.

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19. Find the value of

$$\frac{(0.6)^4 - (0.5)^4}{(0.6)^2 + (0.5)^2}$$

- (A) 0.0121
- (B) 0.011
- (C) 0.11
- (D) 1.1

Correct Answer: (C) 0.11

SOLUTION:

Step 1: Compute the squares first.

$$0.6^2 = 0.36 \text{ and } 0.5^2 = 0.25.$$

Step 2: Compute the fourth powers by squaring these results.

$$0.6^4 = (0.6^2)^2 = 0.36^2 = 0.1296$$

$$0.5^4 = (0.5^2)^2 = 0.25^2 = 0.0625$$

Step 3: Work out the numerator and denominator separately.

Numerator: $0.1296 - 0.0625 = 0.0671$

Denominator: $0.36 + 0.25 = 0.61$

Step 4: Divide to get the final value.

$$\frac{0.0671}{0.61} = 0.11$$

This matches exactly since $0.0671 = 0.11 \times 0.61$, confirming there is no rounding involved, the division comes out clean.

Final Answer:

Computing every power directly also gives 0.11, the same as the shortcut using the difference of fourth powers identity.

0.11

Quick Tip: Use $a^4 - b^4 = (a^2 - b^2)(a^2 + b^2)$ to cancel the denominator.

...

20. The mean of n terms of an arithmetic progression is $\bar{x}$. If the sum of $(n - 1)$ terms is k , find the n th term.

- (A) $n\bar{x} + k$
- (B) $\bar{x} - nk$
- (C) $k\bar{x} + n$
- (D) $n\bar{x} - k$

Correct Answer: (D) $n\bar{x} - k$

SOLUTION:

Step 1: Build a small working example instead of jumping straight to algebra.

Take a simple AP: 3, 6, 9, 12, so there are $n = 4$ terms. The mean of all four terms is $\bar{x} = \frac{3+6+9+12}{4} = \frac{30}{4} = 7.5$.

Step 2: Compute the sum of the first $(n - 1)$ terms from the example.

The first $(n - 1) = 3$ terms are 3, 6, 9, and their sum is $k = 3 + 6 + 9 = 18$. The actual 4th term of this AP is 12.

Step 3: Test each option against these numbers.

$n\bar{x} + k = 4(7.5) + 18 = 30 + 18 = 48$, which is far too large.

$\bar{x} - nk = 7.5 - 4(18) = 7.5 - 72 = -64.5$, clearly wrong since the term is positive and small.

$k\bar{x} + n = 18(7.5) + 4 = 135 + 4 = 139$, also far too large.

$n\bar{x} - k = 4(7.5) - 18 = 30 - 18 = 12$, which exactly matches the true 4th term.

Step 4: Confirm the pattern generally.

This works because the sum of all n terms is $n\bar{x}$ (mean times count), and taking away the sum of the first $(n - 1)$ terms, which is k , leaves exactly the last term. So $n\bar{x} - k$ is not a coincidence for this one example, it follows from how sums and means are built.

Final Answer:

Testing with real numbers confirms the n th term is $n\bar{x} - k$, option (d).

$$\boxed{n\bar{x} - k}$$

Quick Tip: Sum of n terms is $n\bar{x}$; the n th term equals that sum minus the sum of the first $(n - 1)$ terms.

• • •

21. When a number is divided by 4, the remainder is 2. When the quotient is divided by 2, the remainder is 1. What will be the remainder when the number is divided by 8?

- (A) 4
- (B) 5
- (C) 6
- (D) 7

Correct Answer: (C) 6

SOLUTION:

Step 1: Find the smallest number that fits both conditions.

We need N divided by 4 to leave remainder 2, and the resulting quotient divided by 2 to leave remainder 1, meaning the quotient must be odd.

Try quotient $q = 1$ (the smallest odd number): $N = 4(1) + 2 = 6$.

Check: $6 \div 4 = 1$ remainder 2. Correct. And $q = 1$ divided by 2 gives remainder 1. Correct.

Step 2: Divide this example number by 8.

$6 \div 8 = 0$ remainder 6.

Step 3: Test a second example to make sure this is not a coincidence.

Try quotient $q = 3$ (the next odd number): $N = 4(3) + 2 = 14$.

Check: $14 \div 4 = 3$ remainder 2. Correct. And $q = 3$ divided by 2 gives

remainder 1. Correct.

Now $14 \div 8 = 1$ remainder 6.

Step 4: Try one more to confirm the pattern holds.

Try quotient $q = 5$: $N = 4(5) + 2 = 22$. Check both conditions hold, and $22 \div 8 = 2$ remainder 6.

Every valid N lands on remainder 6 when divided by 8, because each time the quotient jumps by 2 (staying odd), N jumps by exactly 8, which does not change the remainder on division by 8.

Final Answer:

Testing actual numbers that satisfy both conditions always gives remainder 6 on division by 8.

6

Quick Tip: Write $N = 4q + 2$ and $q = 2m + 1$, then substitute to get $N = 8m + 6$.

...

22. If $\log(x^2y^4) = a$ and $\log \frac{x}{y} = b$, find the value of $\frac{\log x}{\log y}$.

- (A) $\frac{a + 4b}{a - 2b}$
- (B) $\frac{a - 4b}{a + 2b}$
- (C) $\frac{a + 4b}{a + 2b}$
- (D) $\frac{a - 4b}{a - 2b}$

Correct Answer: (A) $\frac{a + 4b}{a - 2b}$

SOLUTION:

Step 1: Pick easy numbers for x and y to test the relation.

Let $x = 100$ and $y = 10$, using base 10 logs so the numbers stay clean.

Then $\log x = 2$ and $\log y = 1$.

Step 2: Compute a and b from these values.

$$a = \log(x^2y^4) = 2\log x + 4\log y = 2(2) + 4(1) = 4 + 4 = 8$$

$$b = \log \frac{x}{y} = \log x - \log y = 2 - 1 = 1$$

Step 3: Compute the actual value of $\frac{\log x}{\log y}$ directly.

$$\frac{\log x}{\log y} = \frac{2}{1} = 2$$

Step 4: Check each option using $a = 8$ and $b = 1$.

$$\frac{a+4b}{a-2b} = \frac{8+4}{8-2} = \frac{12}{6} = 2, \text{ matches.}$$

$$\frac{a-4b}{a+2b} = \frac{8-4}{8+2} = \frac{4}{10} = 0.4, \text{ does not match.}$$

$$\frac{a+4b}{a+2b} = \frac{12}{10} = 1.2, \text{ does not match.}$$

$$\frac{a-4b}{a-2b} = \frac{4}{6} \approx 0.67, \text{ does not match.}$$

Step 5: Confirm with a second pair of numbers.

Try $x = 1000$, $y = 10$: $\log x = 3$, $\log y = 1$, so $\frac{\log x}{\log y} = 3$. Also $a = 2(3) + 4(1) = 10$, $b = 3 - 1 = 2$. Testing option (a): $\frac{10+8}{10-4} = \frac{18}{6} = 3$, matches again.

Final Answer:

Both test cases confirm that $\frac{\log x}{\log y} = \frac{a+4b}{a-2b}$, option (a).

$$\frac{a + 4b}{a - 2b}$$

Quick Tip: Let $p = \log x$, $q = \log y$; solve $2p + 4q = a$ and $p - q = b$ together.

• • •

23. The distance between A and B is 180 km. A starts towards B at a speed of 30 kmph at 9:00 a.m., and after 1 hour, B starts towards A at a speed of 20 kmph. At what time will they meet for the first time?

- (A) 12:00 p.m.
- (B) 1:00 p.m.
- (C) 1:30 p.m.
- (D) 2:00 p.m.

Correct Answer: (B) 1:00 p.m.

SOLUTION:

Step 1: Set up a single equation using total distance covered by both.

Let T be the number of hours after 9:00 a.m. at which A and B meet. A has been walking for the full T hours by then, covering $30T$ km. B only starts 1 hour later, so B has been moving for $(T - 1)$ hours by the meeting time, covering $20(T - 1)$ km.

Step 2: Add both distances to equal the total gap of 180 km.

$$30T + 20(T - 1) = 180$$

Step 3: Expand and solve for T .

$$30T + 20T - 20 = 180$$

$$50T = 200$$

$$T = 4 \text{ hours}$$

Step 4: Convert T back into a clock time.

Since T is measured from 9:00 a.m.,

$$9 : 00 \text{ a.m.} + 4 \text{ hours} = 1 : 00 \text{ p.m.}$$

Step 5: Cross check against the relative speed method.

This agrees exactly with treating the first hour separately and then closing a 150 km gap at 50 kmph, which also gives 1:00 p.m. Two different ways of setting up the problem land on the same clock time, so 1:00 p.m. is the meeting time, even though some published keys list 1:30 p.m.

Final Answer:

Solving the combined distance equation confirms they meet at 1:00 p.m.

1 : 00 p.m.

Quick Tip: Account for the 1-hour head start of A, then use combined speed 50 kmph to close the remaining gap.

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24. A, B and C start a business in which A's investment is Rs. 20,000. At the end of the year, out of a total profit of Rs. 2,000, A's share is Rs. 1,000 and B's share is Rs. 600. Find the investment of C.

- (A) Rs. 6,000
- (B) Rs. 8,000
- (C) Rs. 12,000
- (D) Rs. 15,000

Correct Answer: (B) Rs. 8,000

SOLUTION:

Step 1: Find the fixed ratio between investment and profit share.

Since all three partners invested for the same one-year period, the ratio of any partner's investment to their profit share stays the same across all partners. Using A's numbers:

$$\frac{\text{Investment}_A}{\text{Share}_A} = \frac{20000}{1000} = 20$$

So every partner's investment is exactly 20 times their profit share.

Step 2: Find C's profit share.

Total profit is Rs. 2,000. A's share is Rs. 1,000 and B's share is Rs. 600, so C's share is

$$2000 - 1000 - 600 = 400$$

Step 3: Apply the constant multiplier to C's share.

$$\text{Investment}_C = 20 \times 400 = 8000$$

Step 4: Check this multiplier against B as well.

If the rule is correct, B's investment should also be 20 times B's share: $20 \times 600 = 12000$. Added up, the three investments are $20000 + 12000 + 8000 = 40000$, and the three shares are $1000 + 600 + 400 = 2000$, and indeed $40000/2000 = 20$, the same multiplier throughout, which confirms the method is consistent.

Final Answer:

Using the constant investment-to-share multiplier also gives C's investment as Rs. 8,000.

Rs. 8,000

Quick Tip: Profit shares split in the same ratio as investments here; find C's share first, then scale.

• • •

25. In a class, 52% of the students failed in English, 40% failed in Mathematics, and 20% failed in both the subjects. What percent of the students passed in both the subjects?

- (A) 18%
- (B) 28%
- (C) 36%
- (D) None of these

Correct Answer: (B) 28%

SOLUTION:

Step 1: Assume a convenient total number of students.

Since only percentages are given, assume the class has 100 students. This turns every percentage into a direct headcount, and the final answer as a percent stays the same.

Step 2: Mark the given numbers on a two-group diagram.

Failed in English = 52 students.

Failed in Mathematics = 40 students.

Failed in both = 20 students.

Step 3: Split each failing group into only-that-subject and both.

Failed English only = $52 - 20 = 32$ students.

Failed Mathematics only = $40 - 20 = 20$ students.

Failed both = 20 students, already counted once.

Step 4: Add up everyone who failed at least one subject.

Total who failed English only, Mathematics only, or both = $32 + 20 + 20 = 72$ students.

This whole group could not pass both subjects together, since failing even one subject rules a student out.

Step 5: Subtract from the total to get the passed-both group.

Students who passed both subjects = $100 - 72 = 28$, which out of 100 students is 28%.

Final Answer:

28% of the students passed in both English and Mathematics, the same answer as before, found this time by counting students directly instead of working with percentages algebraically.

28%

Quick Tip: Passed both = passed English + passed Maths minus passed at least one, and passed at least one equals 100% minus the percent who failed both.

• • •

26. Rohan travels 30 meters in 4 seconds, whereas Mohan travels 40 meters in 5 seconds. If both start from the same point, what distance would be travelled by Mohan by the time he is 20 meters ahead of Rohan?

- (A) 320 m
- (B) 300 m
- (C) 280 m
- (D) 250 m

Correct Answer: (A) 320 m

SOLUTION:

Step 1: Write the speeds as a ratio.

Rohan's speed : Mohan's speed = $7.5 : 8 = 15 : 16$ after multiplying both parts by 2 to clear the decimal.

Step 2: Use the fact that they travel for the same time.

Since distance = speed times time, and both travel for the same amount of time from the same point, their distances at any instant stay in the same ratio as their speeds.

So Rohan's distance : Mohan's distance = 15 : 16 at every moment.

Step 3: Represent the distances using one unknown.

Let Rohan's distance be $15k$ and Mohan's distance be $16k$ for some number k .

The gap between them at that moment is $16k - 15k = k$.

Step 4: Use the given gap to find k .

We are told the gap is 20 m, so $k = 20$.

Step 5: Find Mohan's distance.

$$16k = 16 \times 20 = 320 \text{ m}$$

Final Answer:

Mohan has travelled 320 meters, the same result reached here using the ratio of speeds instead of first finding the time.

320 m

Quick Tip: Work out each one's speed, then find how fast the gap between them grows, and use time = gap divided by that rate.



27. The ratio of two numbers is $\frac{1}{2}$. If the ratio becomes $\frac{5}{8}$ when 4 is added to both the numbers, find the bigger number.

- (A) 6
- (B) 10
- (C) 12
- (D) 24

Correct Answer: (C) 12

SOLUTION:

Step 1: Use one unknown instead of two.

Since the ratio of the numbers is 1:2, write the numbers directly as k and $2k$ for some number k , rather than naming them x and y separately.

Step 2: Add 4 to each and use the new ratio.

The new numbers are $k + 4$ and $2k + 4$, and their ratio is 5:8.

$$\frac{k + 4}{2k + 4} = \frac{5}{8}$$

Step 3: Cross multiply and simplify.

$$8(k + 4) = 5(2k + 4)$$

$$8k + 32 = 10k + 20$$

Step 4: Solve for k .

$$32 - 20 = 10k - 8k$$

$$12 = 2k \Rightarrow k = 6$$

Step 5: Write down both numbers.

The numbers are $k = 6$ and $2k = 12$.

Final Answer:

The bigger number is 12, found here using a single unknown k instead of two separate variables.

12

Quick Tip: Let the numbers be k and $2k$, since their ratio is 1:2, then use the second ratio condition to find k .

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28. 

In the figure above, AT is a tangent to the circle drawn from point T , touching the circle at point A , and ACB is a diameter of the circle. If $\angle BCT = 130^\circ$, find $\angle ATC$.

- (A) 50°
- (B) 60°
- (C) 30°
- (D) 40°

Correct Answer: (D) 40°

SOLUTION:

Step 1: Set up coordinates for the figure.

Place the centre C at the origin $(0,0)$ and let the circle have radius r . Since AT is horizontal and tangent at A , the radius CA must be vertical, because a tangent is always perpendicular to the radius at the point of contact. So place $A = (0, r)$ and, since ACB is a diameter, $B = (0, -r)$.

Step 2: Place point T using the given angle.

Since AT is horizontal through A , point T has the same height as A , so $T = (t, r)$ for some positive t . Ray CB points straight down, at -90° from the positive x -axis. Turning 130° from CB towards CT (matching the figure) places ray CT at $-90^\circ + 130^\circ = 40^\circ$ from the positive x -axis.

Step 3: Solve for t using this direction.

A ray from C at 40° satisfies $\frac{r}{t} = \tan 40^\circ$, since T lies on it. So $t = r \cot 40^\circ$.

Step 4: Find vectors from T and use the dot product.

Vector $TA = (0 - t, r - r) = (-t, 0)$, and vector $TC = (0 - t, 0 - r) = (-t, -r)$.

$$\cos(\angle ATC) = \frac{TA \cdot TC}{|TA||TC|} = \frac{t^2}{t\sqrt{t^2 + r^2}} = \frac{t}{\sqrt{t^2 + r^2}}$$

Step 5: Substitute t and simplify using an identity.

With $t = r \cot 40^\circ$, we get $t^2 + r^2 = r^2(\cot^2 40^\circ + 1) = r^2 \csc^2 40^\circ$, using $\cot^2 \theta + 1 = \csc^2 \theta$. So $\sqrt{t^2 + r^2} = \frac{r}{\sin 40^\circ}$.

$$\cos(\angle ATC) = \frac{r \cot 40^\circ}{r / \sin 40^\circ} = \cot 40^\circ \times \sin 40^\circ = \cos 40^\circ$$

Final Answer:

So $\angle ATC = 40^\circ$, the same answer confirmed here using coordinates and vectors instead of pure angle chasing.

40°

Quick Tip: Angles ACT and BCT lie on a straight line and add to 180 degrees, and a tangent is always perpendicular to the radius drawn to the point of contact.

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29. If $4x + 2y = 14$ and $\frac{5x}{2y} = \frac{5}{3}$, find the value of $y - x$.

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

Correct Answer: (C) 1

SOLUTION:

Step 1: Write both equations in standard form first.

As before, $4x + 2y = 14$ simplifies to $2x + y = 7$, and $\frac{5x}{2y} = \frac{5}{3}$ simplifies to $3x - 2y = 0$. This part must be done the same way no matter which method solves the pair next.

Step 2: Set up the coefficient determinant.

For the pair $2x + y = 7$ and $3x - 2y = 0$, form the determinant of coefficients:

$$D = \begin{vmatrix} 2 & 1 \\ 3 & -2 \end{vmatrix} = 2(-2) - 1(3) = -4 - 3 = -7$$

Step 3: Find x using Cramer's rule.

Replace the x-column with the constants:

$$D_x = \begin{vmatrix} 7 & 1 \\ 0 & -2 \end{vmatrix} = 7(-2) - 1(0) = -14$$

$$x = \frac{D_x}{D} = \frac{-14}{-7} = 2$$

Step 4: Find y using Cramer's rule.

Replace the y-column with the constants:

$$D_y = \begin{vmatrix} 2 & 7 \\ 3 & 0 \end{vmatrix} = 2(0) - 7(3) = -21$$

$$y = \frac{D_y}{D} = \frac{-21}{-7} = 3$$

Final Answer:

$y - x = 3 - 2 = 1$, the same value found here using determinants instead of elimination.

1

Quick Tip: Simplify both given equations to the standard form $ax + by = c$ first, then solve the two linear equations together.

...

30. The cost of 6 hard-discs equals the cost of 9 printers, the cost of 27 printers equals the cost of 30 scanners, and the cost of 300 scanners equals the cost of 9 computers. If the cost of 3 computers is Rs. 72,000, find the cost of a hard-disc.

- (A) Rs. 1800
- (B) Rs. 800
- (C) Rs. 1500
- (D) Rs. 1200

Correct Answer: (D) Rs. 1200

SOLUTION:

Step 1: Express each price in terms of the next one.

From $6H = 9P$: $H = \frac{9}{6}P = \frac{3}{2}P$.

Step 2: Bring in the printer-scanner relation.

From $27P = 30S$: $S = \frac{27}{30}P = \frac{9}{10}P$.

Step 3: Bring in the scanner-computer relation.

From $300S = 9C$: $C = \frac{300}{9}S$. Substitute $S = \frac{9}{10}P$:

$$C = \frac{300}{9} \times \frac{9}{10}P = 30P$$

So $P = \frac{C}{30}$.

Step 4: Substitute back to express H directly in terms of C.

$$H = \frac{3}{2}P = \frac{3}{2} \times \frac{C}{30} = \frac{C}{20}$$

Step 5: Use the given value of 3 computers.

Since $3C = 72,000$, $C = 24,000$. So:

$$H = \frac{C}{20} = \frac{24,000}{20} = 1,200$$

Final Answer:

The cost of a hard-disc is Rs. 1,200, reached here by expressing every price directly in terms of the computer's cost instead of finding one combined multiple for all four.

Rs. 1200

Quick Tip: Convert all three given relations into one chain connecting hard-discs, printers, scanners and computers through a common multiple.

31. There are 2 baskets, A and B, containing mangoes. If 10 mangoes are transferred from A to B, the number of mangoes in both baskets become equal. If 20 mangoes had been transferred from B to A instead, the number of mangoes in basket A would have become twice that in basket B. Find the original number of mangoes in basket A.

- (A) 100
- (B) 80
- (C) 70
- (D) 60

Correct Answer: (A) 100

SOLUTION:

Instead of solving two equations together, we can test each answer choice directly against both conditions in the question, since only one value of the original mangoes in basket A can satisfy both conditions at once.

1. **100:** If basket A starts with 100, condition 1 (moving 10 from A to B makes the baskets equal) gives $b = a - 20 = 80$. Check condition 2: $a + 20 = 120$ and $2(b - 20) = 2(60) = 120$. Both sides match, so $a = 100$ works.
2. **80:** This gives $b = 60$ from condition 1. Check condition 2: $a + 20 = 100$, but $2(b - 20) = 2(40) = 80$. These do not match, so this option fails.
3. **70:** This gives $b = 50$ from condition 1. Check condition 2: $a + 20 = 90$, but $2(b - 20) = 2(30) = 60$. These do not match, so this option fails.

4. **60**: This gives $b = 40$ from condition 1. Check condition 2: $a + 20 = 80$, but $2(b - 20) = 2(20) = 40$. These do not match, so this option fails.

Only $a = 100$ satisfies both conditions together, so the original number of mangoes in basket A must be 100.

Let's summarize:

- Condition 1 always gives $b = a - 20$.
- Condition 2 needs $a + 20$ to equal $2(b - 20)$; only $a = 100$ makes both conditions true at the same time.

So the original number of mangoes in basket A is 100, the same answer reached earlier by solving two equations, this time found by checking each option.

Quick Tip: Set up one equation for each condition using the original number of mangoes in each basket, then solve the two equations together.

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32. In a triangle ABC, $AB = 6$ cm, $BC = 8$ cm and $AC = 10$ cm. A perpendicular BD is drawn from B to a point D on AC. Taking B as the centre and BD as the radius, a circle is drawn that cuts AB and BC at points E and F respectively. Find the ratio of the length of AE to that of CF.

- (A) 3 : 5
- (B) 3 : 8
- (C) 4 : 7
- (D) 3 : 7

Correct Answer: (B) 3 : 8

SOLUTION:

Step 1: Note the right angle, as before.

Since $6^2 + 8^2 = 10^2$, angle B is 90° , so AC is the hypotenuse of right triangle ABC.

Step 2: Write the sine and cosine of angle A.

In right triangle ABC, angle A is opposite side BC and adjacent to side AB, with hypotenuse AC.

$$\sin A = \frac{BC}{AC} = \frac{8}{10} = 0.8, \quad \cos A = \frac{AB}{AC} = \frac{6}{10} = 0.6$$

Step 3: Use right triangle ABD to find BD with trigonometry.

In right triangle ABD (right angle at D), angle A is the same angle as in triangle ABC. So:

$$BD = AB \times \sin A = 6 \times 0.8 = 4.8 \text{ cm}$$

Step 4: Locate E and F using the radius.

The circle centred at B with radius $BD = 4.8 \text{ cm}$ meets AB at E and BC at F, so $BE = BF = 4.8 \text{ cm}$, since both are radii of the same circle.

Step 5: Find AE and CF and simplify the ratio.

$$AE = AB - BE = 6 - 4.8 = 1.2 \text{ cm}, \quad CF = BC - BF = 8 - 4.8 = 3.2 \text{ cm}$$

$$AE : CF = 1.2 : 3.2 = 3 : 8$$

Final Answer:

The ratio of AE to CF is 3 : 8, the same result reached here using the sine of angle A instead of the triangle's area.

$$\boxed{3 : 8}$$

Quick Tip: First check if triangle ABC is right angled, then find the altitude BD using its area, and use BE = BF = BD since they are radii of the same circle.

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33. The cost of an I-pad increases by 10% and the cost of a mobile increases by 18%. The cost of an I-pad is thrice the cost of a mobile. Find the percentage increase in the total cost of 10 I-pads and 5 mobiles.

- (A) 10%
- (B) 11.14%
- (C) 14.63%
- (D) 18%

Correct Answer: (B) 11.14%

SOLUTION:

Step 1: Assume concrete values instead of a variable.

Assume the mobile costs 100. Since the I

– pad costs three times as much as the mobile, the I – pad costs 300.

Step 2: Work out the original bill.

10 I-pads cost $10 \times 300 = 3000$.

5 mobiles cost $5 \times 100 = 500$.

The total original bill is $3000 + 500 = 3500$.

Step 3: Work out the new bill.

I-pads go up by 10 percent, so 10 I-pads now cost $3000 \times \frac{110}{100} = 3300$.

Mobiles go up by 18 percent, so 5 mobiles now cost $500 \times \frac{118}{100} = 590$.

The total new bill is $3300 + 590 = 3890$.

Step 4: Compute the percentage rise.

The rise in the bill is $3890 - 3500 = 390$.

The percentage rise is

$$\frac{390}{3500} \times 100 = 11.142857...\% \approx 11.14\%$$

This sits closer to the I-pad's own 10 percent rise than to the mobile's 18 percent rise, because I-pads make up the bigger share of the total spend.

Final Answer:

The combined cost of the 10 I-pads and 5 mobiles rises by close to 11.14 percent.

11.14%

Quick Tip: Let the mobile's price be a variable, write the I-pad's price as three times that, then compare the total cost before and after the price rise.



34. A person incurs a loss of 10% when he sells an item for Rs. 1,800. At what price should the item be sold to earn a profit of 10%?

- (A) Rs. 2200
- (B) Rs. 2100
- (C) Rs. 2000
- (D) Rs. 1800

Correct Answer: (A) Rs. 2200

SOLUTION:

This question can be solved without separately writing down the cost price, by comparing the two selling prices directly through a ratio.

A loss of 10 percent means the first selling price equals 90 percent of the cost price. A profit of 10 percent means the second selling price equals 110 percent of the cost price. Since both prices are measured against the same cost price, the ratio of the new selling price to the old selling price is $\frac{110}{90} = \frac{11}{9}$.

The old selling price is given as Rs. 1,800, so the new selling price is

$$1800 \times \frac{11}{9} = 200 \times 11 = 2200$$

Let's check this against the options:

- Rs. 2100 and Rs. 2000 do not match the exact ratio $\frac{11}{9}$ of the old price.
- Rs. 1800 is the loss-making price itself, so it cannot also be the profit-making price.

The item should be sold for Rs. 2,200 to convert the 10 percent loss into a 10 percent profit.

Quick Tip: Find the cost price first from the loss-making sale, then apply the required profit percentage to that same cost price.

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35.

Directions for questions 35 to 40: Study the following details about a family's monthly income and expenditure and answer the question that follows.

Income	Amount / Rate
Basic salary	Rs. 5,000
Petrol allowance	20% of basic salary
PF deduction	10% of basic salary

Expenditure	Share of net income
Food	28%
House rent	22%
Entertainment	12%
Children's Education	25%
Other expenses	13%

What is the house rent?

- (A) Rs. 1188
- (B) Rs. 1210
- (C) Rs. 1320
- (D) Rs. 1420

Correct Answer: (B) Rs. 1210

SOLUTION:

Step 1: Find the net income with a shortcut.

Both the petrol allowance and the PF deduction are given as a percent of the basic salary.

Adding a 20 percent allowance and then taking away a 10 percent deduction, both measured on the basic salary, works out the same as scaling the basic salary once by $(100 + 20 - 10)$ percent, that is, by 110 percent.

$$\text{Net income} = 5000 \times 1.10 = 5500$$

Step 2: Find the value of 1 percent of the net income.

$$1\% \text{ of } 5500 = 55$$

This single number lets us read off any of the expenditure heads quickly, since each is just a multiple of 55.

Step 3: Scale up to 22 percent for the house rent.

$$22 \times 55 = 1210$$

Final Answer:

The family pays Rs. 1,210 as house rent.

Rs. 1210

Quick Tip: Work out the family's net income after the PF deduction, then take 22 percent of it.

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36.

Directions for questions 35 to 40: Study the following details about a family's monthly income and expenditure and answer the question that follows.

Income	Amount / Rate
Basic salary	Rs. 5,000
Petrol allowance	20% of basic salary
PF deduction	10% of basic salary

Expenditure	Share of net income
Food	28%
House rent	22%
Entertainment	12%
Children's Education	25%
Other expenses	13%

What is the expenditure on food and entertainment?

- (A) Rs. 2000
- (B) Rs. 2500
- (C) Rs. 2160
- (D) Rs. 2200

Correct Answer: (D) Rs. 2200

SOLUTION:

Step 1: Add the percentages before converting to money.

Food is 28 percent of the net income and entertainment is 12 percent of the net income. Since both are percentages of the very same base, they can be added directly before doing any multiplication.

$$28\% + 12\% = 40\%$$

Step 2: Find the net income.

$$\text{Net income} = 5000 \times 1.10 = 5500$$

using the fact that the 20 percent allowance and the 10 percent deduction on the basic salary together net out to a 10 percent rise on the basic salary.

Step 3: Apply the combined percentage in one step.

$$40\% \text{ of } 5500 = 0.40 \times 5500 = 2200$$

Final Answer:

Food and entertainment together cost the family Rs. 2,200 a month.

Rs. 2200

Quick Tip: Add the food and entertainment percentages first, then apply the combined percentage to the net income.

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37.

Directions for questions 35 to 40: Study the following details about a family's monthly income and expenditure and answer the question that follows.

Income	Amount / Rate
Basic salary	Rs. 5,000
Petrol allowance	20% of basic salary
PF deduction	10% of basic salary

Expenditure	Share of net income
Food	28%
House rent	22%
Entertainment	12%
Children's Education	25%
Other expenses	13%

If the family has no children, how much maximum can they save including PF?

- (A) Rs. 2125
- (B) Rs. 1950
- (C) Rs. 1875
- (D) Rs. 1750

Correct Answer: (C) Rs. 1875

SOLUTION:

Step 1: List every expenditure head in rupees.

Using the net income of Rs. 5,500, found from

$$5000 \times 1.10 = 5500$$

and the value of 1 percent of it, which is Rs. 55, each head works out to

Food: $28 \times 55 = 1540$

House rent: $22 \times 55 = 1210$

Entertainment: $12 \times 55 = 660$

Children's education: $25 \times 55 = 1375$

Other expenses: $13 \times 55 = 715$

Step 2: Remove the education line and total the real spending.

With no children, the education line of Rs. 1,375 is never spent. What is genuinely spent is food, rent, entertainment and other expenses:

$$1540 + 1210 + 660 + 715 = 4125$$

Step 3: Find total savings in a single subtraction from gross income.

The family's full gross income is Rs. 6,000. Out of this, only Rs. 4,125 is genuinely spent, since there is no education cost. Everything else, the PF that was set aside plus the unspent education share, stays with the family:

$$6000 - 4125 = 1875$$

Final Answer:

The maximum the family can save, PF included, is Rs. 1,875.

Rs. 1875

Quick Tip: Remember that PF is already saved before it reaches the family, and add the freed-up education share to it.

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38.

Directions for questions 35 to 40: Study the following details about a family's monthly income and expenditure and answer the question that follows.

Income	Amount / Rate
Basic salary	Rs. 5,000
Petrol allowance	20% of basic salary
PF deduction	10% of basic salary

Expenditure	Share of net income
Food	28%
House rent	22%
Entertainment	12%
Children's Education	25%
Other expenses	13%

After PF deduction and house rent, what is left for expenditure?

- (A) Rs. 4290
- (B) Rs. 4212
- (C) Rs. 4080
- (D) Rs. 3900

Correct Answer: (A) Rs. 4290

SOLUTION:

Step 1: Recall the value of 1 percent of net income.

The net income is Rs. 5,500, from 5000×1.10 , so 1 percent of it is Rs. 55.

Step 2: Add up every expenditure head except house rent.

Food: $28 \times 55 = 1540$

Entertainment: $12 \times 55 = 660$

Children's education: $25 \times 55 = 1375$

Other expenses: $13 \times 55 = 715$

Adding these four gives

$$1540 + 660 + 1375 + 715 = 4290$$

Step 3: Confirm this matches "net income minus house rent".

Since all five heads together make up the whole net income of Rs. 5,500, removing the house rent share of Rs. 1,210 must leave exactly the sum of the other four, which checks out at Rs. 4,290.

Final Answer:

Rs. 4,290 remains for the rest of the expenditure after PF and house rent are paid.

Rs. 4290

Quick Tip: Subtract the PF deduction and then the house rent from the gross income, in that order.

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39.

Directions for questions 35 to 40: Study the following details about a family's monthly income and expenditure and answer the question that follows.

Income	Amount / Rate
Basic salary	Rs. 5,000
Petrol allowance	20% of basic salary
PF deduction	10% of basic salary

Expenditure	Share of net income
Food	28%
House rent	22%
Entertainment	12%
Children's Education	25%
Other expenses	13%

How much is the PF deduction?

- (A) Rs. 500
- (B) Rs. 600
- (C) Rs. 1000
- (D) Rs. 1200

Correct Answer: (A) Rs. 500

SOLUTION:

Step 1: Use the fact that PF is the only gap between gross and net income.

The gross income comes from adding a 20 percent petrol allowance to the basic salary, and the net income comes from removing the PF percentage from that same basic salary.

Step 2: Write both incomes in terms of the basic salary.

$$\text{Gross} = 5000 + 0.20(5000) = 6000$$

$$\text{Net} = 5000 \times 1.10 = 5500$$

Step 3: Find PF as the difference between gross income and net income.

$$6000 - 5500 = 500$$

This confirms directly that Rs. 500 is removed to go from the gross figure to the net figure, and this removed amount is exactly the PF deduction.

Final Answer:

The PF deduction each month is Rs. 500.

<i>Rs. 500</i>

Quick Tip: The PF deduction is a percentage of the basic salary only, not of the gross or net income.

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40.

Directions for questions 35 to 40: Study the following details about a family's monthly income and expenditure and answer the question that follows.

Income	Amount / Rate
Basic salary	Rs. 5,000
Petrol allowance	20% of basic salary
PF deduction	10% of basic salary

Expenditure	Share of net income
Food	28%
House rent	22%
Entertainment	12%
Children's Education	25%
Other expenses	13%

If the family gets a 15% inflation allowance on the basic salary, then what is the gross income of the family?

- (A) Rs. 6150
- (B) Rs. 6250
- (C) Rs. 6750
- (D) Rs. 7000

Correct Answer: (C) Rs. 6750

SOLUTION:

Step 1: Express gross income as a single multiple of the basic salary.

The petrol allowance adds 20 percent to the basic salary and the new inflation allowance adds a further 15 percent to the basic salary. Since both are stated as a percentage of the same basic salary, they can be added together before applying them.

$$20\% + 15\% = 35\%$$

Step 2: Apply the combined percentage to the basic salary.

$$\text{Gross income} = 5000 + 0.35 \times 5000 = 5000 \times 1.35$$

$$5000 \times 1.35 = 6750$$

Step 3: Sanity check against the earlier gross income.

The earlier gross income without the inflation allowance was Rs. 6,000, and adding Rs. 750 (15 percent of Rs. 5,000) to it also gives Rs. 6,750, which matches.

Final Answer:

With the inflation allowance, the family's gross income rises to Rs. 6,750.

Rs. 6750

Quick Tip: Add the inflation allowance, a percentage of the basic salary, to

the earlier gross income.

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41. Who among the following is the winner of the men's singles Lawn Tennis tournament at the Olympics 2012?

- (A) Roger Federer
- (B) Rafael Nadal
- (C) Andy Murray
- (D) None of the above

Correct Answer: (C) Andy Murray

SOLUTION:

Step 1: Understanding the Question:

The question asks for the gold medal winner of the men's singles lawn tennis event at the 2012 London Olympics.

Step 2: Key Approach:

Recall the top players active in tennis in 2012 and check which of them actually competed in and won the Olympic final that year.

Step 3: Detailed Explanation:

Rafael Nadal withdrew from the 2012 Olympics due to a knee injury, so he could not have won.

Roger Federer played through the tournament and reached the final, but he lost that match, so he finished as runner up, not winner.

Andy Murray played the final against Federer at the All England Club, the same court where he had lost the Wimbledon final to Federer a month earlier.

This time Murray won in straight sets and took the gold medal.

Step 4: Final Answer:

Andy Murray is the correct answer, since he beat Roger Federer to win Olympic gold in men's singles tennis in 2012. This matches option (c).

Quick Tip: Recall who won gold in men's singles tennis at the London 2012 Olympics, held at Wimbledon.

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42. Fibre optic cables transmit large amounts of data using .

- (A) light
- (B) water
- (C) sound
- (D) None of the above

Correct Answer: (A) light

SOLUTION:**Step 1: Understanding the Concept:**

The question is about the physical signal that carries information inside a fibre optic cable.

Step 2: Key Approach:

A fibre optic cable is built as a thin core of glass or plastic surrounded by a cladding layer with a lower refractive index. This structure is designed to trap and guide one particular kind of wave along its length.

Step 3: Detailed Explanation:

When a beam of light enters the core at the right angle, it keeps bouncing off the boundary between the core and the cladding through total internal reflection, instead of escaping outward.

This lets the light pulse, which is switched on and off very fast to represent data bits, travel long distances with very little signal loss.

Water and sound are not used because neither can be guided efficiently through a solid glass fibre the way light can, and plain electrical signals face far more resistance and interference over long cable runs than light does.

Step 4: Final Answer:

Since data in a fibre optic cable is carried as pulses of light guided by total internal reflection, the correct option is light, answer (a).

Quick Tip: Think about what a fibre optic cable is physically made of and how it carries a signal.

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43. Six sigma based quality improvement concepts are not applicable to .

- (A) Banking
- (B) Manufacturing
- (C) Health
- (D) Infrastructure

Correct Answer: (D) Infrastructure

SOLUTION:

Step 1: Understanding the Question:

We must identify the sector where Six Sigma quality improvement is

not typically used.

Step 2: Key Approach:

Six Sigma works by measuring defects in a process with statistical tools and then systematically reducing that variation, so it fits best in sectors with high volume, repeatable operations.

Step 3: Detailed Explanation:

Manufacturing is the birthplace of Six Sigma and still its most classic use case, since factory production lines generate large amounts of measurable process data.

Banking uses Six Sigma to streamline processes like account opening, cheque clearing and loan approvals, which repeat thousands of times and can be measured for defects.

Healthcare providers use Six Sigma to cut down on medication errors and improve patient care processes.

Infrastructure projects, such as building roads, bridges or power plants, are largely one off or project based undertakings governed by engineering design, government approvals and site conditions, which do not lend themselves to the repeatable process measurement that Six Sigma needs.

Step 4: Final Answer:

Because Six Sigma needs repeatable, measurable processes and infrastructure work does not fit that mould as well as banking, manufacturing or health services do, the correct answer is Infrastructure, option (d).

Quick Tip: Six Sigma needs repeatable, measurable processes to work well.



44. Which among the following are not constitutional bodies?

1. EC
2. CVC
3. NHRC
4. UPSC

Correct code:

- (A) 1 only
- (B) 2 and 3 only
- (C) 3 and 4 only
- (D) All of the above

Correct Answer: (B) 2 and 3 only

SOLUTION:

Step 1: Understanding the Concept:

A constitutional body is one that the Constitution of India itself creates through a specific Article, while a statutory body is created later by an ordinary Act of Parliament and can, in principle, be changed more easily than a constitutional provision.

Step 2: Key Approach:

Check each of the four bodies against the Constitution's Articles to see which ones actually appear there.

Step 3: Detailed Explanation:

The Election Commission traces its authority to Article 324, so it is constitutional.

The Union Public Service Commission traces its authority to Articles

315 to 323, so it too is constitutional.

The Central Vigilance Commission has no Article backing it. It began as an executive resolution in 1964 and only got legal force through the CVC Act of 2003, which makes it a statutory body.

The National Human Rights Commission was formed under the Protection of Human Rights Act, 1993, again an ordinary law and not a constitutional Article, so it is also statutory.

This means only CVC and NHRC, numbers 2 and 3, are not constitutional bodies.

Step 4: Final Answer:

The bodies that are not constitutional are CVC and NHRC, so the correct code is 2 and 3 only, option (b).

Quick Tip: Check which of these bodies are created by specific Articles of the Constitution versus by ordinary Acts of Parliament.

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45. Which was the first country to draw funds from the IMF?

- (A) France
- (B) Kenya
- (C) Brazil
- (D) None of the above

Correct Answer: (A) France

SOLUTION:

Step 1: Understanding the Question:

The question asks which country was the first to borrow money from

the International Monetary Fund.

Step 2: Key Approach:

Recall when the IMF started functioning and which country needed emergency funds around that time.

Step 3: Detailed Explanation:

The IMF was created by the Bretton Woods Agreement of 1944 and began its actual lending activities in 1947, shortly after the end of the Second World War.

Europe, and France in particular, faced a severe shortage of foreign currency reserves needed to rebuild industry and infrastructure after the war.

France approached the newly formed IMF and became the first country in the world to draw a loan from it.

Kenya and Brazil are not linked to this historic first drawing, since Kenya joined the IMF much later and Brazil's borrowings came afterward as well.

Step 4: Final Answer:

France holds the distinction of being the first country to draw funds from the IMF, so the correct answer is option (a).

Quick Tip: The IMF began lending operations in 1947, right after the Second World War.

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46. An octopus has .

- (A) hearts
- (B) eyes
- (C) arms
- (D) all of the above

Correct Answer: (D) all of the above

SOLUTION:

Step 1: Understanding the Concept:

The question lists three body features, hearts, eyes and arms, and asks which of them an octopus actually has.

Step 2: Key Approach:

Go through each feature one at a time and check it against known octopus biology.

Step 3: Detailed Explanation:

An octopus has three hearts in total. Two of these push blood through its gills to load it with oxygen, while the third circulates that oxygen rich blood around the rest of its body.

It also has a pair of camera type eyes that let it see shapes, light and movement in its surroundings.

In addition, it has eight muscular arms covered in rows of suckers, which it uses for crawling, grabbing prey and handling objects.

Since each of the three features, hearts, eyes and arms, is confirmed to be present in an octopus, none of the first three options alone captures the full picture.

Step 4: Final Answer:

Because an octopus truly has three hearts, eyes and eight arms, the complete and correct answer is all of the above, option (d).

Quick Tip: Consider the circulatory, visual and limb related anatomy of an octopus.

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47. Maxis Communications holds a majority stake in .

- (A) Aircel
- (B) Airtel
- (C) Vodafone
- (D) Idea

Correct Answer: (A) Aircel

SOLUTION:

Step 1: Understanding the Question:

We need to match the Malaysian company Maxis Communications with the Indian telecom operator in which it holds a majority stake.

Step 2: Key Approach:

Think about the ownership background of each Indian telecom brand listed in the options.

Step 3: Detailed Explanation:

Airtel is owned and run by India's Bharti Group, with Singtel as a major foreign partner, so Maxis has no majority role there.

Vodafone India's controlling shareholder was the UK headquartered Vodafone Group, again unrelated to Maxis.

Idea Cellular was promoted by the Aditya Birla Group, with its own separate foreign investors over time, not Maxis.

Aircel is the operator where the Malaysian company Maxis Communications Berhad built up a majority holding, entering the Indian market through this investment.

Step 4: Final Answer:

Maxis Communications holds a majority stake in Aircel, so the correct answer is option (a).

Quick Tip: Maxis Communications is a Malaysian telecom group with an Indian investment.

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48. What is the term for a computer virus which has a delayed payload?

- (A) Bomb
- (B) Infection
- (C) Trojan horses
- (D) Worm

Correct Answer: (A) Bomb

SOLUTION:

Step 1: Understanding the Concept:

The question asks for the specific term used when a computer virus is designed to release its harmful payload only after some delay, rather than immediately on infection.

Step 2: Key Approach:

Compare the definitions of the four listed terms against the idea of a timed or condition based delay.

Step 3: Detailed Explanation:

A worm focuses on spreading itself automatically from one system to another over a network, so its key feature is replication, not timing.

A Trojan horse focuses on tricking the user by pretending to be useful or harmless software, so its key feature is disguise, not timing.

Infection is simply the general act of a virus attaching itself to a file or program, and by itself says nothing about delay.

A logic bomb, commonly just called a bomb, is written to sit quietly inside a system and only activate its damaging payload when a specific date, time or event occurs, which is precisely what a delayed payload means.

Step 4: Final Answer:

Because the defining feature of a bomb is a payload that triggers only after a set delay or condition, the correct answer is Bomb, option (a).

Quick Tip: Think of the term for malicious code that lies dormant until triggered by a set condition.

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49. Suez canal connects.

- (A) English channel with North Sea
- (B) Mediterranean with Red Sea
- (C) Pacific Ocean with Caribbean Sea
- (D) Gulf of Mexico and Pacific Ocean

Correct Answer: (B) Mediterranean with Red Sea

SOLUTION:

Step 1: Understanding the Question.

The question asks which two seas the Suez Canal joins. This is a straightforward geography fact about a well known shipping route.

Step 2: Key Fact or Approach.

The Suez Canal is an artificial waterway cut through the Isthmus of Suez in Egypt. It was built so that ships would not have to sail around the entire African continent to move between Europe and Asia.

Step 3: Detailed Explanation.

On the northern end, the canal opens into the Mediterranean Sea near Port Said. On the southern end, it opens into the Red Sea near Suez city. A ship entering from the Mediterranean side sails south through the canal and comes out into the Red Sea, from where it can reach the Indian Ocean.

The other choices describe different canals or unconnected water bodies. The English Channel already meets the North Sea on its own without any canal. The Pacific Ocean and the Caribbean Sea are joined by the Panama Canal in Central America, a completely separate waterway. The Gulf of Mexico and the Pacific Ocean are not linked by any well known canal.

Step 4: Final Answer.

The Suez Canal connects the Mediterranean Sea with the Red Sea, which is option (b).

Quick Tip: Remember the Suez Canal runs through Egypt and shortens the Europe to Asia sea route, unlike the Panama Canal which links the Pacific

and Caribbean.

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50. Lok Sabha passed two bills to change name of state and name of language of.

- (A) Assam
- (B) Orissa
- (C) West Bengal
- (D) Madhya Pradesh

Correct Answer: (B) Orissa

SOLUTION:

Step 1: Understanding the Question.

The question refers to a state where Parliament passed two separate bills, one to change the state's name and another to change the name of its main language.

Step 2: Key Fact or Approach.

Changing a state's name in India needs a law passed by Parliament, since state names appear in the First Schedule of the Constitution. A related language name change needs its own separate amendment.

Step 3: Detailed Explanation.

Orissa is the state that fits this description. Parliament cleared the Orissa (Alteration of Name) Bill, 2010, to rename the state as Odisha, and alongside it the Constitution (113th Amendment) Bill to rename the Oriya language as Odia in the Eighth Schedule of the Constitution. Both changes came into force from 1 November 2011. None of Assam, West Bengal, or Madhya Pradesh had both a state name change and a

language name change enacted by Parliament around this time.

Step 4: Final Answer.

The state is Orissa, renamed Odisha, with its language Oriya renamed Odia, so option (b) is correct.

Quick Tip: Think of the 2010-2011 Act that renamed both a state and its main language together, effective November 2011.

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51. Which among the following is not a Public Sector Bank of India?

- (A) South Indian Bank
- (B) Bank of India
- (C) Bank of Baroda
- (D) Punjab National Bank

Correct Answer: (A) South Indian Bank

SOLUTION:

Step 1: Understanding the Question.

We need to pick the bank that is privately owned rather than government owned, among the four listed.

Step 2: Key Fact or Approach.

Ownership decides the category. If the Government of India holds majority shares, it is a public sector bank. If private shareholders control it, it is a private sector bank. India nationalised 14 major banks in 1969 and 6 more in 1980.

Step 3: Detailed Explanation.

Bank of India, Bank of Baroda, and Punjab National Bank were each part of the 1969 batch of nationalised banks and have stayed government owned ever since. South Indian Bank, on the other hand, was set up in 1929 in Kerala and was never included in any nationalisation round. It has continued to operate as a private sector bank with shares traded and held largely outside government control.

Step 4: Final Answer.

South Indian Bank is not a public sector bank, so option (a) is the answer.

Quick Tip: Recall which banks were nationalised in 1969; the one left out of that list is the answer.

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52. First foreign Minister of India.

- (A) Gulzarilal Nanda
- (B) Lal Bahadur Shastri
- (C) Sardar Swaran Singh
- (D) Jawaharlal Nehru

Correct Answer: (D) Jawaharlal Nehru

SOLUTION:**Step 1: Understanding the Question.**

The question asks who was the very first person to hold the External Affairs, or Foreign Minister, portfolio in independent India's government.

Step 2: Key Fact or Approach.

After independence in August 1947, Jawaharlal Nehru formed the first Union Cabinet as Prime Minister. He chose to retain a few key ministries under his own charge rather than assign them out.

Step 3: Detailed Explanation.

External Affairs was one of the portfolios Nehru kept with himself, and he continued to hold it right up to his death in May 1964. This is why, alongside being independent India's first Prime Minister, he is also counted as its first Foreign Minister. Gulzarilal Nanda stepped in as caretaker Prime Minister after later deaths but did not hold External Affairs. Lal Bahadur Shastri, who succeeded Nehru as Prime Minister in 1964, had earlier held portfolios such as Railways and Home. Sardar Swaran Singh took charge of External Affairs only after Shastri became Prime Minister, so he came well after Nehru.

Step 4: Final Answer.

Jawaharlal Nehru was India's first Foreign Minister, which is option (d).

Quick Tip: Recall that Nehru kept the External Affairs portfolio with himself throughout his time as the first Prime Minister.

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53. Study of Fossil.

- (A) Araneology
- (B) Paleontology
- (C) Cardiology
- (D) Anthology

Correct Answer: (B) Paleontology

SOLUTION:

Step 1: Understanding the Question.

We need the correct name of the field that studies fossils.

Step 2: Key Fact or Approach.

Breaking the word into its Greek roots helps here. Palaios means old or ancient, and logos means study or knowledge. Joining these gives the name of the science of ancient life forms.

Step 3: Detailed Explanation.

Paleontology is exactly this science, the study of fossils such as bones, shells, and imprints left behind by plants and animals that lived long ago. It helps scientists understand evolution and the history of life on Earth. Checking the other choices rules them out quickly. Araneology is about spiders, coming from aranea, the Latin word for spider.

Cardiology comes from kardia, meaning heart, and is a branch of medicine. Anthology is not a science at all, it is a term for a compiled collection of written works.

Step 4: Final Answer.

The study of fossils is called Paleontology, so option (b) is correct.

Quick Tip: Break the word into its Greek roots, palaios meaning ancient and logos meaning study, to find the science of ancient life.

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54. Which among the following is not a direct tax?

- (A) Income Tax
- (B) Corporation Tax
- (C) Sales Tax
- (D) Gift Tax

Correct Answer: (C) Sales Tax

SOLUTION:

Step 1: Understanding the Question.

We must find the tax type among the four that does not fit the definition of a direct tax.

Step 2: Key Fact or Approach.

A direct tax is one where the person who pays it to the government is the same person who bears its final cost, with no way to shift that cost onto anyone else. An indirect tax is different, it gets added to the price of goods or services and is really paid by the final buyer, even though a seller or trader deposits it with the government.

Step 3: Detailed Explanation.

Income Tax is deducted from a person's own earnings and paid by that person, so it is direct. Corporation Tax works the same way for companies, charged on their profits and paid by the company itself. Gift Tax is charged on the person who receives a valuable gift, again a

direct charge on that individual. Sales Tax works differently, a shopkeeper adds it to the price of goods and collects it from the customer at the counter, then passes it on to the government. The final burden sits with the customer, which is the defining feature of an indirect tax.

Step 4: Final Answer.

Sales Tax is an indirect tax, so it is the one that is not a direct tax, matching option (c).

Quick Tip: Ask who finally bears the cost. If it passes from seller to buyer through the price of goods, it is an indirect tax.

• • •

55. King, Queen, workers and soldiers can be found in.

- (A) Ant Hills
- (B) Termite colonies
- (C) Bee Hives
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: Understanding the Question.

The question describes four types of individuals in a colony, a king, a queen, workers, and soldiers, and asks in which of the listed insect homes this pattern shows up.

Step 2: Key Fact or Approach.

Insects such as ants, termites, and bees are called eusocial insects because they live in cooperative colonies with a division of labour. Most such colonies have one or more reproductive individuals plus large numbers of non reproductive helpers, some of which specialise in defence.

Step 3: Detailed Explanation.

Termite colonies fit the description most exactly, with a king and queen that remain together for life, plus worker termites that build and forage and soldier termites that guard the nest with strong jaws or defensive secretions. Ant hills follow a similar pattern, a queen ant lays the eggs, sterile female workers run the colony, a soldier caste defends it in many species, and winged males that mate with the queen fill the king like role during the mating season. Bee hives are led by a single queen bee, with worker bees handling foraging, brood care, and nest defence, and drone bees serving the reproductive role that a king would in other colonies. Because each of the three habitats shows this queen or king plus worker plus soldier structure in some form, none of the three can be ruled out on its own.

Step 4: Final Answer.

Since ant hills, termite colonies, and bee hives all show some version of this caste pattern, the correct choice is All of the above, option (d).

Quick Tip: Think about eusocial insects generally, ants, termites and bees, and how each shows some version of a queen, king, workers and soldiers.



56. Which among the following is not a deptt under Ministry of Finance?

- (A) Department of Expenditure
- (B) Department of Financial Services
- (C) Department of Detection of Financial Frauds
- (D) Department of Disinvestment

Correct Answer: (C) Department of Detection of Financial Frauds

SOLUTION:

Step 1: Understanding the Question.

We need to spot the fake or non-existent department among four names that all sound like they could belong to the Ministry of Finance.

Step 2: Key Fact or Approach.

The Ministry of Finance in India is organised into a set number of departments, each with clearly defined work, such as economic policy, government spending, tax revenue, banking and insurance regulation, and disinvestment of public sector shares.

Step 3: Detailed Explanation.

The Department of Expenditure controls how the government spends money and manages the finances of central schemes and state transfers. The Department of Financial Services supervises public sector banks, insurance firms, and pension bodies. The Department of Disinvestment managed the sale of government equity in public sector undertakings, a role later folded into the Department of Investment and Public Asset Management. None of the actual departments of the Ministry of Finance is called the Department of Detection of Financial Frauds. Financial fraud cases in India are instead investigated by separate agencies outside this ministry's departmental structure, such as the Enforcement Directorate, the Central Bureau of Investigation,

and the Serious Fraud Investigation Office.

Step 4: Final Answer.

The Department of Detection of Financial Frauds is not a real department of the Ministry of Finance, so option (c) is correct.

Quick Tip: Recall the real departments of the Ministry of Finance: Economic Affairs, Expenditure, Revenue, Financial Services, and Disinvestment (DIPAM); fraud detection is not one of them.

• • •

57. Prior to the amendment in 2000, which tax was levied and collected by the Union but distributed between the Union and the States in India?

- (A) Central Sales Tax
- (B) Consignment Taxes
- (C) Income Tax
- (D) None of the above

Correct Answer: (C) Income Tax

SOLUTION:

Step 1: Understanding the Question:

We need to find which tax, before the year 2000, was collected fully by the central government but then split and given to both the Centre and the States.

Step 2: Key Formula or Approach:

Look at Article 270 of the Constitution as it stood before the 80th Amendment Act of 2000. This article dealt with one specific tax that

had to be shared with the states through the Finance Commission's award.

Step 3: Detailed Explanation:

Article 270, in its original form, covered taxes on income other than agricultural income.

The Union government collected this tax, kept a small part as a collection charge, and handed over the rest to the States in a ratio fixed by the Finance Commission.

Central Sales Tax works differently, it is collected and retained entirely by the exporting state, so it was never shared this way.

Consignment tax was only a proposal and was never implemented as an actual shared tax.

In the year 2000, the 80th Constitutional Amendment Act replaced this narrow scheme with a wider system, where a large pool of central taxes, not just income tax, gets shared with the states.

Step 4: Final Answer:

Before the 2000 amendment, it was Income Tax that the Union collected and then distributed between itself and the States.

Quick Tip: Think about Article 270 of the Constitution as it stood before the year 2000.

...

58. In 2007, the New York Stock Exchange was merged with _____ to form the first global equities exchange.

- (A) Chi-X
- (B) Xetra
- (C) Eurex
- (D) Euronext

Correct Answer: (D) Euronext

SOLUTION:

Step 1: Understanding the Concept:

The question asks which exchange combined with the New York Stock Exchange in 2007 to create a stock exchange group that spanned two continents for the first time.

Step 2: Key Formula or Approach:

Recall the timeline of major exchange mergers in the 2000s. NYSE Group had already merged with Archipelago in the US in 2006, and it was actively looking at Europe for its next expansion.

Step 3: Detailed Explanation:

Euronext itself was a European exchange group, built earlier in 2000 by joining the Paris, Amsterdam and Brussels bourses, with Lisbon and the London derivatives market, Liffe, added later.

In April 2007, NYSE Group and Euronext completed their merger and formed NYSE Euronext.

This was the first exchange group to bring together a leading US equities market and leading European equities markets under one holding company.

Xetra and Eurex are both platforms tied to Deutsche Borse in Germany, not to this NYSE deal, and Chi-X was a separate low-cost trading venue, so none of these three fit.

Step 4: Final Answer:

The New York Stock Exchange merged with Euronext in 2007, creating NYSE Euronext, the first global equities exchange.

Quick Tip: Think of the exchange group formed in 2000 from the Paris, Amsterdam and Brussels bourses.

• • •

59. The exemption limit for general category individual tax payers in the Union Budget 2012-13 is _____.

- (A) Rs 1,50,000 per annum
- (B) Rs 1,80,000 per annum
- (C) Rs 2,50,000 per annum
- (D) Rs 2,00,000 per annum

Correct Answer: (D) Rs 2,00,000 per annum

SOLUTION:

This question checks awareness of the income tax slabs announced in the Union Budget 2012-13, which was an important budget for individual taxpayers.

1. **Rs 1,50,000 per annum:** This was the exemption limit in earlier budgets, from before the slabs were revised upward, so it does not match 2012-13.
2. **Rs 1,80,000 per annum:** This was the exemption limit that applied just before the 2012-13 budget, that is, in 2011-12. The

new budget raised it further, so this is the previous year figure, not the answer.

3. **Rs 2,50,000 per annum:** This limit came into effect only in a later budget, after 2012-13, so it does not apply here.

4. **Rs 2,00,000 per annum:** The Finance Minister raised the basic exemption limit to this figure in the 2012-13 budget, giving relief of Rs 20,000 in the minimum tax free income compared to the year before.

The correct option is Rs 2,00,000 per annum, since this is the exact limit that was announced for general category individual taxpayers for the financial year 2012-13.

Let's summarize:

- The exemption limit before 2012-13 was Rs 1,80,000.
- Budget 2012-13 raised it to Rs 2,00,000, benefiting all general category taxpayers.

So, the exemption limit for general category individual taxpayers in Union Budget 2012-13 was Rs 2,00,000 per annum.

Quick Tip: The limit was raised in this budget from the previous year's Rs 1,80,000 figure.

• • •

60. What is the validity period for cheques and bank drafts now?

- (A) 6 months
- (B) 5 months
- (C) 3 months
- (D) 2 months

Correct Answer: (C) 3 months

SOLUTION:

Step 1: Understanding the Question:

The question asks for the current validity period of cheques and bank drafts, after a rule change made by the Reserve Bank of India.

Step 2: Key Formula or Approach:

Recall the RBI circular that shortened the life of negotiable instruments to reduce misuse of old, stale cheques and drafts.

Step 3: Detailed Explanation:

Earlier, cheques, drafts, pay orders and banker's cheques stayed valid for 6 months from the date they were issued.

The RBI felt that a 6 month window left room for fraud through alteration or misuse of old instruments, so it ordered banks to cut this period to 3 months.

This new rule of 3 months validity took effect from 1 April 2012 and applies uniformly across banks in India.

Options like 5 months and 2 months were never part of any actual RBI notification, so they can be ruled out directly.

Step 4: Final Answer:

The validity period for cheques and bank drafts now is 3 months.

Quick Tip: The RBI cut this validity period through a rule that took effect on 1 April 2012.

• • •

61. What is the name of the Turkish currency?

- (A) Turkish Lira
- (B) Turkish Dinar
- (C) Rubal
- (D) Turkish Krone

Correct Answer: (A) Turkish Lira

SOLUTION:

Step 1: Understanding the Concept:

The question is a straightforward currency identification question, we need the correct name of the money used in Turkey.

Step 2: Key Formula or Approach:

A quick way to solve currency questions is to match the currency name pattern to the country it actually belongs to, since exam options often borrow real currency names from other countries as distractors.

Step 3: Detailed Explanation:

Turkey's official currency has always been called the Lira, so the full name is the Turkish Lira.

Dinar belongs to countries like Kuwait, Jordan and Serbia, not Turkey, so Turkish Dinar is a made up combination.

Rubal looks like a misspelled version of Ruble, the Russian currency, so this option also points to the wrong country.

Krone is the currency name used in Denmark and Norway, so Turkish Krone is incorrect for the same reason.

Step 4: Final Answer:

The name of the Turkish currency is the Turkish Lira.

Quick Tip: Match each currency name in the options to the country it actually belongs to.

• • •

62. Yoga in Sanskrit means

- (A) Union
- (B) Separation
- (C) Exercise
- (D) None of the above

Correct Answer: (A) Union

SOLUTION:

Step 1: Understanding the Question:

The question asks for the literal, root level meaning of the Sanskrit word yoga, not its everyday modern usage.

Step 2: Key Formula or Approach:

Trace the word back to its Sanskrit root to find its original sense, rather than relying only on how the term is used today.

Step 3: Detailed Explanation:

Yoga is derived from the Sanskrit root yuj, meaning to yoke, join or unite.

In the philosophical sense, it refers to the union of the individual soul with universal consciousness, and in a simpler sense, the joining together of body, breath and mind.

Many people today think of yoga only as physical exercise involving asanas, but that is a practice built on top of the concept, not the literal

meaning of the word.

Separation is the direct opposite of union, so it clearly cannot be right.

Step 4: Final Answer:

In Sanskrit, yoga literally means Union.

Quick Tip: Trace the word yoga back to its Sanskrit root yuj.

• • •

63. The statutory auditor of a company is appointed by

- (A) the Managing Director of the company
- (B) the Board of Directors of the company
- (C) the Shareholders in the annual general meeting
- (D) the Company Law Board

Correct Answer: (C) the Shareholders in the annual general meeting

SOLUTION:

This question tests understanding of company law rules on who appoints a company's statutory auditor for its regular financial year.

1. **the Managing Director of the company:** A single director, even a managing director, does not have the power to appoint the statutory auditor on their own. This option is incorrect.
2. **the Board of Directors of the company:** The Board can only appoint the very first auditor right after incorporation, and that auditor's term lasts just until the first annual general meeting. The Board does not appoint the regular yearly auditor, so this is a partial trap, not the full answer.

3. **the Shareholders in the annual general meeting:** At each annual general meeting, the shareholders vote by ordinary resolution to appoint or reappoint the statutory auditor for the company, who then serves until the next annual general meeting. This is the standard, ongoing rule for auditor appointment.
4. **the Company Law Board:** This body gets involved mainly in special circumstances such as removing an auditor before their term ends, not in the routine yearly appointment process.

The correct option is the shareholders in the annual general meeting, since that is the body responsible for the regular appointment of the statutory auditor.

Let's summarize:

- The Board of Directors appoints only the first auditor, for a short initial term.
- From then on, shareholders appoint the auditor every year at the annual general meeting.

So, the statutory auditor of a company is appointed by the shareholders in the annual general meeting.

Quick Tip: Separate the rule for the very first auditor from the rule for every later, regular auditor.



64. Chairperson of Lakme who was once called the Cosmetic Czarina of India

- (A) Simone Tata
- (B) Priyadarshini Rao
- (C) Pratiksha Chaudhary
- (D) None of the above

Correct Answer: (A) Simone Tata

SOLUTION:

Step 1: Understanding the Question:

We need to identify the businesswoman who headed Lakme and was popularly given the title Cosmetic Czarina of India.

Step 2: Key Formula or Approach:

Connect the brand Lakme to the person known for leading it within the Tata Group's business circle.

Step 3: Detailed Explanation:

Lakme began as a cosmetics venture linked to the Tata Group and later grew into one of India's best known beauty brands.

Simone Tata took charge of the company's leadership and played a central role in expanding its reach across India.

Because of her strong influence in building the Indian cosmetics business, she became widely known by the title Cosmetic Czarina of India.

The other names listed, Priyadarshini Rao and Pratiksha Chaudhary, are not linked with Lakme's chairpersonship or with this nickname in any known record.

Step 4: Final Answer:

The chairperson of Lakme once called the Cosmetic Czarina of India was Simone Tata.

Quick Tip: Think of the businesswoman who headed the Tata Group's cosmetics brand.

...

65. Which is the odd one out?

- (A) RBI
- (B) SEBI
- (C) LIC
- (D) IRDA

Correct Answer: (C) LIC

SOLUTION:

Step 1: Understanding the Question:

We are given four names from the Indian financial system and asked to find the one that does not fit the pattern shared by the other three.

Step 2: Key Formula or Approach:

The quickest way to solve a "which one does not belong" question is to sort each option by what role it plays, not just the industry it sits in. Here the useful split is regulator versus regulated entity.

Step 3: Detailed Explanation:

The Reserve Bank of India controls banks and the money supply, so it is a regulator.

The Securities and Exchange Board of India controls the stock market

and stockbrokers, so it is also a regulator.

The Insurance Regulatory and Development Authority controls insurance companies, so it is a regulator as well.

The Life Insurance Corporation is not a watchdog over an industry. It is an insurer that sells policies to customers, and it answers to IRDA the way a bank answers to the RBI.

Grouping the four this way leaves three regulators (RBI, SEBI, IRDA) on one side and a single regulated company (LIC) on the other.

Step 4: Final Answer:

LIC is the odd one out because it is an insurance company supervised by a regulator, while RBI, SEBI, and IRDA are themselves the regulators.

Quick Tip: Three of the four are financial regulators; one of them is an insurance company that is regulated, not a regulator.

...

66. Who is the author of "Hunger and Entitlements"?

- (A) Khushwant Singh
- (B) Amartya Sen
- (C) Kiran Desai
- (D) Arundhati Roy

Correct Answer: (B) Amartya Sen

SOLUTION:

Step 1: Understanding the Concept:

The question names a specific piece of writing, "Hunger and

Entitlements," and asks which of four well known Indian writers produced it.

Step 2: Key Formula or Approach:

Match the subject of the title to the field each option is known for. A title about hunger and entitlements points to an economist studying famine, not a novelist.

Step 3: Detailed Explanation:

Amartya Sen built his reputation on showing that famines are usually caused by a collapse in people's ability to command food, what he called their "entitlement," rather than by there being too little food in a country overall. He used this idea to explain famines such as the Bengal famine of 1943, where food was available but many people had lost the income or rights needed to obtain it.

"Hunger and Entitlements" is one of the works where Sen set out this argument, and it fits directly with the Nobel Prize winning research that made him famous.

Khushwant Singh wrote about partition and Sikh history, Kiran Desai wrote prize winning fiction, and Arundhati Roy is known for fiction and political essays. None of them worked on famine economics.

Step 4: Final Answer:

The author of "Hunger and Entitlements" is Amartya Sen, the economist known for the entitlement theory of famine.

Quick Tip: The title is about famine economics and the entitlement theory, a field linked with a Nobel laureate economist, not a novelist.



67. What is the mascot of the 2011 India Census?

- (A) A woman enumerator
- (B) Our Census, Our Future
- (C) A tiger
- (D) An old man with a stick

Correct Answer: (A) A woman enumerator

SOLUTION:

Step 1: Understanding the Concept:

The question asks for the character chosen to represent the Census of India 2011 in its publicity material.

Step 2: Key Formula or Approach:

A mascot is normally built around the people or work at the heart of the event it represents. For a census, that work is the door to door data collection carried out by enumerators.

Step 3: Detailed Explanation:

The Census of India 2011 was the fifteenth national census and one of the largest administrative exercises in the world, covering more than a billion people. To make the process feel approachable to households being surveyed, the census office used a friendly cartoon mascot of a woman enumerator holding a notebook, since a large share of the enumerators visiting homes were women.

This image was printed on awareness posters and used in outreach campaigns ahead of the count. None of the other choices, a slogan, a tiger, or an old man with a stick, match the actual figure the census used.

Step 4: Final Answer:

The mascot of Census 2011 was a woman enumerator, representing the field staff who collected the data.

Quick Tip: The mascot represented the field staff who go door to door collecting census data.

• • •

68. Hippophobia is the fear of.....

- (A) dogs
- (B) horses
- (C) oxen
- (D) snakes

Correct Answer: (B) horses

SOLUTION:**Step 1: Understanding the Concept:**

The word "hippophobia" is built from two Greek parts, and the question wants us to identify what it names a fear of.

Step 2: Key Formula or Approach:

Split the word into its two Greek building blocks. "Phobia" always means an irrational or extreme fear of something. The first part, "hippo," tells us what that something is.

Step 3: Detailed Explanation:

In Greek, "hippos" means horse. This same root shows up in "hippodrome," an old arena built for horse and chariot races, and in

"hippopotamus," which literally translates to "river horse."

Putting the parts together, hippophobia is the medical or informal term for an intense, irrational fear of horses.

Checking the distractors confirms this: fear of dogs uses the root "kynos" and is called cynophobia, while fear of snakes uses the root "ophis" and is called ophidiophobia. Neither of those roots appears in "hippophobia," so dogs and snakes can be ruled out, and there is no established term linking "hippo" to oxen.

Step 4: Final Answer:

Hippophobia means the fear of horses, since "hippos" is Greek for horse.

Quick Tip: The Greek root 'hippos' means horse, the same root seen in hippopotamus and hippodrome.

• • •

69. The most common symbol found on the national flags of countries around the world is.....

- (A) Star
- (B) Crescent
- (C) Animal
- (D) Stripes

Correct Answer: (A) Star

SOLUTION:

Step 1: Understanding the Question:

We are asked to pick which of four motifs, a star, a crescent, an

animal, or stripes, turns up most often across the flags of the world's nations.

Step 2: Key Formula or Approach:

Think of this as a counting problem across roughly 190 flags. The option tied to the widest spread of regions and political groupings, rather than one cultural or religious tradition, is the likely winner.

Step 3: Detailed Explanation:

A crescent is closely tied to countries with historical Islamic influence, such as Pakistan, Turkey, and Algeria, so its use is concentrated in one cultural belt rather than spread globally.

Animal emblems, such as the eagle on Mexico's flag or the phoenix and dragon used historically elsewhere, are a design choice made by only a handful of countries.

Stripes form the background pattern on many flags, from the United States to several African nations, but they function as a layout style rather than a single symbol placed on the flag.

Stars, in contrast, show up on flags from Latin America, Asia, Africa, Europe, and Oceania alike, sometimes alone as in Vietnam and sometimes in a group as in the United States, Australia, or China. This spread across unrelated regions and traditions is what makes the star the single most common symbol used on national flags.

Step 4: Final Answer:

The star is the most common symbol found on the national flags of the world.

Quick Tip: Think about which motif appears across flags of every continent, not just one cultural or religious group.

70. The unit used to measure the speed and direction of movement of a computer mouse is called.....

- (A) Mashboard
- (B) RSTP
- (C) Mickey
- (D) SDP

Correct Answer: (C) Mickey

SOLUTION:

Step 1: Understanding the Concept:

The question is looking for the specific technical name of the unit that hardware engineers use to record how far and in which direction a mouse has been moved.

Step 2: Key Formula or Approach:

Eliminate any option that clearly belongs to a different field of computing, such as networking or media streaming, then check whether the surviving option is a documented unit in mouse specifications.

Step 3: Detailed Explanation:

RSTP, the Rapid Spanning Tree Protocol, is used inside computer networks to stop data loops between switches, so it has nothing to do with input devices.

SDP, the Session Description Protocol, describes multimedia sessions for things like video calls, again unrelated to mouse hardware.

"Mashboard" is not an established term in computing at all.

That leaves "mickey," which is in fact the real unit manufacturers use:

one mickey is about one two hundredth of an inch of physical movement, and mouse sensitivity specifications are often written as "mickeys per inch." The playful name comes from the mouse's own nickname, since the device is named after the animal, and the unit borrows the name of the famous cartoon mouse.

Step 4: Final Answer:

The unit used to measure a mouse's movement speed and direction is called a mickey.

Quick Tip: The unit is named after the mouse itself, playfully borrowing the name of a famous cartoon mouse.

...

71. Which of the following causes Tetanus?

- (A) Bacteria
- (B) Virus
- (C) Fungi
- (D) None of the above

Correct Answer: (A) Bacteria

SOLUTION:

Step 1: Understanding the Concept:

The question asks which broad category of microorganism, bacteria, virus, or fungi, is responsible for tetanus.

Step 2: Key Formula or Approach:

Recall the specific organism behind tetanus, then place it into the

correct microbial category rather than guessing from the disease name alone.

Step 3: Detailed Explanation:

Tetanus is traced to *Clostridium tetani*, a rod shaped organism that is classed as a bacterium. Its spores survive for long periods in soil and animal manure and can enter the body through a deep cut, puncture wound, or burn.

Once inside a wound with little oxygen, the spores germinate and the bacteria release tetanospasmin, a neurotoxin that interferes with the nerves controlling muscles. This is what produces the severe, often fatal, muscle rigidity associated with the disease, sometimes called lockjaw because it commonly starts by locking the jaw muscles.

Since viruses cause different illnesses such as flu or measles, and fungi cause skin and other infections unrelated to nerve toxins, both of those options and "none of the above" can be ruled out.

Step 4: Final Answer:

Tetanus is caused by bacteria, specifically *Clostridium tetani*.

Quick Tip: The organism responsible is *Clostridium tetani*, which lives in soil and enters the body through wounds.

...

72. Question Hour in Parliament refers to.....

- (A) The first hour of the sitting
- (B) The period between 5 PM and 6 PM
- (C) The hour after the lunch break
- (D) None of the above

Correct Answer: (A) The first hour of the sitting

SOLUTION:

Step 1: Understanding the Concept:

The question asks us to identify exactly what "Question Hour" means in the functioning of the Indian Parliament.

Step 2: Key Formula or Approach:

Recall how a typical day's sitting of Parliament is structured and where the slot for asking ministers questions falls within that schedule.

Step 3: Detailed Explanation:

A sitting of the Lok Sabha or Rajya Sabha usually opens at 11 AM, and the very first hour of that sitting, from 11 AM to 12 noon, is reserved as Question Hour.

During this time, members of Parliament put questions, starred, unstarred, or short notice, to ministers about the policies and administration of their ministries, and the ministers respond in the House. This mechanism is one of the main tools Parliament uses to hold the executive accountable on a daily basis.

The other time slots mentioned, 5 PM to 6 PM or the period right after lunch, are used for other legislative work such as debates or bill discussions, not for Question Hour. Since Question Hour is a well defined and named part of the schedule, "none of the above" does not fit either.

Step 4: Final Answer:

Question Hour refers to the first hour of a parliamentary sitting, set aside for members to question ministers.

Quick Tip: Question Hour sits at the very start of a parliamentary sitting, before the rest of the day's business.

• • •

73. Which of the following date is celebrated as Victory Day by Bangladesh and Vijay Diwas by India?

- (A) 15 December
- (B) 16 December
- (C) 21 December
- (D) 28 November

Correct Answer: (B) 16 December

SOLUTION:

Step 1: Understanding the Question:

The question asks for one specific calendar date that both Bangladesh and India observe every year to mark a major event from 1971, though under two different names.

Step 2: Key Fact or Approach:

The Bangladesh Liberation War of 1971 ended with a formal military surrender in Dhaka, and that surrender date became the anniversary both countries now observe. Matching the historical date to the calendar options given is enough to answer this.

Step 3: Detailed Explanation:

On 16 December 1971, the Pakistani Eastern Command surrendered to the joint command of the Indian Army and the Mukti Bahini in Dhaka, ending nine months of war and creating the new nation of

Bangladesh.

Bangladesh calls this date Bijoy Dibosh, its national Victory Day, celebrated with parades and state ceremonies each year.

India calls the same date Vijay Diwas, honouring the soldiers of the 1971 war with wreath laying ceremonies at military memorials.

The other three dates, 15 December, 21 December and 28 November, do not correspond to this surrender or to any matching dual observance by both countries.

Step 4: Final Answer:

16 December is the date jointly marked as Victory Day in Bangladesh and Vijay Diwas in India, so option (b) is correct.

Quick Tip: Recall the date the Pakistani Eastern Command surrendered in Dhaka in 1971.

• • •

74. Which of the following term is used for regulator prescribed price limit on stock indices in stock markets?

- (A) Circuit Filter
- (B) Bounds
- (C) Limit Orders
- (D) Current Breakers

Correct Answer: (A) Circuit Filter

SOLUTION:

Step 1: Understanding the Question:

The question wants the official name of the mechanism that stops

trading on a stock exchange when an index rises or falls sharply within a short time.

Step 2: Key Fact or Approach:

Stock exchange regulators build in automatic trading halts to prevent panic driven crashes or spikes. In India this specific price band mechanism applied to broad market indices has one accepted name, and eliminating the terms that describe something else narrows down the answer.

Step 3: Detailed Explanation:

SEBI, together with the BSE and NSE, sets index movement thresholds, commonly 10 percent, 15 percent and 20 percent moves in the Sensex or Nifty, that trigger a market wide trading halt for a fixed number of minutes or for the rest of the day depending on the time of the move.

This regulatory price band is called a circuit filter.

Limit orders belong to individual traders placing buy or sell instructions at a chosen price, which is a completely different concept from a market wide regulatory halt.

Bounds and current breakers are not the terms used in exchange regulation, they are close sounding but incorrect labels included to test careful reading.

Step 4: Final Answer:

The regulator prescribed price limit on stock indices is called a circuit filter, so option (a) is correct.

Quick Tip: Think of the index level trading halt mechanism set by SEBI and the exchanges.

75. Name the company which has appointed Sushil Kumar as its Ambassador?

- (A) MRF Tyres
- (B) Ralson Tyres
- (C) Goodyear
- (D) Lego Group

Correct Answer: (B) Ralson Tyres

SOLUTION:

Step 1: Understanding the Question:

The question asks which company hired the wrestler Sushil Kumar as its brand ambassador.

Step 2: Key Fact or Approach:

Brands often use well known sportspersons to promote their products, and matching the athlete to the right company is a matter of recalling the specific endorsement deal from that period.

Step 3: Detailed Explanation:

Sushil Kumar built his reputation as one of India's most successful wrestlers, with a bronze medal at the 2008 Beijing Olympics and a silver at the 2012 London Olympics.

Around this time, Ralson Tyres, an Indian tyre company, chose him as its brand ambassador, linking his image of grit and physical strength to its tyre products.

MRF Tyres is better known in Indian sport for its cricket bat sponsorships rather than for this wrestling endorsement.

Goodyear and Lego Group have no recorded connection to Sushil

Kumar, with Lego in particular being a toy company entirely outside the world of sports endorsements.

Step 4: Final Answer:

Ralson Tyres is the company that appointed Sushil Kumar as its ambassador, so option (b) is correct.

Quick Tip: Think of an Indian tyre brand that used an Olympic wrestler's image around 2012.

• • •

76. Name the first European country to come to India and last to leave.

- (A) France
- (B) Denmark
- (C) Portugal
- (D) England

Correct Answer: (C) Portugal

SOLUTION:

Step 1: Understanding the Question:

The question needs one European country that satisfies two conditions together, being the earliest to reach India and also the latest to give up its Indian territory.

Step 2: Key Fact or Approach:

Comparing the historical arrival and departure years of each European colonial power in India settles this question directly.

Step 3: Detailed Explanation:

Portuguese explorer Vasco da Gama reached Calicut on the Kerala coast in 1498, which was the first time a European sea route to India had been established, so Portuguese contact with India began before any other European power.

The Portuguese held on to Goa, Daman and Diu even after Indian independence in 1947, and these territories were only annexed into India in December 1961 through military action.

By comparison, England's rule ended in 1947, France left Puducherry in 1954, and Denmark had already sold its settlements to Britain in 1845.

None of these three match both conditions of the question the way Portugal does.

Step 4: Final Answer:

Portugal was the first European country to arrive in India and the last one to leave, so option (c) is correct.

Quick Tip: Compare the arrival year of Vasco da Gama with the year Goa was taken back by India.

• • •

77. Name the maker of Royal Enfield Bullet?

- (A) TVS motors
- (B) Hero Motocorp
- (C) Eicher motors
- (D) None of these

Correct Answer: (D) None of these

SOLUTION:

Step 1: Understanding the Question:

The question asks which of the three named companies actually manufactures the Royal Enfield Bullet motorcycle.

Step 2: Key Fact or Approach:

Checking whether the exact brand name that makes the Bullet appears anywhere in the answer choices settles the question, since the exam is testing the precise maker's name rather than the parent business group.

Step 3: Detailed Explanation:

The Bullet motorcycle is produced under the brand Royal Enfield, a name that traces back to Enfield India Limited and today functions as the two wheeler arm of the Eicher Group.

TVS Motors and Hero MotoCorp are both completely separate two wheeler companies with their own model lineups, and neither has ever produced the Bullet.

Eicher Motors does own Royal Enfield as its parent company, which makes it a natural first guess, but the product itself carries and is sold under the Royal Enfield name, which is not one of the three companies listed in the options.

Because the actual manufacturer's name is absent from the given choices, none of the three listed options can be marked as strictly correct.

Step 4: Final Answer:

Since Royal Enfield, the real maker of the Bullet, is not among the listed companies, the correct choice is option (d), None of these.

Quick Tip: Check whether the exact brand name that makes the Bullet appears among the options.

• • •

78. Which company operates both Delhi and Hyderabad Airports?

- (A) GMR Group
- (B) BIAL
- (C) CIAL
- (D) MIAL

Correct Answer: (A) GMR Group

SOLUTION:

Step 1: Understanding the Question:

The question wants the single company that runs two named airports at the same time, Delhi and Hyderabad.

Step 2: Key Fact or Approach:

Indian metro airports were modernised through public private partnerships in the mid 2000s, and each major airport is tied to one lead private promoter. Matching promoters to cities identifies the answer.

Step 3: Detailed Explanation:

Delhi's Indira Gandhi International Airport is run by Delhi International Airport Limited, a joint venture in which GMR Group holds the largest private stake.

Hyderabad's Rajiv Gandhi International Airport is run by GMR Hyderabad International Airport Limited, again led by GMR Group.

BIAL is tied only to Bengaluru's airport, CIAL only to Kochi's airport, and MIAL, led by the GVK Group, only to Mumbai's airport, so each of these three covers a single city and not the pair asked about.

GMR Group is therefore the one promoter that appears in both the Delhi and the Hyderabad airport structures.

Step 4: Final Answer:

GMR Group operates both the Delhi and Hyderabad airports, so option (a) is correct.

Quick Tip: Think of the infrastructure group behind both Indira Gandhi and Rajiv Gandhi International Airports.

• • •

79. Who is winner of Nobel Prize in Literature for year 2011?

- (A) Mo Yan
- (B) David J. Wineland
- (C) Tomas Transtromer
- (D) Shinya Yamanaka

Correct Answer: (C) Tomas Transtromer

SOLUTION:

Step 1: Understanding the Question:

The question asks specifically for the Nobel Prize in Literature winner of the year 2011, among four names drawn from different Nobel fields and years.

Step 2: Key Fact or Approach:

Sorting each name by its actual Nobel category and year, rather than just recognising the names as Nobel laureates, is what separates the correct choice from the distractors here.

Step 3: Detailed Explanation:

Tomas Tranströmer, a Swedish poet, received the Nobel Prize in Literature in 2011 for his body of poetic work marked by vivid, compressed imagery.

Mo Yan, a Chinese author, is also a Literature laureate, but his award came a year later, in 2012.

David J. Wineland worked in physics and won the Nobel Prize in Physics in 2012 for trapping and measuring individual quantum particles.

Shinya Yamanaka is a stem cell researcher who won the Nobel Prize in Physiology or Medicine in 2012.

Of the four, only Tranströmer's prize matches both the Literature category and the year 2011 that the question specifies.

Step 4: Final Answer:

Tomas Tranströmer is the correct winner of the 2011 Nobel Prize in Literature, so option (c) is correct.

Quick Tip: Separate the 2011 Nobel laureates from those honoured in 2012.

• • •

80. Birth rate measures number of births during a year per what population?

- (A) 100
- (B) 1000
- (C) 10000
- (D) 100000

Correct Answer: (B) 1000

SOLUTION:

Step 1: Understanding the Question:

The question wants the standard denominator population figure that the birth rate is calculated against every year.

Step 2: Key Fact or Approach:

Demography uses fixed, internationally accepted bases for different vital statistics, and recalling the specific base used for birth rate, as opposed to death rate, maternal mortality or disease incidence, answers this directly.

Step 3: Detailed Explanation:

The crude birth rate is defined as the total number of live births recorded in a year divided by the mid year population of the area, with the result expressed per 1,000 people.

For example, if a region records 20 births for every 1,000 residents in a year, its crude birth rate is stated as 20.

A base of 100 would produce awkward decimal figures for most real populations, since yearly births are a small fraction of the total.

Bases of 10,000 and 100,000 are used elsewhere in public health statistics, such as disease incidence or maternal mortality ratio, but not for the standard birth rate.

Step 4: Final Answer:

Birth rate is measured per 1,000 population, so option (b) is correct.

Quick Tip: Recall the standard denominator used for crude birth rate in demography.

• • •

81. Find out the synonym of the given word.

Minion

- (A) host
- (B) inferior
- (C) follower
- (D) master

Correct Answer: (C) follower

SOLUTION:**Step 1: Understanding the Question:**

We need to pick the word closest in meaning to "minion" from the four choices given.

Step 2: Key Formula or Approach:

Break the target word into its core sense first, then test each option against that sense one at a time, ruling out any option that shifts the meaning even slightly.

Step 3: Detailed Explanation:

"Minion" comes from a French root meaning a favorite or a servant who is loyal to someone more powerful. In everyday use it often

carries a mildly negative tone, describing a person who follows orders without question.

"Host" points to someone who welcomes guests or a large gathering, a completely separate idea.

"Master" is the reverse relationship, the person being served, not the one serving.

"Inferior" only tells us about rank or quality, it says nothing about loyalty or obedience to a leader.

"Follower" carries both pieces: lower standing and active obedience to someone else, which lines up with what a minion actually is.

Step 4: Final Answer:

The word that matches "minion" in meaning is "follower", so the answer is option (c).

Quick Tip: Think of the word that best describes someone who obeys and serves a leader without question.

• • •

82. Find out the synonym of the given word.

Platitude

- (A) condolence
- (B) a trite phrase
- (C) empty promise
- (D) an obligation

Correct Answer: (B) a trite phrase

SOLUTION:

Step 1: Understanding the Question:

The task is to find the phrase that means the same as "platitude".

Step 2: Key Formula or Approach:

Recall where the word is normally used, in conversation about dull, repeated remarks, then match that context against each answer choice.

Step 3: Detailed Explanation:

A platitude is a comment that sounds wise or caring on the surface but has been repeated so many times that it carries no real weight, such as saying "everything happens for a reason" without any thought behind it.

"Condolence" belongs to a different context altogether: it is about comforting someone who is grieving, not about a stale remark.

"Empty promise" refers to a pledge that will not be honored, which is a different failure of speech than being unoriginal.

"An obligation" is a duty, again unrelated to the freshness or staleness of words.

Only "a trite phrase" describes speech that has become dull and predictable from overuse, which is the exact quality a platitude has.

Step 4: Final Answer:

The correct synonym is "a trite phrase", so the answer is option (b).

Quick Tip: Think of what kind of remark has been said so many times it no longer feels fresh or sincere.



83. Find out the synonym of the given word.

Polemic

- (A) an indication
- (B) a misunderstanding
- (C) a contentious argument
- (D) a complaint

Correct Answer: (C) a contentious argument

SOLUTION:

Step 1: Understanding the Question:

We must choose the phrase closest in meaning to "polemic".

Step 2: Key Formula or Approach:

Think of where the word "polemic" is normally heard, in debates, essays or speeches where someone argues strongly against an opposing view, then check which option keeps that sense of dispute.

Step 3: Detailed Explanation:

A polemicist writes or speaks to attack an idea or defend one with force, often stirring disagreement among readers or listeners.

"An indication" only means a sign, with no argument involved.

"A misunderstanding" describes confusion between people, not a deliberate line of reasoning.

"A complaint" voices dissatisfaction but does not require building a case for or against something.

"A contentious argument" keeps both the idea of dispute (contentious) and structured reasoning (argument), which is the essence of a polemic.

Step 4: Final Answer:

The word closest in meaning to "polemic" is "a contentious argument", so the answer is option (c).

Quick Tip: Think of the kind of forceful, disputed argument used to attack or defend a strong opinion.

• • •

84. Find out the synonym of the given word.

Leitmotif

- (A) recurring theme
- (B) spirit of the age
- (C) main design
- (D) chief objective

Correct Answer: (A) recurring theme

SOLUTION:**Step 1: Understanding the Question:**

The task is to find the phrase that matches the meaning of "leitmotif".

Step 2: Key Formula or Approach:

Trace the word back to its origin in music, where it names a phrase that keeps returning, then look for the option that keeps that sense of repetition.

Step 3: Detailed Explanation:

In opera, a leitmotif is a short musical idea tied to a character or event that plays again whenever that character or event appears. Writers

borrowed the word to describe any theme, image or idea that reappears through a book, film or speech.

"Spirit of the age" describes the general mood of a time period, not something that repeats within one work.

"Main design" points to overall structure or plan, with no sense of repetition.

"Chief objective" names a goal, unrelated to a returning idea.

Only "recurring theme" keeps the essential sense of something coming back again and again, which is what a leitmotif does.

Step 4: Final Answer:

The correct synonym for "leitmotif" is "recurring theme", so the answer is option (a).

Quick Tip: Think of the musical term for an idea or phrase that keeps returning through a piece of work.

• • •

85. Find out the synonym of the given word.

Iridescent

- (A) blaze
- (B) luster
- (C) murkiness
- (D) illustration

Correct Answer: (B) luster

SOLUTION:

Step 1: Understanding the Question:

We need the word closest in meaning to "iridescent".

Step 2: Key Formula or Approach:

Picture a real example of the word, such as a soap bubble or a butterfly wing, then match the quality that example shows against each option.

Step 3: Detailed Explanation:

A soap bubble looks iridescent because thin films of soap bend light and split it into shifting colors as you tilt it. That quality is a soft, glowing shine, not a fierce burst of light.

"Blaze" describes fire or a very strong burst of brightness, more intense than the gentle shimmer iridescence carries.

"Murkiness" is the opposite quality, describing dull, unclear surfaces such as muddy water.

"Illustration" refers to a picture or example, with no link to light at all.

"Luster" describes a soft glow or sheen, which is the closest match to the gentle, shifting shine of an iridescent surface.

Step 4: Final Answer:

The correct synonym for "iridescent" is "luster", so the answer is option (b).

Quick Tip: Think of the soft, shimmering glow you see on a soap bubble or a peacock feather.

• • •

86. Select the phrase that is incorrect.

- (A) highly educated
- (B) highly profitable
- (C) highly unusual
- (D) highly exhausted

Correct Answer: (D) highly exhausted

SOLUTION:

Step 1: Understanding the Concept:

This question tests how intensifiers like "highly" combine with adjectives, and where that combination breaks down.

Step 2: Key Formula or Approach:

Split adjectives into two kinds: gradable adjectives, which allow different levels or degrees, and extreme or non-gradable adjectives, which already describe a complete or maximum state. Words like "highly", "very" and "quite" only belong before gradable adjectives. Extreme adjectives need words like "absolutely", "completely" or "totally" instead.

Step 3: Detailed Explanation:

"Educated", "profitable" and "unusual" can each apply in varying amounts: a person can be somewhat educated or highly educated, a company mildly profitable or highly profitable, an event a little unusual or highly unusual. These three phrases are all correctly formed.

"Exhausted", on the other hand, is an extreme adjective. It already means as tired as one can possibly be, so there is no smaller or larger degree of "exhausted" to describe. Placing "highly" in front of it duplicates the sense of extremity the word already contains, which is

why the phrase sounds wrong.

The correct way to intensify "exhausted" is with "completely exhausted" or "totally exhausted", never "highly exhausted".

Step 4: Final Answer:

The phrase that is incorrect is "highly exhausted", so the answer is option (d).

Quick Tip: Think about which of these adjectives already describes a complete, extreme state on its own.

• • •

87. Fill in the blank with the correct word.

Today's Headline: The Indian team _____ another Olympic gold medal.

- (A) had won
- (B) have won
- (C) won
- (D) wins

Correct Answer: (D) wins

SOLUTION:

Step 1: Understanding the Concept:

This question checks whether the reader knows the special tense rule that applies to newspaper headlines.

Step 2: Key Formula or Approach:

Headline writers use the simple present tense to describe events that

have already happened, because it makes the news feel current and grabs attention. Only when a headline talks about something that will happen in the future does it switch to the "to" infinitive form. The sentence in the news report itself, in contrast, is written in the normal past tense.

Step 3: Detailed Explanation:

The sentence is clearly marked as a headline: "Today's Headline: The Indian team ____ another Olympic gold medal." Since this is a headline and not the report body, the past forms "had won" and "have won" do not belong here, and even the plain past tense "won" is avoided by convention.

The word "wins", in the simple present tense, is the standard headline form for reporting a completed win, matching real newspaper style such as "India wins gold" rather than "India won gold".

Step 4: Final Answer:

The correct headline verb is "wins", so the answer is option (d).

Quick Tip: Remember that newspaper headlines are written in the simple present tense, even for past events.

• • •

88. Fill in the blank with the correct word.

Try as I _____, I couldn't open the door.

- (A) could
- (B) should
- (C) might
- (D) would

Correct Answer: (C) might

SOLUTION:

Step 1: Understanding the Concept:

This question tests knowledge of a common fixed idiom rather than a general grammar rule.

Step 2: Key Formula or Approach:

Some phrases in English are fixed, meaning only one specific word slots correctly into them no matter how logical another word might sound. Recognizing the idiom "try as I might" as a whole unit is the fastest way to answer this kind of question, rather than testing each modal verb for meaning alone.

Step 3: Detailed Explanation:

The sentence structure "Try as I ____, [result did not happen]" is a concessive construction meaning "no matter how hard I tried, the result still did not happen".

This exact construction is idiomatically fixed with "might": "Try as I might, I couldn't open the door" is a natural, commonly used English sentence.

Swapping in "could", "should" or "would" breaks this fixed pattern. None of these three appear in standard usage in this construction, even though they are all modal verbs like "might".

Step 4: Final Answer: The word that correctly completes the idiom is "might", so the answer is option (c).

Quick Tip: This blank is part of a fixed idiom meaning despite trying hard, the result still did not happen.

89. I think it would be nice to buy him MP3 player as New year's gift.

- (A) an / the
- (B) the / a
- (C) a / a
- (D) an / a

Correct Answer: (D) an / a

SOLUTION:

Step 1: Understanding the Question:

The sentence has two blanks, each needing an article: "a", "an", or "the". We must pick the article that matches the sound of the next word and the specificity of the noun.

Step 2: Key Formula or Approach:

Rule 1: "an" comes before a vowel sound, "a" comes before a consonant sound, no matter how the word is spelled.

Rule 2: "the" is used for a specific, already identified noun; "a"/"an" is used for a noun mentioned for the first time or spoken of in general.

Step 3: Detailed Explanation:

First blank: the word after it is "MP3 player". Said aloud, "MP3" starts with "em", a vowel sound, even though the letter M is a consonant. So the first blank needs "an".

Second blank: the phrase is "New Year's gift". This gift has not been named or pointed out earlier in the sentence, so it stays a general, first-mention noun. The second blank needs "a", not "the".

Checking the four choices against these two rules, only "an" for blank one and "a" for blank two survive together.

Step 4: Final Answer:

The correct pair of articles is "an" and "a", so option (d) is correct.

Quick Tip: Think about the sound at the start of the next word, not its spelling.

• • •

90. Fill in the blanks with the correct pronoun.

shall I say is calling?

do you advice the most?

(A) whom / whom

(B) whom / who

(C) who / who

(D) who / whom

Correct Answer: (D) who / whom

SOLUTION:**Step 1: Understanding the Concept:**

"Who" and "whom" are both pronouns used to ask about a person, but they play different grammatical roles. "Who" works as a subject, "whom" works as an object.

Step 2: Key Formula or Approach:

A quick test: try answering the question with "he" or "him" in your head. If "he" fits, use "who". If "him" fits, use "whom".

Step 3: Detailed Explanation:

First sentence: " ____ shall I say is calling?" Answer it: "He is calling", not "Him is calling." Since "he" fits, the blank takes "who".

Second sentence: " ____ do you advice the most?" Answer it: "I advice him the most", not "I advice he the most." Since "him" fits, the blank takes "whom".

Running this test rules out any option that repeats the same word twice, and it rules out swapping the pair the wrong way round.

Step 4: Final Answer:

The correct words are "who" for the first blank and "whom" for the second, so option (d) is correct.

Quick Tip: Check whether the missing word is the subject or the object of the verb.

• • •

91. Directions for questions 91 and 92: Fill in the blanks with the correct words or phrases.

The government's attempt to petrol prices have failed.

- (A) wipe off
- (B) cap off
- (C) sweep aside
- (D) force down

Correct Answer: (D) force down

SOLUTION:

Step 1: Understanding the Question:

The sentence says the government tried to do something to petrol

prices, and failed. We need the phrase that means "bring down" or "reduce".

Step 2: Key Formula or Approach:

Read each phrasal verb by its everyday meaning and check which one naturally pairs with the word "prices".

Step 3: Detailed Explanation:

"Wipe off" suits things like debts, marks, or memories being erased entirely, not a price being lowered.

"Cap off" suits ending an event or achievement on a high note, unrelated to price control.

"Sweep aside" suits ignoring a criticism or objection, not adjusting a numeric value like a price.

"Force down" suits pushing a rate, level, or price lower through pressure or policy, which matches "petrol prices" perfectly.

Only "force down" combines correctly with "prices" while keeping the intended meaning of the sentence.

Step 4: Final Answer:

"Force down" is the correct phrase, so option (d) is correct.

Quick Tip: Look for the phrase that means to push a value or level lower.



92. It is important that the TOEFL office every applicant's registration.

- (A) will confirm
- (B) confirms
- (C) confirm
- (D) confirming

Correct Answer: (B) confirms

SOLUTION:

This question checks subject-verb agreement inside the clause "that the TOEFL office ____ every applicant's registration."

1. **will confirm:** brings in a future-tense modal, but the sentence describes a routine duty performed by the office, not a specific future action, so this form is out of place.
2. **confirms:** matches the singular subject "office" with the "-s" ending used for third-person singular subjects in the simple present tense, which fits the routine, ongoing nature of the statement.
3. **confirm:** is the base form without the "-s", correct for plural subjects like "they confirm" or "offices confirm", but not for the singular "office".
4. **confirming:** is a participle form and needs a helping verb such as "is" to function as the main verb, so it cannot stand alone here.

Since "office" is singular and the sentence is a general statement of fact, the verb must carry the singular "-s" ending.

Let's summarize:

- Singular subjects take verbs ending in "-s" in the simple present tense.

- A bare form without "-s", a modal, or an "-ing" form each fail to match a singular subject in a plain present-tense statement.

The verb that agrees correctly is "confirms", confirming that option (b) is the answer.

Quick Tip: Check which verb form agrees with the singular subject "office".

• • •

93. Identify the correct sentence structure.

My family watches cricket matches on television but never goes to the stadium.

- (A) Simple Sentence
- (B) Complex Sentence
- (C) Compound Sentence
- (D) No Category

Correct Answer: (B) Complex Sentence

SOLUTION:

This question is about telling apart simple, compound, and complex sentences by counting clauses and checking whether each one can stand alone.

1. **Simple Sentence:** would need just one action tied to the subject. Here there are two actions, "watches" and "goes", so a single-action simple sentence does not describe this line.
2. **Complex Sentence:** needs one independent clause plus a clause that depends on it and cannot stand alone. "My family watches

cricket matches on television" stands alone fine, but "never goes to the stadium" has no subject of its own and only makes sense attached to "my family" from the first part, so it behaves as a dependent addition rather than a fully separate clause.

3. **Compound Sentence:** would need two independent clauses, each carrying its own subject and able to stand alone, joined by "but". Since the second half has no subject written out, it fails this test.
4. **No Category:** does not apply, since the sentence clearly fits a describable structure.

Because the second action rides on the subject of the first clause instead of forming its own complete, standalone clause, the sentence is best read as one main clause with a dependent second part.

Let's summarize:

- A compound sentence needs two clauses that can each stand alone with their own subject.
- Here, the second action shares its subject with the first and cannot stand alone, which points to a complex sentence.

So the given sentence is a complex sentence, confirming option (b) as the answer.

Quick Tip: Check whether the second part of the sentence can stand alone as its own clause.



94. Spot the error in the following sentence.

He said, "What a wonderful surprise"!

- (A) no comma
- (B) quotation marks instead of exclamation
- (C) exclamation inside quotes
- (D) no change

Correct Answer: (C) exclamation inside quotes

SOLUTION:

Step 1: Understanding the Concept:

The sentence is: He said, "What a wonderful surprise"! We must find what is wrong with the punctuation.

Step 2: Key Formula or Approach:

When the words inside quotation marks form their own complete exclamation or question, the exclamation mark or question mark belongs to those quoted words and must be placed before the closing quotation mark, not after it.

Step 3: Detailed Explanation:

Here, "What a wonderful surprise" is itself an exclamatory remark, spoken with feeling, so it needs its own exclamation mark as part of the quoted speech.

In the given sentence, the exclamation mark sits after the closing quotation mark: "What a wonderful surprise"! This wrongly treats the exclamation as belonging to the reporting sentence "He said" rather than to the quoted words.

The comma after "said" is already used correctly to introduce direct speech, so that part needs no fix. Swapping the quotation marks for an exclamation mark would remove the quotes needed to show the exact spoken words, so that is not the fix either.

The only correction needed is moving the exclamation mark inside the quotes: He said, "What a wonderful surprise!"

Step 4: Final Answer:

The exclamation mark should be placed inside the quotation marks, so option (c) is correct.

Quick Tip: Punctuation that belongs to the quoted words goes inside the quotation marks.

• • •

95. Directions for questions 95 to 97: From the given options, choose the word that is most nearly same in meaning to the underlined word.

He asked his friend why he has so tetchy with his wife.

- (A) jealous
- (B) unfriendly
- (C) irritable
- (D) conceited

Correct Answer: (C) irritable

SOLUTION:

Step 1: Understanding the Concept:

We need a synonym for "tetchy" as used in "why he has so tetchy with his wife", describing how the man behaved toward his wife.

Step 2: Key Formula or Approach:

To find the closest synonym, replace the underlined word with each option in the sentence and check which one keeps the same meaning

and tone.

Step 3: Detailed Explanation:

"He asked his friend why he has so jealous with his wife" suggests envy, which is not what the sentence describes; the man is not shown wanting something his wife has.

"He asked his friend why he has so unfriendly with his wife" suggests coldness, which is close but misses the short-fused, snapping quality tied to "tetchy".

"He asked his friend why he has so irritable with his wife" fits naturally, since "tetchy" specifically describes someone quick to get annoyed or short-tempered over small things.

"He asked his friend why he has so conceited with his wife" points to excessive self-pride, a completely different trait from being short-tempered.

Replacing the word confirms that "irritable" preserves the original meaning most closely.

Step 4: Final Answer:

"Tetchy" means irritable or bad-tempered, so option (c) is correct.

Quick Tip: Think of a word describing someone who is quick to anger over small things.

• • •

96. They launched a scurrilous attack.

- (A) serious
- (B) insulting
- (C) unjustified
- (D) unsuccessful

Correct Answer: (B) insulting

SOLUTION:

Step 1: Understanding the Concept:

We need a word close in meaning to "scurrilous" as it describes the "attack" in "They launched a scurrilous attack."

Step 2: Key Formula or Approach:

Break the word down by what kind of attack is being described: is it about how strong it was, how fair it was, how it turned out, or how rude it was in language? Match that quality to the closest option.

Step 3: Detailed Explanation:

A "serious" attack would be about its importance or gravity, not about the language used, so it does not capture "scurrilous".

An "unjustified" attack would be about whether it had a fair reason, which is a separate question from how rudely it was worded.

An "unsuccessful" attack describes only the outcome, saying nothing about the tone of the words.

An "insulting" attack matches "scurrilous" directly, since "scurrilous" describes language that is coarse, abusive, and aimed at damaging someone's name or reputation.

Since the word describes the manner and tone of the attack rather than its strength, fairness, or outcome, "insulting" is the option that lines up with its meaning.

Step 4: Final Answer:

"Scurrilous" means insulting or abusive, so option (b) is correct.

Quick Tip: Think of a word describing rude, abusive language aimed at someone's reputation.

• • •

97.

From the given options, choose the word that is most nearly the same in meaning to the underlined word.

He castigated her for her insensitive remarks.

- (A) praised
- (B) defended
- (C) criticized
- (D) ignored

Correct Answer: (C) criticized

SOLUTION:

This question tests vocabulary in context. The sentence says a man was scolded harshly for careless remarks, and we must pick the option word that carries the same weight as "castigated."

1. **praised:** this means to speak well of someone. It carries a positive tone, the exact opposite of scolding someone for a fault, so it does not fit.
2. **defended:** this means to stand up for someone or shield them from blame. Castigating a person is about assigning blame, not

removing it, so this option does not match either.

3. **criticized**: this means to judge someone harshly and point out their faults openly, which is exactly what castigate means. This is the correct match.
4. **ignored**: this means to take no notice of something. Castigating someone requires direct, pointed comment, the opposite of staying silent, so this option is wrong too.

Since "castigated" means to reprimand someone strongly for a fault, the word that carries the same sense here is "criticized."

Let's summarize:

- "Castigate" always carries a negative, scolding sense, so any positive or neutral option can be ruled out right away.
- "Criticized" is the only option that keeps the same harsh, fault finding tone as the original word.

So the correct answer is option (c), criticized.

Quick Tip: Think about what it means to scold or reprimand someone harshly for a fault.



98.

Although it does contain some path breaking ideas, one would hardly characterize the work as .

From the words given below, choose the pair of words that, when filled in the blank (used interchangeably), would not alter the meaning of the sentence.

1. revolutionary
2. original
3. conventional
4. interesting
5. innovative

- (A) I, II
(B) II, IV
(C) II, V
(D) III, IV

Correct Answer: (C) II, V

SOLUTION:

This question checks whether we can spot two words from a list that mean nearly the same thing, so that using either one in the blank leaves the sentence saying the same thing. The sentence tells us the work has some path breaking ideas, but as a whole it would "hardly" be called a certain quality.

1. **I, II (revolutionary, original):** revolutionary suggests a complete, dramatic break from the past, while original simply means not copied or borrowed. These are related but not equal in

strength, so swapping one for the other does shift the sentence's meaning slightly. Not the best pair.

2. **II, IV (original, interesting)**: original is about being new and fresh, while interesting is about holding someone's attention. A work can be interesting without being original at all, so these two words are not close enough in meaning to be swapped freely.
3. **II, V (original, innovative)**: original and innovative both describe a work that introduces new ideas or methods rather than repeating old ones. Saying the work is "hardly original" says almost the same thing as saying it is "hardly innovative." This pair keeps the sentence's meaning steady.
4. **III, IV (conventional, interesting)**: conventional means ordinary or traditional, the near opposite of original, while interesting is about engagement value. These two ideas do not overlap, so this pair changes the sentence's sense depending on which word is chosen.

Only "original" and "innovative" are true synonyms in this context, so either word fits the blank while keeping the same overall claim about the work.

Let's summarize:

- The task needs a synonym pair, not just any two plausible words.
- "Original" and "innovative" both point to freshness and new ideas, making them interchangeable here.

The correct answer is option (c), II and V.

Quick Tip: Look for two words in the list that are close synonyms of each other, not just any plausible fit.

99.

The word Pyrohic means 'victory that comes at a high cost.' Choose the correct spelling of the underlined word.

- (A) Pyroic
- (B) Pyorhic
- (C) Pyrrhic
- (D) Pyrrohic

Correct Answer: (C) Pyrrhic

SOLUTION:

This question is a straightforward spelling check built around a term from history. A "victory that comes at a high cost" is a well known idiom in English, and we just need to match the meaning given to its correctly spelled name.

1. **Pyroic:** this spelling is missing both the second "r" and the "h" that belong in the real word, so it is incorrect.
2. **Pyorhic:** here the letters "o" and "r" are placed in the wrong order right after the "Py," which does not match the actual spelling.
3. **Pyrrhic:** this has the double "r" and the "h" exactly where they belong, giving the correct spelling of the word used for a costly victory.
4. **Pyrrohic:** this version inserts an extra "o" that does not exist in the real word, making it incorrect.

The term "Pyrrhic victory" describes a win so costly that it is almost as bad as a loss, named after King Pyrrhus of Epirus who defeated the

Romans but lost too many of his own soldiers in the process.

Let's summarize:

- The word needs a double "r" right after "Py" and an "h" before the ending "ic."
- Every other option either drops a letter or places one in the wrong spot.

The correctly spelled word is "Pyrrhic," so the answer is option (c).

Quick Tip: Recall the phrase 'Pyrrhic victory', named after a king who won battles at great cost.

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100.

Change the given sentence into its passive voice.

It had had it.

- (A) It had had by it.
- (B) It had been had by it.
- (C) It had had been by it.
- (D) It had it by it.

Correct Answer: (B) It had been had by it.

SOLUTION:

This question looks odd at first because the sentence "It had had it" repeats the word "had" twice, but it is simply the past perfect tense of "it has it," meaning "it possessed it before some other past event." The task is to turn this into the passive voice correctly.

1. **It had had by it:** this drops the word "been," which is required to mark passive voice in the past perfect tense. Without "been," the sentence is not truly passive, so this option is wrong.
2. **It had been had by it:** this keeps the full passive structure, object plus "had been" plus the past participle "had" plus "by" plus the original subject. This matches the standard rule for turning a past perfect active sentence into passive voice.
3. **It had had been by it:** here "had" and "been" are swapped out of order. The passive auxiliary must read "had been," not "had... been" split apart like this, so the sentence breaks the grammar rule.
4. **It had it by it:** this option removes the past participle form needed to show the action was done to the object, so it does not express passive voice at all.

Remember the general rule for past perfect passive: Object + had been + past participle + by + Subject. Applying this to "It (subject) had had (verb) it (object)" gives us "It (new subject) had been had (participle) by it (original subject)."

Let's summarize:

- Past perfect passive always needs the fixed phrase "had been" before the past participle.
- The past participle of "have" is "had," so it correctly appears once after "had been."

The correct passive form is "It had been had by it," which is option (b).

Quick Tip: Use the passive pattern: Object + had been + past participle + by + Subject.

101.

Identify the pronoun in the given sentence.

It is Atul who gave me the pen. Identify 'who' in the given sentence.

- (A) object pronoun
- (B) relative pronoun
- (C) preposition
- (D) conjunction

Correct Answer: (B) relative pronoun

SOLUTION:

The sentence "It is Atul who gave me the pen" uses "who" to link a describing clause back to a person already named in the sentence, Atul. We need to identify exactly what part of speech "who" is playing here.

1. **object pronoun:** words like "him" or "them" that receive the action of a verb are object pronouns. "Who" is not receiving any action here, in fact it is the one performing the action of giving, so this option does not fit.
2. **relative pronoun:** a relative pronoun points back to a noun mentioned earlier and starts a clause that describes it. Here "who" points back to "Atul" and starts the clause "who gave me the pen," which tells us more about Atul. This is exactly the job of a relative pronoun.
3. **preposition:** prepositions like "at," "with," or "by" show where, when, or how something happens in relation to something else. "Who" carries no such meaning, so this option does not apply.

4. **conjunction**: a plain conjunction only joins two clauses without referring back to a noun. "Who" does more than join, it also acts as the subject of its own clause and stands in for Atul, which a simple conjunction cannot do.

Since "who" both refers back to the noun "Atul" and introduces a clause about him, it is best classified as a relative pronoun.

Let's summarize:

- Relative pronouns connect a describing clause to a noun already mentioned in the sentence.
- "Who," "whom," "which," and "that" are the common relative pronouns to remember.

So the correct answer is option (b), relative pronoun.

Quick Tip: Ask what noun the word 'who' refers back to and what clause it introduces.

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102.

Out of the four given words, two of them are either synonyms or antonyms of each other. Identify the correct pair.

1. Limpid
2. Luscious
3. Acrid
4. Benign

- (A) I, II
- (B) I, III
- (C) II, III
- (D) III, IV

Correct Answer: (C) II, III

SOLUTION:

This question gives four words, Limpid, Luscious, Acrid, and Benign, and asks us to find the two that form a matching pair, either as synonyms or as antonyms.

1. **Limpid:** means clear, transparent, or easy to see through, often used to describe calm water or a clear style of writing.
2. **Luscious:** means richly sweet, juicy, and highly pleasing to the taste or smell, often used for ripe fruit or rich food.
3. **Acrid:** means sharply bitter, harsh, or stinging to the taste or smell, the kind of quality that makes you wince.
4. **Benign:** means gentle, kind, or harmless in nature or effect, often used for a mild illness or a kind person.

Comparing all six possible pairings, Limpid does not connect meaningfully with any of the other three, since clarity of a liquid or of thought has nothing to do with taste or gentleness. Benign also stands apart, since it describes harmlessness rather than a taste quality.

Luscious and Acrid, however, both describe how something tastes or smells, one being pleasantly sweet and the other being harshly bitter, placing them at opposite ends of the same scale of taste. That opposite relationship makes them antonyms of each other.

Let's summarize:

- Luscious describes a pleasant, sweet taste, while Acrid describes an unpleasant, bitter one.
- Because they sit at opposite points on the same taste scale, they qualify as antonyms.

The correct pair is Luscious and Acrid, so the answer is option (c), II and III.

Quick Tip: Compare the words in pairs by their core meaning: clarity, taste, and gentleness.



103.

Out of the four given words, two of them are either synonyms or antonyms of each other. Identify the correct pair.

1. Prolixity
2. Brevity
3. Agreement
4. Proposition

- (A) I, II
(B) I, III
(C) II, IV
(D) I, IV

Correct Answer: (A) I, II

SOLUTION:

Here we are given four words, Prolixity, Brevity, Agreement, and Proposition, and we need to spot the pair that shares a synonym or antonym relationship.

1. **Prolixity**: refers to speech or writing that drags on far longer than needed, full of extra words that do not add value.
2. **Brevity**: refers to the quality of expressing something in as few words as possible, being short and direct.
3. **Agreement**: refers to a shared understanding or consent between two or more people or parties.
4. **Proposition**: refers to an idea, plan, or statement offered for someone to think over or accept.

Looking across the four words, only Prolixity and Brevity connect to the same underlying idea, the length of speech or writing, but from opposite directions. One means talking too much, the other means saying just enough. Agreement and Proposition both belong to a different area of meaning entirely, dealing with consent and suggestions rather than length of expression, so neither pairs cleanly with Prolixity or Brevity, nor with each other in a strict synonym or antonym sense.

Let's summarize:

- Prolixity means excessive wordiness, while Brevity means conciseness, placing them at opposite ends of the same scale.
- Agreement and Proposition do not share this kind of direct opposite or matching relationship with any other word in the list.

The correct pair is Prolixity and Brevity, so the answer is option (a), I and II.

Quick Tip: Think about which two words describe opposite amounts of speech.

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104.

Arrange sentences 1, 2, 3, 4 and 5 to form a logical sequence. Choose the most logical order of sentences from the four given choices.

1. Seen through Bond's eyes, the morning sun comes 'shouting over the rooftops', while the whistling-thrush is 'Fred Astaire dancing in top hat and tails'.
2. But they don't matter.
3. You can feel how precious this world, with its mountains and valleys, rivers and cascades, animals, birds, insects and plants, is to the author.
4. When Bond describes a destination it ceases to be a place on the map and becomes a beautiful portrait of life itself.
5. As is inevitable with an anthology containing such a vast body of work, there is some overlapping of material and several typos.

(A) 45231

(B) 52314

(C) 41235

(D) 54231

Correct Answer: (B) 52314

SOLUTION:

Para jumble questions are solved by finding the sentence that best opens the passage, then tracing how each following sentence answers

or continues the idea in the one before it, using linking words and pronouns as clues.

1. **Sentence 5:** "As is inevitable with an anthology containing such a vast body of work, there is some overlapping of material and several typos." This sentence stands alone well as an opener, since it introduces the anthology being reviewed and mentions a small, expected flaw, a common way to start balanced writing about a large body of work.
2. **Sentence 2:** "But they don't matter." The word "they" clearly ties back to the "overlapping" and "typos" from sentence 5, and "but" signals a contrast, brushing those flaws aside. This can only make sense placed right after sentence 5.
3. **Sentence 3:** "You can feel how precious this world... is to the author." After saying the small flaws do not matter, the writer needs to explain what does matter, and this sentence shifts the focus to the richness of the world the author creates, a natural next step after the dismissal in sentence 2.
4. **Sentence 1:** "Seen through Bond's eyes, the morning sun comes 'shouting over the rooftops'..." This sentence backs up the claim in sentence 3 with a specific, vivid example of the author's imagery, so it fits right after sentence 3, which sets up the general idea that sentence 1 then illustrates.
5. **Sentence 4:** "When Bond describes a destination it ceases to be a place on the map and becomes a beautiful portrait of life itself." This line reads like a closing thought, generalizing the effect shown by the earlier vivid examples, making it the natural final sentence of the passage.

Tracing the pronoun links and the shift from admitting a flaw to praising the writing gives the order 5, 2, 3, 1, 4.

Let's summarize:

- Start with the sentence that introduces the topic and admits a small flaw, sentence 5.
- Follow the pronoun "they" to link it directly to sentence 2, then trace the shift to praise across sentences 3, 1, and 4.

The correct order is 5-2-3-1-4, so the answer is option (b).

Quick Tip: Find the sentence that best opens the passage, then trace the pronoun 'they' to the next line.

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105. Arrange the sentences 1, 2, 3, 4, 5 and 6 to form a logical sequence. Choose the most logical order of sentences from the four given choices.

1. The Croatian mercenaries in the French Service wearing their traditional small, knotted neckerchiefs aroused the interest of Parisians.
2. Men looked smarter in the age of the tie.
3. Its appeal to the masses started only during the industrial revolution when masses of people shifted to cities.
4. Croat soon became Cravats and a fashion craze started among men and women.
5. The modern history of this accessory is generally traced back to the Thirty Years' War (1618-1648).
6. But it was still a part of the elite style.

- (A) 512643
(B) 425136
(C) 251463
(D) 321465

SOLUTION:

Para-jumble questions like this one are solved faster by first spotting the linking words and pronouns that tie two sentences together, rather than reading the whole paragraph over and over.

1. **Opening line:** Sentence 2 ("Men looked smarter in the age of the tie") is a broad, timeless statement, the kind of line writers use to open a piece before narrowing down to specific history. It cannot follow any of the other sentences, since none of them lead into it, so it starts the sequence.
2. **Sentence 5 after 2:** Sentence 5 mentions "the modern history of this accessory," which is the direct historical background for the tie mentioned in sentence 2. The phrase "this accessory" only makes sense once the tie has already been named, so 5 must come right after 2.
3. **Sentence 1 after 5:** Sentence 5 ends on the Thirty Years' War. Sentence 1 opens with "The Croatian mercenaries," a specific detail that belongs to that same war period, so it logically follows 5.
4. **Sentence 4 after 1:** Sentence 4 begins "Croat soon became Cravats," picking up the word "Croatian" from sentence 1 and turning it into the next stage of the story. This word link ties the two sentences together directly.
5. **Sentence 6 after 4:** The connector "But" at the start of sentence 6 needs a contrasting idea right before it. Sentence 4 talks about a fashion "craze," and sentence 6 contrasts that with the fact the craze was "still" limited to the elite. This contrast only works right after 4.

6. Sentence 3 last: Sentence 3 explains when the accessory finally left the elite circle and reached the masses, during the industrial revolution. This is the natural closing point of the paragraph, since it resolves the "still elite" idea from sentence 6.

Chaining the connectors this way gives the order 2, 5, 1, 4, 6, 3, which is option (c) 251463.

So the correct sequence is 251463.

Quick Tip: Look for the sentence that works as a general opening statement, then trace which event follows which using words like "still" and "but".

...

106. Given below are fragments of a sentence numbered 1 to 8. Arrange these fragments in a logical order so that together they make a meaningful sentence. From the given options, choose the one with the most appropriate sequence.

1. not only
2. I still think
3. because it is cheap
4. because it is large
5. that we should
6. but also
7. buy this plot
8. although you may not like it

- (A) 1, 4, 6, 3, 2, 8, 5, 7
- (B) 4, 2, 8, 6, 7, 1, 5, 3
- (C) 2, 5, 7, 8, 6, 4, 1, 3
- (D) 8, 2, 5, 7, 1, 4, 6, 3

Correct Answer: (D) 8, 2, 5, 7, 1, 4, 6, 3

SOLUTION:

With fragment questions, it often helps to read the fragments out in each option's order and check whether the result forms one real English sentence.

1. **Option (a) 1, 4, 6, 3, 2, 8, 5, 7:** This reads "not only because it is large but also because it is cheap I still think although you may not like it that we should buy this plot," which has no clear subject or main verb placed correctly. It falls apart grammatically.
2. **Option (b) 4, 2, 8, 6, 7, 1, 5, 3:** This reads "because it is large I still think although you may not like it but also buy this plot not only that we should because it is cheap," which puts the connectors in the wrong spots and makes no sense.
3. **Option (c) 2, 5, 7, 8, 6, 4, 1, 3:** This reads "I still think that we should buy this plot although you may not like it but also because it is large not only because it is cheap," which breaks the fixed order, since "but also" appears before "not only."
4. **Option (d) 8, 2, 5, 7, 1, 4, 6, 3:** This reads "Although you may not like it, I still think that we should buy this plot not only because it is large but also because it is cheap," a complete sentence with the concession clause first, the opinion next, the action after that, and the paired reasons in the correct order.

Only option (d) reads as one clean, grammatically sound sentence, so it is the answer.

Let's summarize:

- "not only" must always be paired with a later "but also," never the reverse.
- A concession clause with "although" reads most naturally at the start of a sentence.

The correct sequence is therefore 8, 2, 5, 7, 1, 4, 6, 3, option (d).

Quick Tip: Spot the fixed "not only... but also..." pair first, then find what action that reason is explaining.

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107. Directions for questions 107 to 111: Read the following passage and answer the questions that follow.

The Celts may be taken as a starting point for a study of the long series of people whose arrival and settlement in Britain have contributed to its history. They provide a link between the prehistoric period, at the end of which they had emerged ...

(Passage of 230 words, from "The Celts" by Nora Chadwick, Penguin edition.)

A line was taken and the pronoun "our" was underlined. Whom did the pronoun refer to?

- (A) Europeans
- (B) British
- (C) Celts
- (D) Romans

Correct Answer: (B) British

SOLUTION:

Step 1: Understanding the Question.

We are told a line from the passage had the word "our" underlined, and we need to work out who this pronoun stands for, using only the framing of the passage.

Step 2: Key Approach.

In a passage about "the long series of people whose arrival and settlement in Britain have contributed to its history," the pronoun "our" is a first-person plural form. It can only refer to the group the author identifies with while writing, signalled by phrases like "its history" (Britain's history) rather than the history of the Celts themselves.

Step 3: Detailed Explanation.

The Celts, Romans, and other early settlers are all described in the third person as people who "arrived" and "settled," the language used for outsiders being studied, not for the writer's own group. The word "our" instead describes the people the passage is written for and by, present day Britain, whose history has been shaped by all these earlier arrivals, including the Celts. Options like "Europeans," "Celts," or "Romans" are all groups discussed from the outside in the passage, so none of them fit a first-person pronoun used by the author.

Step 4: Final Answer.

The pronoun "our" refers to the British, since the passage is a British historian's account of the peoples, including the Celts, who shaped British history. The answer is option (b) British.

Quick Tip: Ask who the author is writing for. Pronouns like "our" usually mean the author's own group.

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108. Directions for questions 107 to 111: Read the following passage and answer the questions that follow.

The Celts may be taken as a starting point for a study of the long series of people whose arrival and settlement in Britain have contributed to its history. They provide a link between the prehistoric period, at the end of which they had emerged ...

(Passage of 230 words, from "The Celts" by Nora Chadwick, Penguin edition.)

According to the passage, who were the enemies of the Celtic people?

- (A) The people of Britain
- (B) Romans
- (C) The ancient classical writers
- (D) The Vikings

Correct Answer: (C) The ancient classical writers

SOLUTION:

Step 1: Understanding the Concept.

The question asks who the passage names as the "enemies" of the Celtic people. This is not necessarily about who fought the Celts in war, but about who worked against the Celts' place in history.

Step 2: Key Approach.

A people's true historical "enemy" is often whoever controls the surviving record about them. If the Celts left few of their own accounts, and most of what survives was written by outsiders with their own biases, those outside writers effectively become the enemy of a fair historical record.

Step 3: Detailed Explanation.

The ancient classical writers, mainly Greek and Roman historians, are the main source for what is known about the early Celts, and they frequently wrote about the Celts as outsiders or rivals, often painting them in a negative or dismissive light. This bias meant the Celts were pushed down in importance in the historical record, not because they lacked achievements, but because the writers recording history were not sympathetic to them. The people of Britain, the Romans as a military force, and the Vikings do not fit this specific role of shaping a biased written record about the Celts.

Step 4: Final Answer.

The ancient classical writers are identified as the enemies of the Celtic people in this sense, matching option (c).

Quick Tip: Think about where the historical record of the Celts actually comes from.

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109. Directions for questions 107 to 111: Read the following passage and answer the questions that follow.

The Celts may be taken as a starting point for a study of the long series of people whose arrival and settlement in Britain have contributed to its history. They provide a link between the prehistoric period, at the end of which they had emerged ...

(Passage of 230 words, from "The Celts" by Nora Chadwick, Penguin edition.)

What does the word "relegate" mean?

- (A) To make importance
- (B) To make less important
- (C) Delegate
- (D) Give poor treatment

Correct Answer: (B) To make less important

SOLUTION:

Step 1: Understanding the Word.

"Relegate" comes from Latin roots meaning to send away or send back, and in modern English it is used when something or someone is pushed down to a lower rank, position, or level of importance.

Step 2: Key Approach.

The best way to fix a word's meaning is to recall it in a familiar sentence. Sports commentary often says a team was "relegated" after a poor season, meaning the team moved down a division, that is, given a lower standing.

Step 3: Detailed Explanation.

Applying that same sense here, the Celts in the passage have been "relegated" in importance in the historical record, meaning their significance has been pushed down or downgraded compared to other periods or peoples. Checking the options, "to make importance" is grammatically odd and means close to the opposite of the word, "delegate" is a different word entirely about handing over a task, and "give poor treatment" describes mistreatment rather than a change in rank or standing. Only "to make less important" captures the core sense of lowering someone's or something's status.

Step 4: Final Answer.

"Relegate" means to make less important, so the answer is option (b).

Quick Tip: Recall "relegate" from its common use in sports, when a team is moved down a division.

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110. Directions for questions 107 to 111: Read the following passage and answer the questions that follow.

The Celts may be taken as a starting point for a study of the long series of people whose arrival and settlement in Britain have contributed to its history. They provide a link between the prehistoric period, at the end of which they had emerged ...

(Passage of 230 words, from "The Celts" by Nora Chadwick, Penguin edition.)

Which of the following can be inferred as the reason why the Celtic people were not given due importance in the history of Britain?

- (A) Because they were considered outsiders.
- (B) Because they soon returned to their homeland.
- (C) Because they did not leave much records for the archaeologists.
- (D) None of the above

Correct Answer: (D) None of the above

SOLUTION:

Step 1: Understanding the Question.

We need to infer the real reason the Celts were not given due importance in British history, based only on what the passage suggests, and then match that reason to one of the four options.

Step 2: Key Approach.

The best strategy on an inference question with a "none of the above" option is to disprove each specific option first, using details already established in the passage, rather than searching for outside proof that any one of them is true.

Step 3: Detailed Explanation.

Option (a) fails because the passage treats the Celts as part of Britain's own chain of settlers, not as outsiders. Option (b) fails because the passage describes the Celts' "arrival and settlement," meaning they stayed rather than returning home. Option (c) fails on a closer look too, since the issue raised earlier in the passage is about the classical writers' thin written record of the Celts, not a shortage of archaeological material, and the two are not the same kind of evidence. With all three specific reasons ruled out by details already

present in the passage, the only option left standing is that none of them correctly explains the omission.

Step 4: Final Answer.

Since options (a), (b), and (c) each conflict with the passage, the correct inference is option (d), none of the above.

Quick Tip: Test each specific option against the passage before picking a "none of the above" answer.

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111. Directions for questions 107 to 111: Read the following passage and answer the questions that follow.

The Celts may be taken as a starting point for a study of the long series of people whose arrival and settlement in Britain have contributed to its history. They provide a link between the prehistoric period, at the end of which they had emerged ...

(Passage of 230 words, from "The Celts" by Nora Chadwick, Penguin edition.)

What did the findings of the archaeologists reveal?

- (A) Writing came later on.
- (B) The Celts were an illiterate race.
- (C) The writings of the Celts were destroyed by those who came after them.
- (D) The Celts did not believe in keeping records of their exploits.

Correct Answer: (A) Writing came later on.

SOLUTION:

Step 1: Understanding the Concept.

We are asked what the archaeological findings, as opposed to guesswork, actually revealed about the Celts and writing.

Step 2: Key Approach.

Archaeology draws conclusions from physical, dateable evidence, such as when the earliest inscriptions or written material appear in the ground. It cannot tell us about beliefs, intentions, or destroyed material that leaves no trace, only about what has actually been dug up and dated.

Step 3: Detailed Explanation.

Using this test, "the Celts were an illiterate race" goes further than the evidence allows, since it turns an absence of early writing into a permanent, sweeping label. "Writings were destroyed by those who came after them" and "the Celts did not believe in keeping records" both describe events or beliefs archaeology has no direct way to confirm, they are assumptions layered on top of the evidence, not conclusions drawn from it. What the dating of inscriptions and written material genuinely supports is simply that widespread writing came into use only at a later stage in Britain's history.

Step 4: Final Answer.

The finding that fits real archaeological evidence is that writing came later on, so the answer is option (a).

Quick Tip: Archaeology proves what is found and dated, not beliefs or destroyed material.

112. Identify if the sentence has an error in it.

The CEO, together with his managers, have decided to organize a meeting.

- (A) together with
- (B) organize
- (C) have
- (D) no error

Correct Answer: (C) have

SOLUTION:

Step 1: Understanding the Concept.

This sentence tests a common subject-verb agreement trap, where a phrase between the subject and the verb tempts a writer into using a plural verb even though the real subject is singular.

Step 2: Key Formula or Approach.

Mentally remove any phrase set off by commas that begins with words like "together with," "along with," "as well as," or "in addition to," since these phrases do not change the number of the subject. What remains after removing the phrase is the true subject the verb must agree with.

Step 3: Detailed Explanation.

Removing "together with his managers" from the sentence leaves "The CEO have decided to organize a meeting." Read this way, the mismatch is clear: "The CEO" is singular, so it needs "has decided," not "have decided." The phrases "together with" and "organize" are both used correctly elsewhere in the sentence and are not the source of the problem.

Step 4: Final Answer.

The error is in the word "have," which should be "has" to match the singular subject "The CEO." The answer is option (c).

Quick Tip: Remove the phrase between the commas and check if the verb still agrees with the subject.

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113. Read the arguments given below and answer the question that follows.

A number of independent studies have confirmed that XYZ minivans on an average have a better system of brakes as compared to any other minivans. Therefore, anyone wanting to buy a minivan solely on the basis of safety should buy XYZ minivans.

Which of the following most weakens the above conclusion?

- (A) Independent studies have strong research methods which project reliable findings.
- (B) EFG minivans have also fared better than ABC minivans on safety tests.
- (C) In some studies ABC minivans gave better results in the brake tests.
- (D) ABC minivans performed better than XYZ minivans in the frontal crash tests.

Correct Answer: (D) ABC minivans performed better than XYZ minivans in the frontal crash tests.

SOLUTION:

This is an argument-based question. A single premise (XYZ minivans have better brakes on average) is used to build a broad conclusion (buy XYZ if safety is your only concern). To weaken this kind of argument, we need a fact that attacks the missing link between "good brakes" and "overall safety".

1. **(a) Independent studies have strong research methods...**: This actually strengthens the credibility of the data used in the argument, it does not attack the conclusion at all.
2. **(b) EFG minivans have also fared better than ABC minivans...**: ABC and EFG are outside vehicles that never appear in the original comparison between XYZ and other minivans, so this fact is irrelevant to the conclusion.
3. **(c) In some studies ABC minivans gave better results in the brake tests...**: This only creates a small doubt about the brake data itself, it does not challenge the bigger assumption that brakes decide overall safety.
4. **(d) ABC minivans performed better than XYZ minivans in the frontal crash tests...**: Crash performance is a direct measure of safety, just like brakes are. Showing that XYZ loses on this front proves that "better brakes" does not mean "safest minivan overall".

The correct option is (d). It exposes the real weakness in the argument: safety depends on more than one factor, and XYZ is not ahead on all of them.

Let's summarize:

- A conclusion built on one factor can be weakened by showing another factor where the claim does not hold.

- Options that talk about unrelated vehicles or only add credibility to the premise do not weaken anything.

So the answer is option (d), since it directly shows XYZ minivans are not superior once crash safety is also considered.

Quick Tip: Look for an option that introduces a different safety measure where XYZ minivans do not perform as well.

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114. Select the word / words that have to be removed / replaced in order to make the sentence grammatically correct.

The tiles were secure fastened and so very few of them were dislodged when the shuttle re-entered the earth's atmosphere.

- (A) tiles
- (B) secure fastened
- (C) shuttle re-entered
- (D) atmosphere

Correct Answer: (B) secure fastened

SOLUTION:

Step 1: Recall the rule for modifying a verb.

In English, only an adverb can modify a verb. An adjective is used to describe a noun, not an action. This is the grammar rule we test the sentence against.

Step 2: Locate the verb in question.

In the phrase "were secure fastened", the word "fastened" functions as a past participle verb, telling us how the tiles were attached to the shuttle.

Step 3: Check the word placed before the verb.

The word "secure" sits right before "fastened" and is meant to describe the manner of fastening. Since "secure" is an adjective, it breaks the rule from Step 1. The manner of an action must be shown using an adverb, which here should be "securely".

Step 4: Confirm the other three choices are clean.

"Tiles" is a simple subject noun, "shuttle re-entered" is a correct subject-verb pair, and "atmosphere" is a correctly used object noun. None of these three break any grammar rule.

Final Answer:

Only "secure fastened" is wrong and needs to become "securely fastened", so option (b) is correct.

Quick Tip: Check whether the word before "fastened" should be an adverb instead of an adjective.

• • •

115. Spot the error in the following sentence.

The Pickerel frog should be avoided as the secretions from their skin are lethal to animals and irritating to humans.

- (A) avoided
- (B) their
- (C) lethal to animals
- (D) irritating

Correct Answer: (B) their

SOLUTION:

Step 1: Find the antecedent of the pronoun.

The sentence begins with "The Pickerel frog", which is one single animal, named in the singular form.

Step 2: Check what pronoun stands in for it later.

Later the sentence says "secretions from their skin". The word "their" is used here to point back to the frog mentioned earlier.

Step 3: Apply the pronoun-antecedent agreement rule.

A pronoun must always match the number of the noun it replaces. Since "The Pickerel frog" is singular, the correct pronoun should also be singular, which is "its", not the plural "their".

Step 4: Rule out the remaining choices.

"Avoided" is a correctly formed passive verb, "lethal to animals" and "irritating" both correctly describe the effects of the secretions and carry no grammar fault.

Final Answer:

The error sits in the pronoun "their", which should be "its" to agree with the singular "Pickerel frog". This makes option (b) correct.

Quick Tip: Check whether the pronoun matches the number of its antecedent, "The Pickerel frog".

• • •

116. Spot the error in the following sentence.

Neither the mathematics department nor the economics department at the State University require that the students must write a thesis to be awarded a Master's Degree.

- (A) Neither...nor
- (B) require
- (C) must
- (D) a Master's Degree

Correct Answer: (B) require

SOLUTION:

Step 1: Identify the subject structure.

The sentence joins two subjects using "neither...nor": "the mathematics department" and "the economics department".

Step 2: Recall the agreement rule for neither...nor.

When two subjects are joined by "neither...nor", the verb does not agree with the first subject, it agrees with the subject placed closer to it, which is the second one.

Step 3: Apply the rule to this sentence.

Here the subject closer to the verb is "the economics department", which is singular. So the verb must take the singular form "requires",

not the plural form "require" that is actually used.

Step 4: Confirm the rest of the sentence is fine.

"Neither...nor" is the right conjunction pair for this structure, "must" correctly shows obligation, and "a Master's Degree" is a correctly used noun phrase. None of these carry an error.

Final Answer:

The verb "require" should be "requires" to agree with the nearer singular subject, so option (b) is correct.

Quick Tip: In "neither...nor" sentences, the verb agrees with the subject closer to it.

• • •

117. Fill in the Blank.

For safety concerns, the nuclear detonator has been designed to have _____ so that two individuals can separately handle them.

- (A) two equipments pieces
- (B) two pieces of equipment
- (C) two pieces of equipments
- (D) two equipments

Correct Answer: (B) two pieces of equipment

SOLUTION:

Step 1: Classify the noun "equipment".

"Equipment" is an uncountable noun, like "furniture" or

"information". Uncountable nouns cannot be counted directly with numbers and do not take an "s" to form a plural.

Step 2: Recall how to count an uncountable noun.

To express a number of an uncountable noun, English uses a counting unit before it, such as "a piece of", "two pieces of", "an item of". The noun itself stays in its base singular form after this unit.

Step 3: Apply this pattern to the blank.

Since we need to say there are two separate items, the correct pattern is "two pieces of equipment", where "pieces" carries the plural and "equipment" stays unchanged.

Step 4: Eliminate the wrong choices.

"Two equipments pieces" wrongly pluralizes "equipment" and reverses the word order. "Two pieces of equipments" wrongly pluralizes "equipment" even after "pieces of" already shows the count. "Two equipments" pluralizes an uncountable noun directly, which is not standard.

Final Answer:

The only grammatically correct phrase is "two pieces of equipment", so option (b) is correct.

Quick Tip: Remember that "equipment" is an uncountable noun and has no plural form.



118. He gave me a drink from his water-gourd. Identify "drink" in the given sentence.

- (A) noun
- (B) verb
- (C) adjective
- (D) adverb

Correct Answer: (A) noun

SOLUTION:

Step 1: Note that "drink" is a dual-function word.

Some English words, like "drink", "walk", or "smile", can act as a noun or a verb depending on their place in a sentence. We must look at the sentence structure to decide which one applies here.

Step 2: Find the main verb of the sentence.

The sentence "He gave me a drink from his water-gourd" already has a clear main verb, "gave". Since a sentence normally has one main verb per clause, "drink" is unlikely to be acting as a second verb here.

Step 3: Look at what comes right before "drink".

The word "a" appears directly before "drink". Articles like "a", "an", and "the" are placed before nouns, not before verbs, adjectives, or adverbs.

Step 4: Confirm the role of "drink" in the sentence.

"Drink" here names the thing that was given to "me", making it the object of the verb "gave". Naming a thing and being marked by an article are both clear signs of a noun.

Final Answer:

"Drink" functions as a noun in this sentence, so option (a) is correct.

Quick Tip: Check what comes right before the word "drink" in the sentence.

• • •

119. Bollywood and reality television shows have made dance glamorous. Identify "glamorous" in the given sentence.

- (A) noun
- (B) verb
- (C) adverb
- (D) adjective

Correct Answer: (D) adjective

SOLUTION:

Step 1: Break the sentence into its core parts.

The sentence "Bollywood and reality television shows have made dance glamorous" has the subject "Bollywood and reality television shows", the verb phrase "have made", the object "dance", and then the word "glamorous".

Step 2: Recognize the sentence pattern.

This is a "make + object + complement" pattern, similar to "made him happy" or "made the room bright". In this pattern, the word after the object describes a change in the object's state or quality.

Step 3: Decide what "glamorous" is doing.

"Glamorous" is not an action, since the action is already carried by "have made". It is also not naming any object of its own. Instead, it tells us the new quality that "dance" has taken on. A word that tells us

the quality of a noun is doing the job of an adjective.

Step 4: Rule out the other options.

It is not a noun since it names no thing, not a verb since "have made" is the only verb, and not an adverb since it does not describe how the action of making happened, it describes the resulting state of "dance".

Final Answer:

"Glamorous" describes the noun "dance" and works as an adjective, so option (d) is correct.

Quick Tip: See which word in the sentence "glamorous" is describing.

• • •

120. Fill in the blank.

It was a fine June day, brilliant _____ sunlight.

- (A) through
- (B) by
- (C) with
- (D) in

Correct Answer: (C) with

SOLUTION:

Step 1: Understand what the sentence is describing.

The sentence "It was a fine June day, brilliant _____ sunlight" is painting a picture of a bright, sunny day. The missing word connects "brilliant" with "sunlight".

Step 2: Recall the meaning each preposition carries.

"Through" suggests passing across something, "by" often shows an agent, a means, or nearness in time or place, "in" usually marks a location or time period, and "with" shows that something is filled, covered, or accompanied by another thing.

Step 3: Match the meaning needed here.

We need a word that shows the day was full of sunlight, not one that shows location, timing, or passing through something. "With" is the preposition that captures the idea of being filled or covered by sunlight.

Step 4: Test the phrase with "with".

"Brilliant with sunlight" reads naturally and matches common usage, similar to phrases like "bright with light" or "sparkling with dew".

Final Answer:

The correct preposition is "with", so option (c) is correct.

Quick Tip: Think of a preposition that means "filled with" or "covered by".



121. A cube is painted Green on four adjoining side faces and Black on the other two faces, which are opposite each other (the top face and the bottom face). The cube is then cut by two evenly spaced cuts parallel to each of its three pairs of faces, which divides every edge into 3 equal parts and turns the big cube into a $3 \times 3 \times 3$ arrangement of 27 smaller cubes of equal size.

How many smaller cubes are formed in all?

- (A) 27
- (B) 25
- (C) 18
- (D) None of these

Correct Answer: (A) 27

SOLUTION:

Step 1: Picture the cube as stacked layers.

Since every edge is cut into 3 equal parts, picture the big cube as 3 flat layers stacked one above the other, a bottom layer, a middle layer and a top layer, each layer being one unit thick.

Step 2: Count the small cubes in a single layer.

Look straight down at just one layer. Because each edge is divided into 3 parts, that layer looks like a flat 3 by 3 grid of small cubes when seen from above, which gives $3 \times 3 = 9$ small cubes in one layer.

Step 3: Multiply by the number of layers.

There are 3 such layers in total, and each one holds 9 small cubes, so the total count is

$$9 \times 3 = 27$$

This layer by layer count lands on the same number as the direct 3^3 calculation, which confirms the answer is correct.

Final Answer:

The cube is cut into 27 smaller cubes.

27

Quick Tip: Two cuts parallel to each face split every edge into 3 equal parts, so the number of small cubes is (edge parts) cubed.

...

122. A cube is painted Green on four adjoining side faces and Black on the other two faces, which are opposite each other (the top face and the bottom face). The cube is then cut by two evenly spaced cuts parallel to each of its three pairs of faces, which divides every edge into 3 equal parts and turns the big cube into a $3 \times 3 \times 3$ arrangement of 27 smaller cubes of equal size.

How many of the smaller cubes have only one face painted, and that face is Black colored?

- (A) 1
- (B) 2
- (C) 4
- (D) 6

Correct Answer: (B) 2

SOLUTION:

Step 1: List out all 27 small cubes by type.

In a cube cut into 3 equal parts on every edge, the 27 pieces split as 8 corner cubes (3 faces painted each), 12 edge cubes (2 faces painted each), 6 face-centre cubes (1 face painted each) and 1 centre cube (0 faces painted). Check the total: $8 + 12 + 6 + 1 = 27$, which matches the cube we have.

Step 2: Focus only on the group with a single painted face.

The question asks about cubes with just one painted face, so only the 6 face-centre cubes are relevant here, one sitting at the middle of each of the 6 outer faces of the big cube.

Step 3: Filter by colour.

Of these 6 outer faces, 2 are Black (top and bottom) and 4 are Green (the four side faces). So among the 6 face-centre cubes, 2 of them show a Black face and the other 4 show a Green face.

Step 4: Pick out the ones the question wants.

Since the question asks specifically for one face painted and that face is Black, we keep only the 2 face-centre cubes belonging to the top and bottom faces.

Final Answer:

There are 2 such smaller cubes.

2

Quick Tip: Only a face-centre cube touches exactly one outer face; check

which face-centre cubes sit on the Black top and bottom faces.

• • •

123. A cube is painted Green on four adjoining side faces and Black on the other two faces, which are opposite each other (the top face and the bottom face). The cube is then cut by two evenly spaced cuts parallel to each of its three pairs of faces, which divides every edge into 3 equal parts and turns the big cube into a $3 \times 3 \times 3$ arrangement of 27 smaller cubes of equal size.

How many of the smaller cubes have no face painted at all?

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

Correct Answer: (A) 1

SOLUTION:

Step 1: Go back to the layer picture.

Think of the big cube as 3 layers stacked up, a bottom layer, a middle layer and a top layer. Any small cube sitting in the bottom or top layer automatically touches the bottom face or the top face, so it is painted. Only the middle layer can possibly hold an unpainted cube.

Step 2: Look inside the middle layer.

The middle layer itself is a flat 3 by 3 grid of 9 small cubes. The 8 cubes around the border of this grid still touch one of the 4 side faces of the big cube, since they sit along the outer edge of that layer. Only the 1 small cube right at the centre of this 3 by 3 grid does not touch

any side face either.

Step 3: Combine both checks.

That centre cube of the middle layer is neither in the top or bottom layer (so it misses the top and bottom paint) nor on the border of its own layer (so it misses the side paint too). It is the one small cube untouched by any outer face.

Final Answer:

Only 1 smaller cube has no painted face at all.

1

Quick Tip: Only the small cube buried at the very centre, with no outer face at all, is fully unpainted; use $(n-2)^3$ with $n = 3$.

...

124. A cube is painted Green on four adjoining side faces and Black on the other two faces, which are opposite each other (the top face and the bottom face). The cube is then cut by two evenly spaced cuts parallel to each of its three pairs of faces, which divides every edge into 3 equal parts and turns the big cube into a $3 \times 3 \times 3$ arrangement of 27 smaller cubes of equal size.

How many of the smaller cubes have at least three faces painted?

- (A) 4
- (B) 6
- (C) 8
- (D) 10

Correct Answer: (C) 8

SOLUTION:

Step 1: Take the total and remove the other three groups.

Out of the 27 small cubes, we already know 1 centre cube has 0 painted faces, 6 face-centre cubes have 1 painted face each, and 12 edge cubes have 2 painted faces each.

Step 2: Add up what is accounted for.

$$1 + 6 + 12 = 19$$

These 19 small cubes have 0, 1 or 2 painted faces, so none of them can belong to the "at least three faces painted" group.

Step 3: Subtract from the total of 27.

$$27 - 19 = 8$$

Whatever is left over, 8 small cubes, must be the ones with 3 painted faces, and since 3 is also the maximum possible for any small cube here, these are exactly the cubes with at least 3 faces painted, which is the same set as the corner cubes.

Final Answer:

8 smaller cubes have at least three faces painted.

8

Quick Tip: A cube has only 8 corners, and 3 faces is the most that can ever meet at a point, so at least three painted faces means the 8 corner cubes.

• • •

125. If 'AIR' is coded as 'DLU', what is the code for 'PLANE'?

- (A) SOEPH
- (B) SPDQH
- (C) SPDPG
- (D) SODQH

Correct Answer: (D) SODQH

SOLUTION:

Step 1: Build a shifted alphabet strip instead of doing arithmetic letter by letter.

Write the normal alphabet, and under it write the alphabet again but moved 3 places forward (found from AIR to DLU, since A to D, I to L and R to U are each a jump of 3 letters):

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C

Step 2: Read off each letter of PLANE from this strip.

Find P, L, A, N, E in the top row and read the letter directly below each one.

Under P is S.

Under L is O.

Under A is D.

Under N is Q.

Under E is H.

Step 3: Combine the results in the original order of the word.

P, L, A, N, E map to S, O, D, Q, H in that order, which spells SODQH. This lookup method gives the same word as the direct shift-by-3 calculation, which confirms the code is correct.

Final Answer:

The code for PLANE is SODQH.

SODQH

Quick Tip: Compare AIR with DLU letter by letter to find a constant forward shift, then apply that same shift to every letter of PLANE.

...

126. A family has seven members, A, B, C, D, E, F and G. Among them there are three married couples. B, an engineer, is the father of E, who is a student. F, a contractor, is the grandfather of E. C is the daughter-in-law of D, who is a professor. G, a doctor, is the uncle of the student E. Among the seven members there is one journalist, one housewife and one student. C is the sister-in-law of B. The student, E, is single.

Who is C's husband?

- (A) B
- (B) G
- (C) F
- (D) Cannot be determined

Correct Answer: (B) G

SOLUTION:

Step 1: Test option (a), B, first.

If C were B's wife, then C would be E's mother, not E's aunt or sister-in-law. But the clue clearly calls C the sister-in-law of B, not his wife, so this option contradicts the given facts and is ruled out.

Step 2: Test option (c), F.

F is already fixed as the grandfather of E, from the oldest generation. C is described as D's daughter-in-law, which places C one generation below D and F, in the same generation as B. C being married to F, a generation above her, does not fit a daughter-in-law of D's son, so this option is also ruled out.

Step 3: Check whether the answer can be "cannot be determined".

The clues give us enough to fully fix the family: F and D are husband and wife with two sons, B and G; B is married to a woman who becomes E's mother; and C, being D's daughter-in-law who is also B's sister-in-law, must be married to the remaining son, G. Since a definite person can be pinned down, "cannot be determined" is wrong.

Step 4: Confirm option (b), G.

G is the second son of D and F, and marrying C makes C the wife of B's brother, which fits both clues, "daughter-in-law of D" and "sister-in-law of B," at the same time. No other option satisfies both clues together.

Final Answer:

C's husband is G, since he is the only person who fits being both D's son and B's brother.

G

Quick Tip: C is D's daughter-in-law and also B's sister-in-law, so C must be married to B's brother, not to B himself.

...

127. A family has seven members, A, B, C, D, E, F and G. Among them there are three married couples. B, an engineer, is the father of E, who is a student. F, a contractor, is the grandfather of E. C is the daughter-in-law of D, who is a professor. G, a doctor, is the uncle of the student E. Among the seven members there is one journalist, one housewife and one student. C is the sister-in-law of B. The student, E, is single.

Who is E's aunt?

- (A) D
- (B) A
- (C) G
- (D) C

Correct Answer: (D) C

SOLUTION:

Step 1: Go option by option using generation and gender.

An aunt must be female and must belong to the parents' generation, not the grandparents' generation and not E's own generation.

Step 2: Eliminate on generation.

D sits in the grandparents' generation alongside F, since C is described as D's daughter-in-law, meaning D is a generation above C and B.

That rules out D as an aunt.

Step 3: Eliminate on role.

A, taken as B's wife, would be E's own mother. A parent is not an aunt, so A is ruled out. G is male, and the family already needs a female for "aunt," so G, described as uncle, is also ruled out on gender alone.

Step 4: Confirm the remaining name.

That leaves C, who sits in the same generation as B (she is D's daughter-in-law, same level as B) and is female. Since C is married to G, B's brother, she becomes E's aunt through marriage, fitting every requirement, right generation and right gender, that the others failed.

Final Answer:

E's aunt is C.

C

Quick Tip: An aunt can be the wife of your father's brother; since G is B's brother, G's wife C is E's aunt.

• • •

128. A family has seven members, A, B, C, D, E, F and G. Among them there are three married couples. B, an engineer, is the father of E, who is a student. F, a contractor, is the grandfather of E. C is the daughter-in-law of D, who is a professor. G, a doctor, is the uncle of the student E. Among the seven members there is one journalist, one housewife and one student. C is the sister-in-law of B. The student, E, is single.

Which are the three married couples?

- (A) (A, B), (C, G), (D, F)
- (B) (A, F), (B, C), (D, G)
- (C) (A, G), (B, C), (D, F)
- (D) (A, B), (C, F), (D, G)

Correct Answer: (A) (A, B), (C, G), (D, F)

SOLUTION:

Step 1: Check each option against the "grandfather" clue.

F must be married into the oldest generation, since he is E's grandfather. In option (b), F is paired with A, which would make A the grandmother, but then D would need to be a fourth generation figure with no fixed spot, since D is separately tied to C as a mother/father-in-law figure of the same generation as F. This creates two competing "grandparent" pairs, which the family of 7 cannot hold, so option (b) fails.

Step 2: Check the "daughter-in-law of D" clue.

Option (d) pairs C with F, not with a son of D, so C would not be D's daughter-in-law at all under that pairing, contradicting the given clue directly. Option (d) is ruled out.

Step 3: Check the "sister-in-law of B" clue.

Option (c) pairs B directly with C, making C his wife. But the clue calls C the sister-in-law of B, and a wife is never her own husband's sister-in-law, so option (c) contradicts the clue and fails.

Step 4: Confirm the surviving option.

Option (a), (A, B), (C, G), (D, F), keeps F and D together as the grandparent couple, keeps C married to G so that C is D's daughter-in-

law through G and B's sister-in-law through G being B's brother, and keeps A as B's wife and E's mother. Every clue is satisfied at once, and no other option manages this.

Final Answer:

The three married couples are (A, B), (C, G) and (D, F).

$(A, B), (C, G), (D, F)$

Quick Tip: Fix the grandparent couple (D, F) first, then split their two sons as B (married to A) and G (married to C, since C is B's sister-in-law).

...

129. A family consists of seven people, A, B, C, D, E, F and G. Out of them, there are three married couples. B, the engineer, is the father of E, who is the student. F, who is a contractor, is the grandfather of E. C is the daughter-in-law of D, who is a professor. G, the doctor, is the uncle of the student. There is one journalist, one housewife and one student. C is the sister-in-law of B. The student is single.

Which of the following groups definitely represents the females?

- (A) C, D
- (B) A, C
- (C) A, D, C
- (D) A, D, C, E

Correct Answer: (C) A, D, C

SOLUTION:

This question describes seven relatives spread across three married couples and one unmarried student, and asks which people are certainly women based only on the kinship words used, such as father, grandfather, daughter-in-law, uncle and sister-in-law.

1. **Start from the top of the family.** F is called E's grandfather, so F sits one generation above E's parents. D is called C's mother-in-law or father-in-law (daughter-in-law of D), so D has a son who is married to C.
2. **Rule out B as that son.** If B had married C, C would be B's wife, and a wife is not called her husband's sister-in-law. Since C is separately described as the sister-in-law of B, D's son cannot be B.
3. **Identify D's son as G.** G, the doctor, is called the uncle of the student (E), and B is E's father, so G must be B's brother. This fits only if D's son is G, so G is married to C, and G and B are brothers.
4. **Fix the grandparent couple.** Since F is E's grandfather and D is B's parent, D and F form the senior couple. The only person left to pair with B is A, so A is B's wife and E's mother.
5. **Assign gender from the words used.** F, a grandfather, is male, so his wife D is female. C, a daughter-in-law, is a term used only for women, so C is female. C's husband G is therefore male, and his brother B is male too. A, married to B, is female. E's gender is never mentioned anywhere in the passage, so it stays unknown.

The three people whose gender is fixed beyond doubt are A, D and C. The other answer choices either drop one of these three or wrongly add E, whose gender the passage never reveals.

Let's summarize:

- D's son turns out to be G, not B, because C is B's sister-in-law and not his wife.
- A, C and D are definitely female; E's gender is never stated.

So the group that definitely represents the females is A, D, C.

Quick Tip: Work out who is married to whom first, using the daughter-in-law and grandfather clues, then use the sister-in-law and occupation clues to pin down which family members are men and which are women.

• • •

130. Find the missing term "?" in the grid given below.

C	G	K
G	L	Q
L	R	?

- (A) Y
- (B) X
- (C) S
- (D) P

Correct Answer: (B) X

SOLUTION:

Understanding the Concept:

This is a letter based number series hidden inside a 3×3 grid. Each letter stands for its rank in the alphabet, and the goal is to spot how

the ranks move across the grid so the missing entry can be worked out.

Key Approach:

Instead of reading along the rows, this method reads down the columns, since a consistent grid pattern must hold in both directions at once. Column 1 is C, G, L; Column 2 is G, L, R; Column 3 is K, Q, ?.

Detailed Explanation:

Convert Column 1 to numbers: C = 3, G = 7, L = 12. The gaps are $7 - 3 = 4$ and $12 - 7 = 5$, so the gap itself grows by 1 each step.

Convert Column 2 to numbers: G = 7, L = 12, R = 18. The gaps are $12 - 7 = 5$ and $18 - 12 = 6$, again growing by 1 each step, and shifted up by exactly 1 compared to Column 1's gaps (5, 6 versus 4, 5).

This tells us Column 3 should follow gaps of 6 then 7 (one more than Column 2's 5, 6). Column 3 starts at K = 11: the first gap, from K to Q, is $17 - 11 = 6$, which matches the predicted first gap perfectly.

The second gap should then be 7, so the missing value is $17 + 7 = 24$.

Converting 24 back into a letter gives X, since X is the 24th letter of the alphabet.

Final Answer:

Reading by columns instead of rows leads to the same result, confirming the missing term is X, which is option (b).

X

Quick Tip: Convert every letter to its position number (A = 1, B = 2, and so on), then compare how the numbers step up along each row and each column.

131. Study the diagram below, which shows three overlapping groups, College Students, Singers and Dancers, divided into the labelled regions P, Q, R, S, T, U and V, and answer the question that follows.

\includegraphics{images/q131.png}

College students who are dancers but not singers are represented by?

- (A) S
- (B) R
- (C) T
- (D) P

Correct Answer: (B) R

SOLUTION:

The picture places three groups, College Students, Singers and Dancers, as overlapping rectangles, and each of the seven inner boxes stands for a different combination of these three groups. The question asks for college students who dance but do not sing, so we can check each option in turn instead of deriving the region from scratch.

1. **S:** this box sits where College Students and Singers overlap, with no link to Dancers at all, so anyone in S sings but does not dance, the opposite of what we want.
2. **R:** this box sits where College Students and Dancers overlap, and it has no connection to the Singers rectangle, so everyone here is a college student, dances, and does not sing. This matches the question exactly.
3. **T:** this is the central box shared by all three rectangles, so anyone here sings as well as dances, which breaks the "not a singer"

condition.

4. **P**: this box is the part of College Students that does not touch Singers or Dancers at all, so nobody here dances, which breaks the "dancer" condition.

Only region R satisfies being a college student, being a dancer, and not being a singer, all at the same time.

Let's summarize:

- S and T both involve singing, so they are eliminated.
- P involves no dancing at all, so it is eliminated too.
- R is the college student and dancer overlap with no singing link, which is exactly what the question asks for.

So college students who are dancers but not singers are represented by R.

Quick Tip: Look for the region that lies inside both the College Students and the Dancers shapes but stays completely outside the Singers shape.

• • •

132. Study the diagram below, which shows three overlapping groups, College Students, Singers and Dancers, divided into the labelled regions P, Q, R, S, T, U and V, and answer the question that follows.

`\includegraphics{images/q132.png}`

College students who are singers but not dancers are represented by?

- (A) R
- (B) P
- (C) S
- (D) T

Correct Answer: (C) S

SOLUTION:

The diagram overlaps three rectangles, College Students, Singers and Dancers, and each small labelled box represents one specific combination of these three groups. We need college students who sing but do not dance, so each option can be tested directly.

1. **R:** this box is where College Students overlaps Dancers only, with no link to Singers, so people here dance but do not sing, the opposite of what is asked.
2. **P:** this box is College Students with no overlap at all, so nobody here sings or dances, which breaks the "singer" condition.
3. **S:** this box is where College Students overlaps Singers only, with no connection to Dancers, so everyone here is a college student, sings, and does not dance. This fits the question exactly.
4. **T:** this is the shared box for all three rectangles, so anyone here dances as well as sings, breaking the "not a dancer" condition.

Only region S is a college student, a singer, and not a dancer, all at once.

Let's summarize:

- R and T both involve dancing, so they are eliminated.
- P has no singing link, so it is eliminated too.

- S is the college student and singer overlap with no dancing link, matching the question.

So college students who are singers but not dancers are represented by S.

Quick Tip: Look for the region that lies inside both the College Students and the Singers shapes but stays completely outside the Dancers shape.

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133. Study the diagram below, which shows three overlapping groups, College Students, Singers and Dancers, divided into the labelled regions P, Q, R, S, T, U and V, and answer the question that follows.

`\includegraphics{images/q133.png}`

College students who are dancers as well as singers are represented by?

- (A) T
- (B) V
- (C) R
- (D) S

Correct Answer: (A) T

SOLUTION:

The diagram overlaps three rectangles, College Students, Singers and Dancers, and the smaller boxes inside stand for different overlaps between them. The question asks for college students who both sing and dance, so each choice can be checked in turn.

1. **V**: this box lies entirely outside the College Students rectangle, so although it means "dancer", it does not mean "college student dancer" at all, which rules it out straight away.
2. **R**: this box is where College Students overlaps Dancers only, with no connection to Singers, so it covers dancing college students who do not sing.
3. **S**: this box is where College Students overlaps Singers only, with no connection to Dancers, so it covers singing college students who do not dance.
4. **T**: this box sits inside all three rectangles together, College Students, Singers and Dancers, so anyone placed here is a college student who both sings and dances at the same time.

Only T lies inside all three groups simultaneously, which is exactly what the question is asking for.

Let's summarize:

- V is not even inside College Students, so it cannot be the answer despite mentioning dancers.
- R and S each cover only one of the two activities.
- T is the triple overlap, covering college students who sing and dance both.

So college students who are dancers as well as singers are represented by T.

Quick Tip: Look for the single region that lies inside all three shapes at the same time: College Students, Singers and Dancers.



134. Study the diagram below, which shows three overlapping groups, College Students, Singers and Dancers, divided into the labelled regions P, Q, R, S, T, U and V, and answer the question that follows.

\includegraphics{images/q134.png}

College students who are neither dancers nor singers are represented by?

(A) P

(B) S

(C) V

(D) Q

Correct Answer: (A) P

SOLUTION:

The diagram overlaps three rectangles, College Students, Singers and Dancers, and each small box represents a specific combination of the three. The question asks for college students who are neither singers nor dancers, so every choice can be checked against the picture.

1. **S:** this box is College Students overlapping Singers, so anyone here sings, which breaks the "neither" condition right away.
2. **V:** this box sits inside the Dancers rectangle but completely outside the College Students rectangle, so it describes a dancer who is not a college student at all, not a "college student who does not dance". It cannot answer a question about college students.
3. **Q:** by the same reasoning, this box sits inside the Singers rectangle but completely outside the College Students rectangle, so it describes a singer who is not a college student, again not something that can answer a question restricted to college students.

4. **P**: this box is the part of College Students that does not touch Singers or Dancers at all, so it is exactly a college student who neither sings nor dances.

Region P is the only one that is genuinely inside College Students while being outside both other groups, so it is the correct region. Note that some printed answer keys for this question mark option (d), Q, but that region lies outside the College Students boundary in the diagram itself, the same way V is outside it and is correctly ruled out as the answer to the dancers-and-singers question. Using the diagram consistently, the same way it correctly gives R, S and T for the earlier three questions, points to P here.

Let's summarize:

- S involves singing, so it is ruled out.
- Q and V both sit outside the College Students rectangle, so neither can describe a college student at all.
- P is the college-student-only region, matching "neither a singer nor a dancer" exactly.

So college students who are neither dancers nor singers are represented by P.

Quick Tip: Look for the region that lies inside the College Students shape but stays completely outside both the Singers shape and the Dancers shape.



135. Answer the question on the basis of the information given below.

$$P\#Q = \frac{P + PQ}{Q}$$

$$P\$Q = \frac{P - PQ}{Q}$$

$$P?Q = \frac{Q + PQ}{P}$$

$$P@Q = \frac{Q - PQ}{P}$$

Find $a\#b$, if $a = (P\#Q + P?Q)$, $b = (P\$Q + P@Q)$ and $P = 1$ and $Q = 3$.

- (A) $\frac{5}{3}$
- (B) $\frac{1}{11}$
- (C) $-\frac{22}{3}$
- (D) $-\frac{11}{3}$

Correct Answer: (D) $-\frac{11}{3}$

SOLUTION:

Understanding the Concept:

Four made up operators, #, \$, ? and @, are defined by formulas involving P , Q and their product PQ . Two new numbers, a and b , are built by combining these operators, and the final task is to apply the # operator once more, this time to a and b themselves.

Key Approach:

Rather than computing a and b as separate fractions right away, it helps to first simplify each defining formula in general, since $P = 1$ throughout this question, which cancels several denominators neatly.

Detailed Explanation:

With $P = 1$, the formulas simplify to: $1 \# Q = \frac{1+Q}{Q}$, $1 \$ Q = \frac{1-Q}{Q}$, $1 ? Q = Q + Q = 2Q$, and $1 @ Q = Q - Q = 0$ (since $P @ Q = Q - PQ = Q - Q = 0$ whenever $P = 1$).

Using $Q = 3$: $1 \# 3 = \frac{1+3}{3} = \frac{4}{3}$, and $1 ? 3 = 2 \times 3 = 6$, so $a = \frac{4}{3} + 6 = \frac{22}{3}$.

Also $1 \$ 3 = \frac{1-3}{3} = -\frac{2}{3}$, and $1 @ 3 = 0$, so $b = -\frac{2}{3} + 0 = -\frac{2}{3}$.

Now apply the $\#$ rule to the pair (a, b) instead of (P, Q) : $a \# b = \frac{a+ab}{b} = \frac{a}{b} + a$.

Compute $\frac{a}{b} = \frac{22/3}{-2/3} = -11$.

Then $a \# b = -11 + \frac{22}{3} = -\frac{33}{3} + \frac{22}{3} = -\frac{11}{3}$.

This matches the value found by the direct substitution method, confirming the answer is not a coincidence of one particular route.

Final Answer:

Writing $a \# b$ as $\frac{a}{b} + a$ instead of a single fraction gives the same result, $-\frac{11}{3}$, so the correct choice is option (d).

$$\boxed{-\frac{11}{3}}$$

Quick Tip: First find the numeric values of a and b separately by plugging $P = 1$ and $Q = 3$ into the four given formulas, then apply the $\#$ rule a second time, this time treating a as P and b as Q .

136. Answer the question on the basis of the information given below.

$$P\#Q = \frac{P + PQ}{Q}$$

$$P\$Q = \frac{P - PQ}{Q}$$

$$P?Q = \frac{Q + PQ}{P}$$

$$P@Q = \frac{Q - PQ}{P}$$

The value of $\left(\frac{P\#Q}{P\$Q}\right) \div \left(\frac{P?Q}{P@Q}\right)$, where $P = 1$ and $Q = 2$, is

- (A) 0
- (B) -2
- (C) $\frac{4}{3}$
- (D) Infinity

Correct Answer: (A) 0

SOLUTION:

Understanding the Concept:

The expression combines four custom operators through one division of two ratios. Plugging in numbers before simplifying the algebra can create a zero in an inconvenient place, so this method simplifies the operator values symbolically first, using $P = 1$ to make the arithmetic light.

Key Approach:

With $P = 1$, each formula becomes simpler: $1\#Q = \frac{1+Q}{Q}$, $1\$Q = \frac{1-Q}{Q}$, $1?Q = Q + Q = 2Q$, and $1@Q = Q - Q = 0$ for any value of Q , since $P@Q = Q - PQ = Q - Q = 0$ whenever $P = 1$.

Detailed Explanation:

Since $P@Q = 0$ for every Q when $P = 1$, the second ratio in the question, $\frac{P?Q}{P@Q}$, has a zero denominator, so it should never be evaluated as a standalone number. Instead, treat the full statement $\frac{P\#Q}{P\$Q} \div \frac{P?Q}{P@Q}$ as one combined fraction by flipping the second ratio and multiplying: this gives $\frac{(P\#Q) \times (P@Q)}{(P\$Q) \times (P?Q)}$, where $P@Q = 0$ now sits in the numerator, not the denominator.

With $Q = 2$: $1\#2 = \frac{1+2}{2} = \frac{3}{2}$, $1\$2 = \frac{1-2}{2} = -\frac{1}{2}$, $1?2 = 2 \times 2 = 4$, and $1@2 = 0$.

Substituting: numerator $= \frac{3}{2} \times 0 = 0$, denominator $= -\frac{1}{2} \times 4 = -2$.
So the value is $\frac{0}{-2} = 0$.

Since the numerator is zero and the denominator, -2 , is a normal nonzero number, the whole fraction is safely and exactly 0, with no division-by-zero problem anywhere in the calculation.

Final Answer:

Rewriting the division as a single fraction before substituting keeps the zero in the numerator, giving a clean value of 0, so the correct choice is option (a).

0

Quick Tip: Instead of dividing by $P \div Q$ over $P \div Q$ directly (which involves dividing by zero), rewrite the whole expression as one fraction, $(P \div Q)(P \div Q)$ over $(P \div Q)(P \div Q)$, then substitute the numbers.

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137. Six persons, A, B, C, D, E and F, live in six bungalows, three of which face North and three face South. The bungalows are named after six different flowers: Yarrow, Periwinkle, Rose, Orchid, Blue Star and White Primrose, not necessarily in that order. The following facts are known:

1. C lives in the Yarrow bungalow and faces South.
2. There is no bungalow to the left of White Primrose.
3. The bungalow of D is to the right of the bungalow opposite that of B.
4. The bungalow opposite C is Periwinkle.
5. The bungalow opposite B faces North and it is not Rose.
6. The Blue Star bungalow is to the immediate left of Rose, and it faces North.
7. E lives in a bungalow that is to the right of F.

Who lives in the Orchid bungalow?

- (A) A
- (B) B
- (C) E
- (D) D

Correct Answer: (B) B

SOLUTION:

A quicker route here is to build the whole picture as a small grid first, then simply read off the answer instead of chasing each clue one at a

time.

1. **Fix the two rows:** three bungalows face North, call them left to right N1, N2, N3, and three face South, call them S1, S2, S3, with each Ni sitting directly across from Si.
2. **Lock the North row:** the bungalow opposite C is Periwinkle, so Periwinkle is on the North side since C faces South. Blue Star sits right next to Rose on its left, and it also faces North. That uses up all three North slots between Periwinkle, Blue Star and Rose. Since White Primrose (on the South side) must have nothing to its left, the only workable placement is Periwinkle at N1, Blue Star at N2 and Rose at N3.
3. **Lock the South row:** C sits opposite Periwinkle, so C sits at S1 in the Yarrow bungalow. Because the South row faces the opposite direction, its own leftmost spot is the one farthest from N1, which is S3. White Primrose goes there, leaving Orchid at S2.
4. **Place B:** the bungalow opposite B faces North and is not Rose. Rose sits at N3, so B is not at S3. S1 already belongs to C, so B must sit at S2, the Orchid bungalow.

Running back through all seven original conditions against this layout shows none of them are broken, which confirms the deduction is correct rather than just one possible guess.

Let's summarize:

- North row, left to right: Periwinkle, Blue Star, Rose.
- South row, in its own left to right sense: White Primrose, Orchid, Yarrow.
- B occupies the Orchid bungalow.

So the person living in the Orchid bungalow is B, option (b).

Quick Tip: Work out which three flowers sit on the North side first, using the clue about the bungalow opposite C.

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138. Six persons, A, B, C, D, E and F, live in six bungalows, three of which face North and three face South. The bungalows are named after six different flowers: Yarrow, Periwinkle, Rose, Orchid, Blue Star and White Primrose, not necessarily in that order. The following facts are known:

1. C lives in the Yarrow bungalow and faces South.
2. There is no bungalow to the left of White Primrose.
3. The bungalow of D is to the right of the bungalow opposite that of B.
4. The bungalow opposite C is Periwinkle.
5. The bungalow opposite B faces North and it is not Rose.
6. The Blue Star bungalow is to the immediate left of Rose, and it faces North.
7. E lives in a bungalow that is to the right of F.

What is the name of E's bungalow?

- (A) White Primrose
- (B) Rose
- (C) Blue Star
- (D) Periwinkle

Correct Answer: (C) Blue Star

SOLUTION:

Instead of chasing clues one by one, it helps to fill in a small table of who lives where, working outward from the flower positions to the actual people.

1. **Flowers first:** Periwinkle sits opposite C (a South facing bungalow), so Periwinkle is North side. Blue Star sits right before Rose and faces North too, so all three, Periwinkle, Blue Star and Rose, occupy the whole North row. That leaves Yarrow, Orchid and White Primrose for the South row.
2. **Order within each row:** White Primrose (South) must sit with nothing to its left, which only fits together with Blue Star sitting right before Rose if Periwinkle is the very first North bungalow. So North reads Periwinkle, Blue Star, Rose from left to right. C sits opposite Periwinkle, giving Yarrow at the South row's first slot from the North row's viewpoint. Because the South row faces the other way, its own left to right reading is reversed, so its own leftmost bungalow, reserved for White Primrose, is actually the one across from Rose. That leaves Orchid in the middle South slot.
3. **People next, starting with B:** the bungalow across from B is not Rose, so B cannot sit across from Rose. The only other open South slot is the middle one, Orchid, so B lives there.
4. **Then D:** D sits to the right of the bungalow across from B, which is the middle North bungalow, Blue Star. The only North bungalow further right is Rose, so D lives there.
5. **Finally A, E and F:** only the first two North bungalows and the last South bungalow remain, for A, E and F. Since E must sit to the right of F, and the two North bungalows run left to right in the normal sense, F takes the first North bungalow and E takes the second. A is left with the remaining South bungalow.

The second North bungalow is Blue Star, so E's home is the Blue Star bungalow.

Let's summarize:

- North row: F in Periwinkle, E in Blue Star, D in Rose.
- South row: C in Yarrow, B in Orchid, A in White Primrose.

Therefore, E lives in the Blue Star bungalow, option (c).

Quick Tip: Once you know the North row order is Periwinkle, Blue Star, Rose from left to right, use the clue about E sitting to the right of F to place E.

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139. Six persons, A, B, C, D, E and F, live in six bungalows, three of which face North and three face South. The bungalows are named after six different flowers: Yarrow, Periwinkle, Rose, Orchid, Blue Star and White Primrose, not necessarily in that order. The following facts are known:

1. C lives in the Yarrow bungalow and faces South.
2. There is no bungalow to the left of White Primrose.
3. The bungalow of D is to the right of the bungalow opposite that of B.
4. The bungalow opposite C is Periwinkle.
5. The bungalow opposite B faces North and it is not Rose.
6. The Blue Star bungalow is to the immediate left of Rose, and it faces North.
7. E lives in a bungalow that is to the right of F.

Who lives to the immediate left of B?

- (A) A
- (B) C
- (C) F
- (D) D

Correct Answer: (A) A

SOLUTION:

Rather than tracking each clue in the order given, it is quicker to fill a complete seating table first and then simply read off any neighbour relationship the question asks about.

1. **North row flowers:** Periwinkle sits opposite the South facing C, so Periwinkle is North. Blue Star sits right before Rose and also faces North, so the whole North row is Periwinkle, Blue Star and Rose in some order, and the South row is left with Yarrow, Orchid and White Primrose.
2. **Exact order:** since White Primrose (South) needs nothing to its left, Periwinkle has to be first in the North row, giving North as Periwinkle, Blue Star, Rose from left to right. C, sitting opposite Periwinkle, takes the Yarrow spot directly across from it. Because the South row looks the other way, its own leftmost spot is the one across from Rose, which goes to White Primrose, leaving Orchid in the middle South spot, across from Blue Star.
3. **People:** B cannot sit opposite Rose, so B takes the middle South spot, Orchid, across from Blue Star. D sits to the right of Blue Star (the bungalow across from B), so D takes the Rose bungalow. Of the three names left, A, E and F, only the two North bungalows and the White Primrose bungalow remain; since E must be to the right of F, F takes Periwinkle and E takes Blue Star, and A is left with White Primrose.

Now write the completed South row in its own left to right order: since South faces away from North, its own leftmost bungalow is White Primrose (A), then the middle one is Orchid (B), then Yarrow (C) at the far end.

Let's summarize:

- South row, South's own left to right order: A in White Primrose, B in Orchid, C in Yarrow.
- The bungalow immediately before B in that order belongs to A.

So A lives immediately to the left of B, option (a).

Quick Tip: Remember that the South row's own sense of left runs the opposite way to the North row's, since the two rows face each other.

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140. Six persons, A, B, C, D, E and F, live in six bungalows, three of which face North and three face South. The bungalows are named after six different flowers: Yarrow, Periwinkle, Rose, Orchid, Blue Star and White Primrose, not necessarily in that order. The following facts are known:

1. C lives in the Yarrow bungalow and faces South.
2. There is no bungalow to the left of White Primrose.
3. The bungalow of D is to the right of the bungalow opposite that of B.
4. The bungalow opposite C is Periwinkle.
5. The bungalow opposite B faces North and it is not Rose.
6. The Blue Star bungalow is to the immediate left of Rose, and it faces North.
7. E lives in a bungalow that is to the right of F.

Which bungalow is the leftmost and faces North?

- (A) Blue Star
- (B) White Primrose
- (C) Rose
- (D) Periwinkle

Correct Answer: (D) Periwinkle

SOLUTION:

This question only needs the North row worked out, so it helps to test the two possible orders for the North row directly instead of building the full six person layout.

1. **What we know for certain:** the bungalow across from the South facing C is Periwinkle, so Periwinkle is on the North side. Blue Star sits right before Rose and faces North as well. So the North row is made up of exactly Periwinkle, Blue Star and Rose, and the South row is made up of Yarrow, Orchid and White Primrose.
2. **Try Blue Star first:** if Blue Star were the leftmost North bungalow, Rose would be next to it, and Periwinkle would end up at the far end of the North row. Since Periwinkle sits opposite C, C would then sit at the far end of the South row too. But White Primrose, a South side flower, is also required to have nothing to its left, meaning it needs the South row's own leftmost spot, and because the two rows face opposite ways, that spot is the one physically farthest from the North row's leftmost bungalow. With Periwinkle now at the North row's far end, the South row's own leftmost spot lines up with C's position, which already holds Yarrow, not White Primrose. This is a clash, so Blue Star cannot be the leftmost North bungalow.
3. **Try Periwinkle instead:** if Periwinkle is the leftmost North bungalow, then C, sitting opposite it, is at the near end of the South row, and the South row's own leftmost spot (farthest from Periwinkle) is free for White Primrose with no clash at all. Blue Star and Rose then fill the remaining two North spots in the required order.

Only the second case works without breaking any clue.

Let's summarize:

- Testing Blue Star as the leftmost North bungalow creates a clash with White Primrose's position.
- Testing Periwinkle as the leftmost North bungalow satisfies every clue.

So the bungalow that is both leftmost and North facing is Periwinkle, option (d).

Quick Tip: Check which flower has to occupy the very first North side position once White Primrose is fixed on the South side.

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141. Each of the three figures below shows three 3 digit numbers, one below the other. Find the odd one out.

(1)	(2)	(3)
583	658	482
146	314	157
729	962	639

- (A) Only (1)
- (B) Only (2)
- (C) Only (3)
- (D) None of these

Correct Answer: (B) Only (2)

SOLUTION:

Since three figures are given and one is meant to break a shared rule, the fastest way in is to test each option against the answer choices directly, ruling figures in or out one at a time instead of guessing the rule first.

1. **Option (a), only figure (1) is odd:** add the top two numbers of figure (1), $583 + 146 = 729$, which is exactly the bottom number shown. Figure (1) fits a clean addition rule, so it does not look like the odd one out. This rules out option (a).
2. **Option (c), only figure (3) is odd:** add the top two numbers of figure (3), $482 + 157 = 639$, which again matches the bottom number exactly. Figure (3) also fits the same addition rule, so it is not the odd one out either. This rules out option (c).
3. **Option (b), only figure (2) is odd:** add the top two numbers of figure (2), $658 + 314 = 972$. The bottom number actually printed in figure (2) is 962, which does not match 972. Figure (2) breaks the very rule that figures (1) and (3) both satisfy.
4. **Option (d), none of these:** since figure (2) clearly does break the shared addition rule while the other two do not, there is a genuine odd one out, so this option cannot be correct.

Let's summarize:

- Figures (1) and (3) both satisfy bottom number equals sum of the top two numbers.
- Figure (2) fails this same check by a difference of 10.

Therefore, figure (2) is the odd one out, and the correct choice is option (b), only (2).

Quick Tip: Check whether the bottom number in each figure equals the sum of the two numbers above it.

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142. From one sequence of digits, another sequence of digits has to be formed as per the following rule:

Single switch: interchange of any two adjacent digits, where one such interchange counts as one step.

Using only single switching, what is the minimum number of steps required to change 51432 to 12345?

- (A) 6
- (B) 7
- (C) 8
- (D) 9

Correct Answer: (B) 7

SOLUTION:

Instead of physically simulating every swap, this question can be answered directly by counting inversions, that is, pairs of digits that appear in the wrong relative order compared with the target sequence 1 2 3 4 5. Every single switch (adjacent swap) can remove at most one inversion, so the minimum number of steps equals the total number of inversions in the starting sequence.

The starting sequence is 5, 1, 4, 3, 2. Compare every pair of digits, in the order they appear, and mark a pair as an inversion if the left one is bigger than the right one:

1. 5 with 1, 4, 3, 2: the digit 5 is bigger than all four digits that come after it, giving 4 inversions.
2. 1 with 4, 3, 2: 1 is smaller than all three, so 0 inversions here.
3. 4 with 3, 2: 4 is bigger than both, giving 2 inversions.
4. 3 with 2: 3 is bigger than 2, giving 1 inversion.

Adding these up: $4 + 0 + 2 + 1 = 7$.

Let's summarize:

- An adjacent swap can fix exactly one out-of-order pair at a time, never more.
- The sequence 5 1 4 3 2 has 7 such out-of-order pairs against the target 1 2 3 4 5.

So the minimum number of single switch steps needed is 7, which matches option (b).

Quick Tip: Count how many pairs of digits are out of their final relative order. That count is the minimum number of adjacent swaps needed.

• • •

143. From one sequence of digits, another sequence of digits has to be formed as per the following rule:

Double switch: interchange of any two digits that have at most one digit between them (that is, two digits that are either next to each other or have exactly one digit sitting between them), where one such interchange counts as one step.

Using only double switching, what is the minimum number of steps required to change 165324 to 123456?

- (A) 5
- (B) 6
- (C) 7
- (D) None of these

Correct Answer: (D) None of these

SOLUTION:

A cleaner way to handle this is to work out the theoretical fewest swaps first using the general rule for sorting with swaps, and only afterwards check whether the restricted double switch rule can actually reach that number.

1. **General rule:** for any sequence, the fewest swaps needed to sort it, using swaps between any two positions at all, equals the total count of digits minus the number of separate closed loops (cycles) the digits naturally split into, where a digit already in its correct place counts as its own loop of size one.
2. **Apply it here:** the sequence is 1, 6, 5, 3, 2, 4 against target 1, 2, 3, 4, 5, 6. Position 1 already holds the correct digit, 1, so that is one loop by itself. Tracing the rest: the digit at position 2 (6) belongs at position 6, the digit sitting at position 6 (4) belongs at position 4, the digit at position 4 (3) belongs at position 3, the digit at position 3 (5) belongs at position 5, and the digit at position 5 (2) belongs at position 2, which closes the loop back to where it started. That is a single loop running through all five of positions 2, 3, 4, 5, 6.
3. **Count the loops:** there are 2 loops in total, the lone position 1, and the big 5 position loop. With 6 digits and 2 loops, the fewest possible swaps is $6 - 2 = 4$.

4. Check double switch can still reach 4: restricting swaps to digits that are adjacent or have just one digit between them is a real limitation, so it is worth confirming 4 is still reachable, not just a lower bound. One valid sequence is: swap positions 2 and 4 to get 1 3 5 6 2 4, then positions 4 and 6 to get 1 3 5 4 2 6, then positions 3 and 5 to get 1 3 2 4 5 6, then positions 2 and 3 to get 1 2 3 4 5 6. Every one of these four swaps respects the double switch distance rule.

Let's summarize:

- The theoretical fewest swaps for this sequence, with no distance restriction, is 4.
- A concrete 4 step double switch sequence actually achieves it, so double switching cannot possibly need fewer than 4, and does not need more either.

Since 4 does not appear among options (a) 5, (b) 6 or (c) 7, the correct answer is option (d), none of these.

Quick Tip: Work out the fewest swaps needed if any two positions at all could be swapped. That count is already the true lower limit, even for the more restricted double switch.

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144. From one sequence of digits, another sequence of digits has to be formed as per the following rule:

Random switch: interchange of any two digits, regardless of where they sit in the sequence, where one such interchange counts as one step.

Using only random switching, what is the minimum number of steps required to change 653124 to 123456?

- (A) 3
- (B) 4
- (C) 5
- (D) None of these

Correct Answer: (A) 3

SOLUTION:

Since random switching allows swapping any two digits no matter how far apart they sit, this question is best answered with the standard loop counting rule for sorting by swaps, applied here in a slightly different order to the digits, followed by a fresh check sequence.

1. **Set up the rule:** break the digits into closed loops by tracing, for each position, where its current digit needs to end up, and following that chain until it returns to the start. A sequence made of loops of sizes $k_1, k_2, \dots$ can always be sorted in $(k_1 - 1) + (k_2 - 1) + \dots$ swaps, and never fewer, when any two positions can be swapped.
2. **Trace the loops for 653124:** position 3 already holds 3, its own correct value, so that is a loop of size 1 needing 0 swaps. Starting from position 2, it holds 5, whose correct home is

position 5; position 5 holds 2, whose correct home is position 2. That closes a loop of size 2, needing 1 swap. The remaining positions 1, 4 and 6 hold 6, 1 and 4 respectively; 6 belongs at position 6, the digit at position 6 (4) belongs at position 4, and the digit at position 4 (1) belongs at position 1, closing a loop of size 3, needing 2 swaps.

3. **Add them up:** $0 + 1 + 2 = 3$ swaps in total.

4. **Confirm with a different swap sequence:** resolve the size 3 loop first by swapping positions 1 and 6 (values 6 and 4), turning 6 5 3 1 2 4 into 4 5 3 1 2 6, then swapping positions 1 and 4 (values 4 and 1), giving 1 5 3 4 2 6. Now resolve the size 2 loop by swapping positions 2 and 5 (values 5 and 2), giving 1 2 3 4 5 6. That is 3 swaps in total, using a different order of moves from a simulate-first approach, yet landing on the same result.

Let's summarize:

- The digits split into loops of size 1, 2 and 3.
- The fewest swaps for each loop is one less than its size, giving 0, 1 and 2, which add up to 3.

So the minimum number of random switch steps needed is 3, matching option (a).

Quick Tip: Trace the closed loops the digits must travel through. The minimum number of swaps equals the digit count in each loop minus one, added up across all loops.

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145. If COMPATIBLE is to CURIE, then AUDIENCE is to _____ ?

- (A) FREQUENT
- (B) OCEANIC
- (C) UNDERGONE
- (D) UNSEEN

Correct Answer: (C) UNDERGONE

SOLUTION:

Forget the words as whole units for a moment. This puzzle only cares about one thing: the vowels sitting inside each word, and a fixed number stamped on each vowel. Set the table first: $A = 1$, $E = 2$, $I = 3$, $O = 4$, $U = 5$. Consonants are silent, they carry no weight at all, and the position of a vowel in the word does not matter either, only its identity and how many times it shows up.

Build a small table for the given pair before touching the answer choices:

- COMPATIBLE: vowels are O, A, I, E, giving $4 + 1 + 3 + 2 = 10$.
- CURIE: vowels are U, I, E, giving $5 + 3 + 2 = 10$.

The two scores tie at 10. That single fact is the whole rule of the game here, a word is "coded" into its partner when their vowel scores are equal. With the rule confirmed, apply it fresh to the second pair.

AUDIENCE breaks down into the vowels A, U, I, E, E:

$$1 + 5 + 3 + 2 + 2 = 13$$

So whatever option is correct, its vowels have to add up to exactly 13. Run each option through the same table:

1. **FREQUENT**: vowels E, U, E score $2 + 5 + 2 = 9$. Nine is short of thirteen, so this word is out.

2. **OCEANIC**: vowels O, E, A, I score $4 + 2 + 1 + 3 = 10$. Ten is also short of thirteen, so this word is out too.
3. **UNDERGONE**: vowels U, E, O, E score $5 + 2 + 4 + 2 = 13$. Thirteen lines up perfectly with AUDIENCE, so this word stays in the running.
4. **UNSEEN**: vowels U, E, E score $5 + 2 + 2 = 9$. Nine again, so this word is out.

Only one option survives the check, UNDERGONE, and it survives by hitting the target sum exactly, not approximately. Since the coding rule is an equality test and not a "closest match" test, there is no ambiguity once one option ties the score perfectly.

Let's summarize:

- Assign A=1, E=2, I=3, O=4, U=5 and ignore consonants completely.
- Two words are linked when the sum of their vowel values is equal.
- AUDIENCE sums to 13, and only UNDERGONE among the four options also sums to 13.

The word that AUDIENCE codes into is UNDERGONE.

Quick Tip: Assign A=1, E=2, I=3, O=4, U=5, add up only the vowel values in each word, and match the totals.



146.

Directions for questions 146 to 148: Answer the questions on the basis of the information given below.

Ten sports persons A, B, C, D, E, F, G, H, I and J are sitting around a circular table. Each two of them play one of the following sports: Cricket, Swimming, Athletics, Football and Tennis, not necessarily in that order. It is also known that:

- Cricketers are sitting to the immediate right of Athletes and to the immediate left of Swimmers.
- Players who play the same sport sit opposite each other.
- The Tennis player does not sit next to a Swimmer.
- G is sitting equidistant from I and D.
- B and F are Athletes.
- C and D are Cricketers.
- G is sitting three places to the right of D and two places to the left of C.
- J and I are Swimmers.
- H is sitting two places to the right of I.

Which sport does G play?

- (A) Tennis
- (B) Swimming
- (C) Football
- (D) Cannot be determined

Correct Answer: (A) Tennis

SOLUTION:

Rather than jumping straight to formulas, picture ten chairs drawn as a clock face, numbered 1 through 10 clockwise, and fill them in from the strongest clue outward. The strongest clue is the one linking three people by a fixed seat count: D, G and C.

Put D on chair 1. "G is three places to the right of D" walks us clockwise three steps from chair 1, landing G on chair 4. "G is two places to the left of C" means C is two steps clockwise from G, landing C on chair 6. Notice chairs 1 and 6 are exactly opposite each other on a ten-chair circle (a gap of 5), and since C and D are both Cricketers, this opposite seating is expected because same-sport players always face each other across the table.

Now bring in the rule that ties Athletes and Swimmers to every Cricketer: an Athlete sits right before a Cricketer, and a Swimmer sits right after, in clockwise order. Applying this at both Cricketer seats:

- Around D (chair 1): chair 10 is an Athlete, chair 2 is a Swimmer.
- Around C (chair 6): chair 5 is an Athlete, chair 7 is a Swimmer.

B and F, the two named Athletes, must fill chairs 5 and 10. J and I, the two named Swimmers, must fill chairs 2 and 7. Both of those chair-pairs are five apart, so the opposite-seating rule is satisfied automatically for Athletics and Swimming too, a good sign the layout is on track.

To split J and I between chairs 2 and 7, use the clue "H sits two places to the right of I." Try I on chair 2 first: two places clockwise from chair 2 is chair 4, but chair 4 is already taken by G, so this branch collapses immediately. That forces I onto chair 7, and two places clockwise from chair 7 is chair 9, so H sits at chair 9. J then takes the remaining Swimmer chair, chair 2.

At this point the board reads: chair 1 = D, chair 2 = J, chair 4 = G, chair 6 = C, chair 7 = I, chair 9 = H, with chairs 3, 5, 8 and 10 still open for A, B, E and F. As a sanity check, G (chair 4) sits three seats from D (chair 1) and three seats from I (chair 7) going the short way round, matching "G is equidistant from I and D" exactly.

The last step uses a counting trick rather than more placement: a ten-chair circle splits into exactly five opposite-pairs, (1,6), (2,7), (3,8), (4,9) and (5,10). Three of those pairs are already claimed, by Cricket, Swimming and Athletics. Only two sports remain, Football and Tennis, for the only two pairs left standing, (3,8) and (4,9). Since G and H occupy chairs 4 and 9, they must be the pair that plays either Football or Tennis together.

To decide which, check who sits beside the Swimmers (chairs 2 and 7): that means chairs 1, 3, 6 and 8. Chairs 1 and 6 are already Cricketers, so the people actually at risk of breaking the "Tennis player never sits next to a Swimmer" rule are whoever sits at chairs 3 and 8. Since G and H are not at chairs 3 or 8, they are free of that restriction and can safely be the Tennis pair, while chairs 3 and 8 (A and E) pick up Football instead.

Let's summarize:

- D, G and C lock into chairs 1, 4 and 6 from the seat-count clues, and this automatically places C opposite D.
- The Athlete-Cricketer-Swimmer pattern fixes chairs 5, 10 (Athletes) and 2, 7 (Swimmers), and the H clue forces I to chair 7, J to chair 2, H to chair 9.
- Only the pair (4,9), which is G and H, is free of the Swimmer-neighbor restriction, so they must be the Tennis players.

G plays Tennis.

Quick Tip: Fix D, G and C first from the seat-count clues, then place Athletes and Swimmers on either side of each Cricketer, then use the leftover opposite-pair of seats for Football and Tennis.

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147.

Directions for questions 146 to 148: Answer the questions on the basis of the information given below.

Ten sports persons A, B, C, D, E, F, G, H, I and J are sitting around a circular table. Each two of them play one of the following sports: Cricket, Swimming, Athletics, Football and Tennis, not necessarily in that order. It is also known that:

- Cricketers are sitting to the immediate right of Athletes and to the immediate left of Swimmers.
- Players who play the same sport sit opposite each other.
- The Tennis player does not sit next to a Swimmer.
- G is sitting equidistant from I and D.
- B and F are Athletes.
- C and D are Cricketers.
- G is sitting three places to the right of D and two places to the left of C.
- J and I are Swimmers.
- H is sitting two places to the right of I.

If F, D and J sit together, then answer the following question.

Who are the neighbors of H?

- (A) F and A
- (B) F and E
- (C) A and E
- (D) Cannot be determined

Correct Answer: (D) Cannot be determined

SOLUTION:

This question sits on top of the seating already built for the ten sports persons. Chairs 1 to 10 run clockwise, with D at chair 1, J at chair 2, G at chair 4, C at chair 6, I at chair 7 and H at chair 9 all locked in from the earlier clues, and chairs 5, 10 shared by the Athletes B and F, while chairs 3, 8 are shared by the Football pair A and E.

The new instruction says F, D and J must sit together as a block of three consecutive chairs. D and J already touch each other, at chairs 1 and 2, so the block only needs F to attach on one open end, either right before D (chair 10) or right after J (chair 3).

Here is where the Athlete restriction settles it: F can only ever be at chair 5 or chair 10, because those are the two seats reserved for Athletes. Chair 3 is not available to F at all, since it belongs to the Football pair, not the Athletes. So the only way to satisfy "F sits with D and J" is F taking chair 10, forming the run chair 10, chair 1, chair 2 as F, D, J side by side.

With F pinned to chair 10, B automatically takes the other Athlete seat, chair 5, since B and F are the only two Athletes and every other seat is already spoken for.

Now look at H, sitting at chair 9. A chair has exactly two neighbors on a circle, here chair 8 and chair 10. Chair 10 is now settled as F. Chair 8, though, still belongs to the pool shared by A and E, the Football

pair, and nothing in any clue, old or new, ties one of them specifically to chair 8 rather than chair 3. Both assignments of A and E across chairs 3 and 8 satisfy every single condition given.

Let's summarize:

- D and J are already adjacent, so F must join the block, and only chair 10 works for F because F must be an Athlete.
- This fixes B at chair 5 and confirms F as one neighbor of H.
- The other neighbor of H, at chair 8, is A or E, and nothing in the puzzle distinguishes which one goes there.

Since one of H's two neighbors stays genuinely unresolved between A and E, the pair of neighbors as a whole cannot be determined.

Quick Tip: F must take the free Athlete seat next to the D-J block, but the two Football players A and E can still swap between the two remaining seats.

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148.

Directions for questions 146 to 148: Answer the questions on the basis of the information given below.

Ten sports persons A, B, C, D, E, F, G, H, I and J are sitting around a circular table. Each two of them play one of the following sports: Cricket, Swimming, Athletics, Football and Tennis, not necessarily in that order. It is also known that:

- Cricketers are sitting to the immediate right of Athletes and to the immediate left of Swimmers.
- Players who play the same sport sit opposite each other.
- The Tennis player does not sit next to a Swimmer.
- G is sitting equidistant from I and D.
- B and F are Athletes.
- C and D are Cricketers.
- G is sitting three places to the right of D and two places to the left of C.
- J and I are Swimmers.
- H is sitting two places to the right of I.

If F, D and J sit together, then answer the following question.

Who sits to the immediate left of C?

- (A) G
- (B) B
- (C) F
- (D) Cannot be determined

Correct Answer: (B) B

SOLUTION:

Build straight on the layout already forced by the "F, D and J sit together" condition. Since D and J sit next to each other at chairs 1 and 2, and F can only legally occupy an Athlete's chair (5 or 10), the only way to complete the three-seat block is F at chair 10. That leaves chair 5 as the sole remaining Athlete seat, so B has to sit there, there is no other option left for B.

The rest of the table stays exactly as derived earlier: chair 1 is D, chair 2 is J, chair 4 is G, chair 6 is C, chair 7 is I, chair 9 is H, and A, E occupy chairs 3 and 8 between them.

The question asks for whoever sits immediately to the left of C. On a clockwise-numbered circle, moving left means moving one step backward in the numbering, so from chair 6 (C's seat), one step left lands on chair 5.

Chair 5 was just pinned down as B's seat in the previous paragraph, as a direct consequence of F being forced to chair 10. So the answer here does not need any fresh deduction, it falls straight out of the seat that F's placement freed up for B.

Let's summarize:

- F, D, J sitting together forces F to chair 10 and, by elimination, B to chair 5.
- Chair 5 sits directly to the left of C's chair, chair 6.
- Therefore B is the person immediately to the left of C.

The immediate left neighbor of C is B.

Quick Tip: Once F, D and J sit together, F must take the Athlete seat next to D, which pushes B into the seat right next to C.

149.

Directions: Each question has a set of four sequentially ordered statements. Each statement can be classified as one of the following:

- **Fact (F)**: a piece of information that has been heard, seen or read, and which is open to discovery or verification.
- **Inference (I)**: a conclusion drawn about the unknown, on the basis of the known.
- **Judgment (J)**: an opinion that implies approval or disapproval of persons, objects, situations or occurrences in the past, present or future.

Select the answer option that best describes the set of four statements.

1. Yuvraj Singh's 6 sixes in an over in the match against England in the Twenty20 World Cup helped him score the fastest 50 in any form of cricket.
2. India would have lost the game against England if Yuvraj had not played.
3. Yuvraj's innings propelled India to a score which would have otherwise been difficult to reach.
4. Yuvraj Singh won the Man of the Match award for his outstanding performance in India's match against England.

- (A) FIIF
(B) IJIF
(C) FJJF
(D) FIJF

Correct Answer: (C) FJJF

SOLUTION:

The fastest way through this kind of question is to ask one plain question of every statement: can I check this against a scorecard or a record, or am I reading someone's opinion about how things "would have" turned out? Run that test on all four statements one at a time.

1. **Statement 1:** Yuvraj hit 6 sixes in an over and that gave him the fastest 50 in any form of cricket. Both details, the six sixes and the record timing of the fifty, sit in the official scorecard and record books. Anyone can pull up the match data and confirm them, so this is a Fact.
2. **Statement 2:** India would have lost if Yuvraj had not played. This talks about a version of the match that never actually happened, so there is nothing to check it against. It reads as the writer's personal take on how important Yuvraj's innings was, an opinion dressed up as a claim about the past, which makes it a Judgment rather than a Fact or a tight logical Inference.
3. **Statement 3:** Yuvraj's innings took India to a score that "would have otherwise been difficult to reach." Just like statement 2, this leans on the writer's own sense of how tough that target was, it is not something pulled from the scoreboard, it is an evaluation. This is also a Judgment.
4. **Statement 4:** Yuvraj won the Man of the Match award. Award announcements are public and verifiable, so this goes back to being a Fact, the same category as statement 1.

Lining the four labels up in the order the statements appear gives F, J, J, F, which spells out as FJJF.

Let's summarize:

- Statements built on match records or public announcements (statements 1 and 4) are Facts.

- Statements built on "would have" scenarios that can never be checked (statements 2 and 3) are Judgments, since they carry the writer's own evaluation.

The correct sequence is FJJF, matching option (c).

Quick Tip: Ask whether each statement can be checked against a record (Fact) or whether it rests on a hypothetical "would have" scenario reflecting the writer's own view (Judgment).

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150.

Directions: Each question has a set of four sequentially ordered statements. Each statement can be classified as one of the following:

- **Fact (F):** a piece of information that has been heard, seen or read, and which is open to discovery or verification.
- **Inference (I):** a conclusion drawn about the unknown, on the basis of the known.
- **Judgment (J):** an opinion that implies approval or disapproval of persons, objects, situations or occurrences in the past, present or future.

Select the answer option that best describes the set of four statements.

1. SEBI has given an 'informal guidance' to Insilco on the buy back of Non Convertible Debentures.
2. This move could serve as a useful guide for other companies who may have similar plans.
3. The debentures are due for redemption in three annual installments.
4. Insilco may go ahead with early redemption since SEBI has clarified the process.

- (A) FIII
- (B) FJJI
- (C) FJFI
- (D) JJJI

Correct Answer: (C) FJFI

SOLUTION:

Go statement by statement and ask what kind of claim is being made: is it something on record, is it a prediction built from a known fact, or is it really praise or criticism in disguise?

1. **Statement 1:** SEBI gave Insilco an informal guidance on the debenture buyback. This is a specific regulatory event with a definite yes or no answer, it either happened or it did not, and it can be confirmed from SEBI's records. That makes it a Fact.
2. **Statement 2:** this move "could serve as a useful guide" for other companies. The word "useful" is doing the real work here, it is not describing what happened, it is praising the move and rating its value for others. That kind of approval is exactly what a Judgment looks like.
3. **Statement 3:** the debentures are due for redemption in three annual installments. This is a plain, verifiable schedule detail, the sort of fine print found in the debenture terms, so it is a Fact, just like statement 1.
4. **Statement 4:** Insilco "may go ahead with early redemption since SEBI has clarified the process." Notice the word "since", it ties this statement directly to statement 1's fact about SEBI's guidance and uses it to predict what Insilco is likely to do next. It is not an opinion about whether that is good or bad, it is a forward-looking conclusion drawn from known information, which is exactly what an Inference is.

Putting the four labels in order gives F, J, F, I, which reads as FJFI.

Let's summarize:

- Statements 1 and 3 report checkable, on-record details, so both are Facts.

- Statement 2 rates the move as "useful," which is an opinion, so it is a Judgment.
- Statement 4 predicts Insilco's next move based on the fact in statement 1, so it is an Inference.

The correct sequence is FJFI, matching option (c).

Quick Tip: Check each statement against a record for Fact, look for value words like "useful" for Judgment, and watch for a prediction built on a stated fact for Inference.