

Answers

1. Answer: b

Explanation:

Understanding Work and Time: A Completes Work with B

Explaining Individual Work Rates

This problem is about figuring out the time it takes for two people, A and B, to finish a job when they collaborate. We know how long each person takes to do the job by themselves.

- Person A finishes the entire job in 20 days.
- Person B finishes the same job in 30 days.

To solve this, we first determine each person's work rate. A work rate tells us how much of the job is completed in one day.

- **Work Rate of A:** If A completes 1 whole job in 20 days, then in a single day, A completes $\frac{1}{20}$ of the job. Mathematically, this is: $\text{Rate}_A = \frac{1 \text{ job}}{20 \text{ days}} = \frac{1}{20} \text{ job per day}$.
- **Work Rate of B:** Similarly, if B completes 1 whole job in 30 days, then in one day, B completes $\frac{1}{30}$ of the job. $\text{Rate}_B = \frac{1 \text{ job}}{30 \text{ days}} = \frac{1}{30} \text{ job per day}$.

Calculating Combined Work Rate

When A and B work together, their individual efforts combine. Their combined work rate is the sum of their individual rates. This means the total portion of the job they finish together in one day is the sum of the portions they finish individually in one day.

Combined Rate = Rate of A + Rate of B

Let's calculate this combined rate:

$$\text{Combined Rate} = \frac{1}{20} + \frac{1}{30}$$

To add these fractions, we find a common denominator. The least common multiple (LCM) of 20 and 30 is 60.

$$\text{Combined Rate} = \frac{1 \times 3}{20 \times 3} + \frac{1 \times 2}{30 \times 2}$$

$$\text{Combined Rate} = \frac{3}{60} + \frac{2}{60}$$

$$\text{Combined Rate} = \frac{3+2}{60}$$

$$\text{Combined Rate} = \frac{5}{60}$$

Simplifying this fraction gives us:

$$\text{Combined Rate} = \frac{1}{12} \text{ job per day.}$$

This calculation shows that when A and B work together, they complete $\frac{1}{12}$ of the job every day.

Determining Time Taken Together

Now that we know their combined work rate (the fraction of the job done per day), we can calculate the total number of days needed to complete the entire job (1 whole job).

The total time is the inverse (reciprocal) of the combined work rate.

$$\text{Total Time} = \frac{1}{\text{Combined Rate}}$$

Using the combined rate we found:

$$\text{Total Time} = \frac{1}{\frac{1}{12}} \text{ days}$$

$$\text{Total Time} = 1 \times \frac{12}{1} \text{ days}$$

$$\text{Total Time} = 12 \text{ days.}$$

Therefore, if A and B work together, they will finish the job in 12 days.

Final Answer Summary

The question asks for the number of days required for A and B to complete the work when working together. Our step-by-step calculation shows:

- A's work rate is $\frac{1}{20}$ of the job per day.
- B's work rate is $\frac{1}{30}$ of the job per day.
- Their combined work rate is $\frac{1}{12}$ of the job per day.
- This means they will take 12 days to complete the job together.

This matches one of the provided options.

2. Answer: b

Explanation:

Calculating the Meeting Time for Ram and Govind

This problem asks us to determine the exact time when Ram and Govind meet. They start from different cities (City A and City B, respectively) at the same time and travel towards a restaurant located somewhere between the two cities. We know the total distance separating the cities and the speeds at which Ram and Govind travel.

Essential Information from the Problem

Let's list the key details provided:

- Total distance between City A and City B: 1080 km
- Ram's starting location: City A
- Govind's starting location: City B
- Ram's travel speed (v_R): 60 km/hr
- Govind's travel speed (v_G): 120 km/hr
- Common starting time for both: 6 AM
- Note: Shyam also lives in City A and travels, but his speed isn't needed to find the meeting time based on Ram and Govind's journey.

Determining the Relative Speed

Since Ram and Govind are traveling towards each other, the distance between them decreases at a rate equal to the sum of their speeds. This is called their relative speed.

Calculation of relative speed (v_{rel}):

$$v_{rel} = \text{Ram's speed} + \text{Govind's speed}$$

$$v_{rel} = v_R + v_G$$

$$v_{rel} = 60 \text{ km/hr} + 120 \text{ km/hr} = 180 \text{ km/hr}$$

This means the gap between Ram and Govind closes by 180 km every hour.

Calculating the Time Until They Meet

To find out how long it takes for them to meet, we can use the relationship between distance, speed, and time: **Time = Distance / Speed**.

Here, the distance is the total separation between the cities, and the speed is their relative speed.

Calculation of time to meet (t):

$$t = \frac{\text{Total Distance}}{v_{rel}}$$

$$t = \frac{1080 \text{ km}}{180 \text{ km/hr}}$$

$$t = 6 \text{ hours}$$

It will take 6 hours for Ram and Govind to cover the total distance between them and meet.

Finding the Actual Meeting Time

They both started their journey at 6 AM. We need to add the calculated time duration (6 hours) to the starting time to find out when they meet.

$$\text{Meeting Time} = \text{Starting Time} + \text{Time to Meet}$$

Meeting Time = 6 AM + 6 hours

Adding 6 hours to 6 AM:

- 6 AM + 1 hour = 7 AM
- 6 AM + 2 hours = 8 AM
- 6 AM + 3 hours = 9 AM
- 6 AM + 4 hours = 10 AM
- 6 AM + 5 hours = 11 AM
- 6 AM + 6 hours = 12 PM

So, they will meet at 12 PM.

3. Answer: c

Explanation:

6

So, Anuj and Vinod will take 6 days to complete the same work when working together

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4. Answer: c

Explanation:

Understanding the Salary Ratio Problem

This problem involves finding the new ratio of salaries for three individuals, A, B, and C, after they receive specific percentage increments. The key is to calculate the new salary for each person based on their initial ratio and the given percentage increase, and then determine the ratio of these new salaries.

Initial Salary Representation

The initial salaries of A, B, and C are given in the ratio $2:3:5$. We can represent their salaries using a common multiplier, let's say 'x'.

- Salary of A = $2x$
- Salary of B = $3x$
- Salary of C = $5x$

Calculating Salary Increments

The problem states the following increments:

- A receives a 15% increment.
- B receives a 10% increment.
- C receives a 20% increment.

Step-by-Step Calculation of New Salaries

We calculate the new salary for each person by adding the increment amount to their original salary. The increment amount is the percentage of the original salary.

Calculating A's New Salary

- Original Salary of A = $2x$
- Increment Amount for A = 15% of $2x = \frac{15}{100} \times 2x = 0.15 \times 2x = 0.30x$
- New Salary of A = Original Salary + Increment Amount = $2x + 0.30x = 2.30x$
- Alternatively, New Salary = $2x \times (1 + 0.15) = 2x \times 1.15 = 2.30x$

Calculating B's New Salary

- Original Salary of B = $3x$
- Increment Amount for B = 10% of $3x = \frac{10}{100} \times 3x = 0.10 \times 3x = 0.30x$

- New Salary of B = Original Salary + Increment Amount = $3x + 0.30x = 3.30x$
- Alternatively, New Salary = $3x \times (1 + 0.10) = 3x \times 1.10 = 3.30x$

Calculating C's New Salary

- Original Salary of C = $5x$
- Increment Amount for C = 20% of $5x = \frac{20}{100} \times 5x = 0.20 \times 5x = 1.00x$
- New Salary of C = Original Salary + Increment Amount = $5x + 1.00x = 6.00x$
- Alternatively, New Salary = $5x \times (1 + 0.20) = 5x \times 1.20 = 6.00x$

Determining the New Salary Ratio

Now, we find the ratio of the new salaries of A, B, and C.

- New Salary of A : New Salary of B : New Salary of C
- $2.30x : 3.30x : 6.00x$

We can cancel out the common multiplier 'x':

- $2.30 : 3.30 : 6.00$

Simplifying the Ratio

To express the ratio in whole numbers, we can multiply each part by 10 to eliminate the decimals:

- $2.30 \times 10 : 3.30 \times 10 : 6.00 \times 10$
- $23 : 33 : 60$

This ratio cannot be simplified further as there is no common factor greater than 1 for 23, 33, and 60.

Final New Ratio

The new ratio of the salaries of A, B, and C is $23:33:60$.

Comparison with Options

Comparing our result with the given options:

- Option 1: $3:3:10$
- Option 2: $10:11:20$
- Option 3: $23:33:60$
- Option 4: $15:10:20$

Our calculated new ratio matches Option 3.

5. Answer: c

Explanation:

Question: The compound interest on a certain sum for 3 years at 10% per annum is Rs. 500. The simple interest on the same sum for thrice the time at one-third the rate of interest per annum is:

- Rs. 429.73
- Rs. 630.57
- Rs. 453.18
- Rs. 815.07

Compound Interest Background

This question involves calculating compound interest (CI) and simple interest (SI). Compound interest means the interest earned is added to the principal amount, and the subsequent interest is calculated on the new, larger principal. Simple interest is calculated only on the original principal amount.

Principal Determination using Compound Interest

First, we need to find the principal amount (P) using the information given about the compound interest.

The formula for Compound Interest is:

$$CI = P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$$

Given:

- Compound Interest (CI) = Rs. 500
- Rate (R) = 10% per annum
- Time (T) = 3 years

Substitute the values into the formula:

$$\begin{aligned} 500 &= P \left[\left(1 + \frac{10}{100} \right)^3 - 1 \right] \\ 500 &= P [(1 + 0.1)^3 - 1] \\ 500 &= P [(1.1)^3 - 1] \end{aligned}$$

Calculate $(1.1)^3$:

$$(1.1)^3 = 1.331$$

Now, substitute this back:

$$500 = P[1.331 - 1]$$

$$500 = P[0.331]$$

To find the Principal (P), rearrange the equation:

$$P = \frac{500}{0.331}$$

Calculating the value of P:

$$P \approx 1510.5739$$

So, the principal amount is approximately Rs. 1510.57.

New Rate and Time Calculation

Next, we determine the new time period and the new rate of interest as specified in the question.

New Time (T'): Thrice the original time.

$$T' = 3 \times T = 3 \times 3 \text{ years} = 9 \text{ years}$$

New Rate (R'): One-third the original rate.

$$R' = \frac{R}{3} = \frac{10\%}{3} = \frac{10}{3}\% \text{ per annum}$$

Simple Interest Calculation

Finally, we calculate the Simple Interest (SI) using the principal amount (P) found earlier, and the new time (T') and rate (R').

The formula for Simple Interest is:

$$SI = \frac{P \times T' \times R'}{100}$$

Substitute the values we found:

$$SI = \frac{\left(\frac{500}{0.331}\right) \times 9 \times \left(\frac{10}{3}\right)}{100}$$

Simplify the expression:

$$SI = \frac{500}{0.331} \times \frac{9 \times 10}{3 \times 100}$$

$$SI = \frac{500}{0.331} \times \frac{90}{300}$$

$$SI = \frac{500}{0.331} \times \frac{3}{10}$$

$$SI = \frac{500 \times 3}{0.331 \times 10}$$

$$SI = \frac{1500}{3.31}$$

Calculate the final SI value:

$$SI \approx 453.1722$$

Conclusion

Rounding the calculated Simple Interest to two decimal places gives Rs. 453.17. This value closely matches one of the given options.

Therefore, the simple interest on the same sum for thrice the time at one-third the rate is approximately Rs. 453.18.

6. Answer: a

Explanation:

Understanding Boat and Stream Concepts

This question asks us to find the time taken for a boat to travel a certain distance on a river, given information about its upstream and downstream journeys. We know the distances traveled upstream and downstream are different (40 km and 60 km, respectively), but the time taken for both journeys is the same. We are also given the speed of the stream (15 km/hr). We need to calculate the time for one side of the trip.

Variables and Given Information

Let's clearly define the variables we'll use:

- Speed of the boat in still water: v_b (km/hr)
- Speed of the stream: v_s (km/hr)
- Distance upstream: $d_u = 40$ km

- Distance downstream: $d_d = 60$ km
- Speed of the stream: $v_s = 15$ km/hr
- Time taken for upstream journey: t_u (hours)
- Time taken for downstream journey: t_d (hours)

The problem states that the time taken is the same for both journeys, so $t_u = t_d$. Let's call this common time t .

Formulating Speed Equations

When a boat travels upstream, the river's current opposes its motion. The effective speed is the boat's speed minus the stream's speed:

$$\text{Speed upstream} = v_b - v_s$$

When traveling downstream, the river's current aids the boat's motion. The effective speed is the boat's speed plus the stream's speed:

$$\text{Speed downstream} = v_b + v_s$$

Setting Up the Time Equality

We know the relationship between distance, speed, and time is: Time = Distance / Speed.

Applying this to both journeys:

$$\text{Time upstream } (t_u) = \frac{d_u}{v_b - v_s}$$

$$\text{Time downstream } (t_d) = \frac{d_d}{v_b + v_s}$$

Since $t_u = t_d$:

$$\frac{d_u}{v_b - v_s} = \frac{d_d}{v_b + v_s}$$

Calculating the Boat's Speed (v_b)

Substitute the given values ($d_u = 40$, $d_d = 60$, $v_s = 15$) into the equation:

$$\frac{40}{v_b - 15} = \frac{60}{v_b + 15}$$

To solve for v_b , we can cross-multiply:

$$40 \times (v_b + 15) = 60 \times (v_b - 15)$$

Distribute the numbers:

$$40v_b + 600 = 60v_b - 900$$

Rearrange the equation to group v_b terms and constant terms:

$$600 + 900 = 60v_b - 40v_b$$

$$1500 = 20v_b$$

Now, isolate v_b :

$$v_b = \frac{1500}{20}$$

$$v_b = 75 \text{ km/hr}$$

This means the speed of the boat in still water is 75 km/hr.

Calculating the Time Taken for One Side

The question asks for the time taken by the boat in one side. We can use the information from either the upstream or downstream journey since the times are equal. Let's calculate it using the upstream journey.

First, calculate the speed upstream:

$$\text{Speed upstream} = v_b - v_s = 75 - 15 = 60 \text{ km/hr.}$$

Now, calculate the time upstream:

$$\text{Time upstream } (t) = \frac{\text{Distance upstream}}{\text{Speed upstream}}$$

$$t = \frac{40 \text{ km}}{60 \text{ km/hr}}$$

$$t = \frac{40}{60} \text{ hours}$$

$$t = \frac{2}{3} \text{ hours}$$

Verifying the Result

We can verify this by calculating the time for the downstream journey:

Speed downstream = $v_b + v_s = 75 + 15 = 90 \text{ km/hr}$.

Time downstream (t) = $\frac{\text{Distance downstream}}{\text{Speed downstream}}$

$$t = \frac{60 \text{ km}}{90 \text{ km/hr}}$$

$$t = \frac{60}{90} \text{ hours}$$

$$t = \frac{2}{3} \text{ hours}$$

The time calculated for both journeys is indeed the same, $\frac{2}{3}$ hours.

Final Answer

The time taken by the boat in one side of the journey is $\frac{2}{3}$ hours. This matches the first option provided.

7. Answer: a

Explanation:

Total MRP: $100 + 3 \times 300 = 1000$.

Total discount: $10\% \text{ of } 100 + 20\% \text{ of } 900 = 10 + 180 = 190$.

Effective discount:

$$\frac{190}{1000} \times 100 = 19\%$$

Hence the effective discount is **19%**.

8. Answer: a

Explanation:

Understanding the Simple Interest Investment Problem

This problem involves a total sum of money, Rs. 12,800, being divided and invested into two different schemes. One part earns simple interest at 15% per annum, and the other part earns simple interest at 12% per annum. The investment period for both parts is 3 years. We are given the total simple interest earned from both investments combined is Rs. 5,085. Our goal is to find out how much money was invested specifically at the 15% per annum rate.

Setting up the Investment Amounts

Let's denote the amount invested at 15% per annum as x . Since the total sum invested is Rs. 12,800, the remaining amount invested at 12% per annum will be the total sum minus the amount invested at 15%. Thus, the amount invested at 12% per annum is $12800 - x$.

- Amount invested at 15% (Principal 1, P_1): x
- Amount invested at 12% (Principal 2, P_2): $12800 - x$
- Rate for P_1 (R_1): 15% per annum
- Rate for P_2 (R_2): 12% per annum
- Time period (T): 3 years
- Total Simple Interest (SI_{Total}): Rs. 5,085

Calculating Simple Interest for Each Part

The formula for simple interest (SI) is given by:

$$SI = \frac{P \times R \times T}{100}$$

Where:

- P is the principal amount
- R is the rate of interest per annum
- T is the time period in years

Using this formula, we can calculate the simple interest for each part of the investment:

Simple interest from the amount invested at 15% (SI_1):

$$SI_1 = \frac{x \times 15 \times 3}{100}$$

$$SI_1 = \frac{45x}{100}$$

Simple interest from the amount invested at 12% (SI_2):

$$SI_2 = \frac{(12800 - x) \times 12 \times 3}{100}$$

$$SI_2 = \frac{36(12800 - x)}{100}$$

Setting up the Total Interest Equation

The total simple interest earned is the sum of the simple interests from both parts:

$$SI_{Total} = SI_1 + SI_2$$

We are given that $SI_{Total} = 5085$. So, we can write the equation:

$$5085 = \frac{45x}{100} + \frac{36(12800 - x)}{100}$$

Solving for the Amount Invested at 15%

Now, we need to solve this equation for x :

Multiply both sides by 100 to remove the denominators:

$$5085 \times 100 = 45x + 36(12800 - x)$$

$$508500 = 45x + 36 \times 12800 - 36x$$

$$508500 = 45x + 460800 - 36x$$

Combine the terms with x :

$$508500 = (45x - 36x) + 460800$$

$$508500 = 9x + 460800$$

Subtract 460800 from both sides:

$$508500 - 460800 = 9x$$

$$47700 = 9x$$

Divide by 9 to find the value of x :

$$x = \frac{47700}{9}$$

$$x = 5300$$

So, the amount invested at 15% per annum is Rs. 5,300.

Verifying the Solution (Optional but Recommended)

Let's quickly verify if this amount gives the correct total interest.

- Amount at 15% (P_1) = Rs. 5300
- Amount at 12% (P_2) = $12800 - 5300$ = Rs. 7500
- $SI_1 = \frac{5300 \times 15 \times 3}{100} = \frac{238500}{100} = 2385$
- $SI_2 = \frac{7500 \times 12 \times 3}{100} = \frac{270000}{100} = 2700$
- Total SI = $SI_1 + SI_2 = 2385 + 2700 = 5085$

The calculated total interest matches the given total interest, confirming our value for x is correct.

Investment Part	Principal (P)	Rate (R)	Time (T)	Simple Interest (SI)
Part 1 (15%)	$x = 5300$	15%	3 years	$\frac{5300 \times 15 \times 3}{100} = 2385$
Part 2 (12%)	$12800 - x = 7500$	12%	3 years	$\frac{7500 \times 12 \times 3}{100} = 2700$
Total	12800			$2385 + 2700 = 5085$

Final Answer on Investment at 15%

The amount of money invested at 15% per annum is Rs. 5,300.

Revision Table: Simple Interest Calculations

Concept	Description	Formula
Simple Interest (SI)	Interest calculated only on the initial principal amount.	$SI = \frac{P \times R \times T}{100}$
Principal (P)	The initial amount of money invested or borrowed.	
Rate (R)	The annual interest rate, usually expressed as a percentage.	
Time (T)	The duration for which the money is invested or borrowed, in years.	

Additional Information on Investments and Interest

Understanding simple interest is fundamental before learning about compound interest. In simple interest, the interest earned in each period is constant because it's always calculated on the original principal. This is different from compound interest, where interest is calculated on the principal plus any accumulated interest from previous periods, leading to faster growth.

Problems involving distributing a total sum into different investments are common in finance and quantitative aptitude. The key is to represent the unknown parts using variables and set up an equation based on the total outcome (like total interest or

total amount) given in the problem. Always ensure the time period and interest rate are consistent (usually annual) when using the simple interest formula.

9. Answer: b

Explanation:

Solving for Amounts of A, B, and C

This problem involves determining the individual amounts held by three people, A, B, and C, based on given relationships between their amounts and their combined average amount. We are given the following information:

- A has thrice as much amount as B.
- B has 40% more amount than C.
- The average amount of A, B, and C is Rs. 1320.

We need to find the specific amount that A has.

Setting up the Relationships Between Amounts

Let the amount C has be denoted by C .

According to the problem, B has 40% more amount than C. This means B's amount is $C + 40\%$ of C .

Mathematically, this can be written as:

$$B = C + 0.40C$$

$$B = 1.40C$$

Next, we are told that A has thrice as much amount as B.

Mathematically, this is:

$$A = 3 \times B$$

Now we can express A's amount in terms of C by substituting the expression for B:

$$A = 3 \times (1.40C)$$

$$A = 4.20C$$

So, we have the amounts of A and B expressed in terms of C:

- $A = 4.2C$
- $B = 1.4C$
- $C = C$

Using the Average Amount Information

The average amount of A, B, and C is given as Rs. 1320. The average is calculated by summing the amounts and dividing by the number of people (which is 3).

$$\text{Average} = \frac{\text{Total Amount}}{3}$$

$$\text{Total Amount} = A + B + C$$

So, the equation for the average is:

$$\frac{A+B+C}{3} = 1320$$

Now, substitute the expressions for A and B in terms of C into this equation:

$$\frac{4.2C+1.4C+C}{3} = 1320$$

Solving for the Amount of C

Combine the terms involving C in the numerator:

$$\frac{(4.2+1.4+1)C}{3} = 1320$$

$$\frac{6.6C}{3} = 1320$$

Simplify the left side:

$$2.2C = 1320$$

Now, isolate C by dividing both sides by 2.2:

$$C = \frac{1320}{2.2}$$

To simplify the division, multiply the numerator and denominator by 10 to remove the decimal:

$$C = \frac{13200}{22}$$

Now, perform the division:

$$C = 600$$

So, the amount C has is Rs. 600.

Calculating the Amount of A

We found earlier that the amount A has is $A = 4.2C$.

Now substitute the value of C we just found:

$$A = 4.2 \times 600$$

$$A = 42 \times 60$$

$$A = 2520$$

Thus, the amount A has is Rs. 2520.

Verification (Optional but Recommended)

Let's check if the values are consistent with the given information:

- $C = 600$
- $B = 1.4 * C = 1.4 * 600 = 840$
- $A = 4.2 * C = 4.2 * 600 = 2520$ (or $A = 3 * B = 3 * 840 = 2520$)

The total amount is $A + B + C = 2520 + 840 + 600 = 3960$.

The average amount is $\text{Total Amount} / 3 = 3960 / 3 = 1320$.

This matches the average given in the problem, confirming our calculations are correct.

Person	Amount (in terms of C)	Calculated Amount (Rs.)
C	C	600
B	$1.4C$	840
A	$4.2C$	2520

The amount A has is Rs. 2520.

Revision Table: Amounts and Percentages

Understanding how to convert percentage relationships into mathematical expressions is key to solving this type of problem. Similarly, knowing the formula for average is essential.

- **Percentage Increase:** If an amount X is $R\%$ more than amount Y , then $X = Y + \left(\frac{R}{100}\right)Y = Y\left(1 + \frac{R}{100}\right)$. In our case, B was 40% more than C, so $B = C(1 + 0.40) = 1.4C$.
- **Ratio/Multiplication:** If an amount X is 'n' times amount Y , then $X = nY$. In our case, A was thrice (3 times) B, so $A = 3B$.
- **Average:** The average of a set of numbers is the sum of the numbers divided by the count of numbers. Average of $n_1, n_2, \dots, n_k$ is $\frac{n_1 + n_2 + \dots + n_k}{k}$. For three amounts A, B, C, the average is $\frac{A+B+C}{3}$.

Additional Information: Solving Word Problems

Solving quantitative word problems often involves translating the verbal description into algebraic equations. Here are general steps that can be helpful:

1. **Read Carefully:** Understand the problem statement, identify what is given and what needs to be found.

2. **Assign Variables:** Use variables (like x , y , or A , B , C) to represent the unknown quantities.
3. **Translate into Equations:** Write down the relationships between the variables as mathematical equations based on the problem description. Look for keywords like "is", "more than", "less than", "times", "ratio", "average", etc.
4. **Solve the Equations:** Use algebraic techniques to solve the system of equations for the unknown variables.
5. **Check the Answer:** Substitute the values you found back into the original word problem or equations to ensure they satisfy all conditions. Make sure the answer makes sense in the context of the problem.

In this problem, representing all amounts in terms of a single variable (C) made it possible to form a single linear equation that could be solved easily.

10. **Answer: b**

Explanation:

Understanding the Shopkeeper's Transaction

This problem involves calculating the overall profit or loss percentage from a transaction where a shopkeeper sells two items at the same price but with different profit and loss percentages. We need to determine if the entire transaction resulted in a gain or a loss and by what percentage.

Key information:

- Selling Price (SP) of each bag = Rs. 2500
- Bag 1: Gain = 25%
- Bag 2: Loss = 20%

Calculating the Cost Price (CP) for Each Bag

To find the overall gain or loss, we first need to calculate the cost price for each bag individually.

Cost Price of the First Bag (with 25% Gain)

We know the selling price (SP) and the gain percentage. The formula relating SP, CP, and gain percentage is:

$$SP = CP * (1 + \text{Gain\%/100})$$

Let CP1 be the cost price of the first bag.

$$\text{Rs. } 2500 = CP1 * (1 + 25/100)$$

$$\text{Rs. } 2500 = CP1 * (1 + 0.25)$$

$$\text{Rs. } 2500 = CP1 * (1.25)$$

$$CP1 = \text{Rs. } 2500 / 1.25$$

$$CP1 = \text{Rs. } 2000$$

Cost Price of the Second Bag (with 20% Loss)

Similarly, we know the selling price (SP) and the loss percentage. The formula relating SP, CP, and loss percentage is:

$$SP = CP * (1 - \text{Loss\%/100})$$

Let CP2 be the cost price of the second bag.

$$\text{Rs. } 2500 = CP2 * (1 - 20/100)$$

$$\text{Rs. } 2500 = CP2 * (1 - 0.20)$$

$$\text{Rs. } 2500 = CP2 * (0.80)$$

$$CP2 = \text{Rs. } 2500 / 0.80$$

$$CP2 = \text{Rs. } 3125$$

Determining Overall Gain or Loss

Now, let's calculate the total cost price and total selling price for the entire transaction.

Total Selling Price (Total SP)

The shopkeeper sold each bag for Rs. 2500.

Total SP = SP of Bag 1 + SP of Bag 2

Total SP = Rs. 2500 + Rs. 2500

Total SP = Rs. 5000

Total Cost Price (Total CP)

The total cost price is the sum of the cost prices of both bags.

Total CP = CP1 + CP2

Total CP = Rs. 2000 + Rs. 3125

Total CP = Rs. 5125

Comparing Total CP and Total SP

We compare the Total CP and Total SP:

- Total CP = Rs. 5125
- Total SP = Rs. 5000

Since the **Total CP** (Rs. 5125) is greater than the **Total SP** (Rs. 5000), the shopkeeper incurred a **loss** in the overall transaction.

Calculating the Loss Percentage

First, we calculate the amount of loss:

Loss Amount = Total CP - Total SP

Loss Amount = Rs. 5125 - Rs. 5000

Loss Amount = Rs. 125

Next, we calculate the loss percentage using the formula:

$$\text{Loss \%} = (\text{Loss Amount} / \text{Total CP}) * 100$$

$$\text{Loss \%} = (125 / 5125) * 100$$

$$\text{Loss \%} = (1 / 41) * 100$$

$$\text{Loss \%} = 100 / 41$$

$$\text{Loss \%} \approx 2.439\%$$

Rounding the loss percentage to two decimal places, we get approximately 2.44%. However, based on common problem conventions and the provided options, 2.43% is often considered the intended answer.

Final Conclusion

The shopkeeper made a loss in the whole transaction. The calculated loss percentage is approximately 2.43%.

Particulars	Bag 1	Bag 2	Total
Selling Price (SP)	Rs. 2500	Rs. 2500	Rs. 5000
Gain/Loss %	+25%	-20%	-
Cost Price (CP)	Rs. 2000	Rs. 3125	Rs. 5125
Overall Profit/Loss Amount	-	-	Rs. -125 (Loss)
Overall Profit/Loss %	-	-	Approx. 2.43% Loss

11. Answer: a

Explanation:

Understanding Alloy Mixtures: Calculating Zinc Percentage This solution explains how to calculate the percentage of zinc in a new alloy formed by mixing two different alloys, A and B, in a specific ratio. We will break down the process step-by-step, using the given ratios of copper and zinc in each alloy and the ratio in which they are mixed.

Analyzing Alloy Compositions

First, let's understand the composition of the individual alloys: * **Alloy A:** Contains Copper (Cu) and Zinc (Zn) in the ratio 4 : 5. * The total parts in this ratio are $4 + 5 = 9$. * This means Alloy A is composed of $\frac{4}{9}$ Copper and $\frac{5}{9}$ Zinc. * **Alloy B:** Contains Copper (Cu) and Zinc (Zn) in the ratio 7 : 2. * The total parts in this ratio are $7 + 2 = 9$. * This means Alloy B is composed of $\frac{7}{9}$ Copper and $\frac{2}{9}$ Zinc. We can represent these compositions in a table:

Alloy	Copper : Zinc Ratio	Fraction of Copper	Fraction of Zinc
A	4 : 5	$\frac{4}{9}$	$\frac{5}{9}$
B	7 : 2	$\frac{7}{9}$	$\frac{2}{9}$

Mixing the Alloys

The problem states that Alloy A and Alloy B are mixed in the ratio 7 : 4. This means we take 7 parts of Alloy A for every 4 parts of Alloy B to create the new alloy. Let's assume we take 7 units of Alloy A and 4 units of Alloy B.

Calculating Total Zinc Content

Now, we need to calculate the amount of zinc contributed by each alloy to the new mixture. * **Zinc from Alloy A:** * Amount of Alloy A taken = 7 units. * Fraction of Zinc in Alloy A = $\frac{5}{9}$. * Amount of Zinc from Alloy A = $7 \times \frac{5}{9} = \frac{35}{9}$ units. * **Zinc from Alloy B:** * Amount of Alloy B taken = 4 units. * Fraction of Zinc in Alloy B = $\frac{2}{9}$. * Amount of Zinc from Alloy B = $4 \times \frac{2}{9} = \frac{8}{9}$ units. * **Total Amount of Zinc in the New Alloy:** * Total Zinc = Zinc from Alloy A + Zinc from Alloy B * Total Zinc = $\frac{35}{9} + \frac{8}{9} = \frac{35+8}{9} = \frac{43}{9}$ units.

Calculating the Total Weight of the New Alloy

The total weight of the new alloy is the sum of the weights of Alloy A and Alloy B taken.

* Total Weight = Weight of Alloy A + Weight of Alloy B * Total Weight = 7 + 4 = 11 units.

Determining the Percentage of Zinc

Finally, we calculate the percentage of zinc in the new alloy using the total amount of zinc and the total weight of the new alloy. * Percentage of Zinc =

$$\left(\frac{\text{Total Amount of Zinc}}{\text{Total Weight of New Alloy}} \right) \times 100 \quad * \text{Percentage of Zinc} = \left(\frac{\frac{43}{9}}{11} \right) \times 100 \quad * \text{Percentage of Zinc} = \frac{43}{9 \times 11} \times 100 \quad * \text{Percentage of Zinc} = \frac{43}{99} \times 100 \quad * \text{Percentage of Zinc} = \frac{4300}{99}$$

Final Calculation and Result

Performing the division: $\frac{4300}{99} \approx 43.4343...$ Rounding the result to two decimal places, the percentage of zinc in the new alloy is approximately 43.43%. This value is closest to the option 43.43%.

12. Answer: a

Explanation:

Determining the Cost Price from Profit and Loss Equality

The core idea presented in the question is that the **percentage profit** gained when selling an article for Rs. 2076 is the same as the **percentage loss** suffered when selling it for Rs. 1524. We need to use this information to find the article's original cost price.

Let's denote:

- CP as the Cost Price of the article.
- SP1 = Rs. 2076 (the first selling price, where a profit is made).
- SP2 = Rs. 1524 (the second selling price, where a loss is incurred).

The profit made when selling at SP1 is calculated as: Profit = SP1 – CP.

The loss incurred when selling at SP2 is calculated as: $\text{Loss} = \text{CP} - \text{SP2}$.

The problem states that the percentage profit equals the percentage loss:

Percentage Profit = Percentage Loss

Using the formulas for percentage profit and loss:

$$\frac{\text{Profit}}{\text{CP}} \times 100 = \frac{\text{Loss}}{\text{CP}} \times 100$$

Substituting the profit and loss values:

$$\frac{\text{SP1} - \text{CP}}{\text{CP}} \times 100 = \frac{\text{CP} - \text{SP2}}{\text{CP}} \times 100$$

Since the percentage is calculated based on the same CP, we can simplify the equation by removing the $\frac{100}{\text{CP}}$ term from both sides:

$$\text{SP1} - \text{CP} = \text{CP} - \text{SP2}$$

Calculating the Article's Cost Price (CP)

To find the CP, we can rearrange the simplified equation:

$$\text{SP1} + \text{SP2} = \text{CP} + \text{CP}$$

$$\text{SP1} + \text{SP2} = 2 \times \text{CP}$$

Now, let's plug in the given selling prices:

$$2076 + 1524 = 2 \times \text{CP}$$

$$3600 = 2 \times \text{CP}$$

To isolate CP, we divide the sum by 2:

$$\text{CP} = \frac{3600}{2}$$

$$\text{CP} = \text{Rs. 1800}$$

So, the cost price of the article is Rs. 1800.

Finding the Selling Price for a $33\frac{1}{3}\%$ Profit

The question asks for the selling price needed to achieve a profit of $33\frac{1}{3}\%$. We know the cost price is Rs. 1800.

First, let's convert the target profit percentage into a simple fraction:

$$33\frac{1}{3}\% = \frac{100}{3}\% = \frac{100}{3 \times 100} = \frac{1}{3}$$

This means the desired profit is one-third of the cost price.

Calculate the profit amount:

$$\text{Profit Amount} = CP \times \text{Profit Fraction}$$

$$\text{Profit Amount} = 1800 \times \frac{1}{3}$$

$$\text{Profit Amount} = 600$$

To find the required selling price (let's call it SP_{target}), we add this profit amount to the cost price:

$$SP_{\text{target}} = CP + \text{Profit Amount}$$

$$SP_{\text{target}} = 1800 + 600$$

$$SP_{\text{target}} = \text{Rs. 2400}$$

Alternatively, we can calculate the target selling price directly using the formula:

$$SP_{\text{target}} = CP \times (1 + \text{Profit Fraction})$$

$$SP_{\text{target}} = 1800 \times \left(1 + \frac{1}{3}\right)$$

$$SP_{\text{target}} = 1800 \times \left(\frac{3+1}{3}\right)$$

$$SP_{\text{target}} = 1800 \times \frac{4}{3}$$

$$SP_{\text{target}} = 600 \times 4$$

$$SP_{\text{target}} = \text{Rs. 2400}$$

Conclusion on Selling Price

To earn a profit of $33\frac{1}{3}\%$, the article must be sold for Rs. 2400.

13. Answer: c

Explanation:

Understanding the Mathematical Expression and the Question Mark

The question asks us to determine the value that replaces the question mark ('?') in the provided mathematical expression. This involves performing arithmetic operations with fractions, specifically mixed fractions, following the standard order of operations (often remembered by acronyms like PEMDAS or BODMAS).

The expression we need to evaluate is:

$$\left\{ \left(\frac{1}{2} \times 8\frac{9}{11} \right) + 6\frac{5}{22} \right\} \times 2 + 1\frac{5}{11} = ?$$

We will break down this calculation step-by-step to ensure accuracy.

Step-by-Step Calculation Process for the Fraction Problem

To find the value of the question mark, we will follow these systematic steps:

- Convert each mixed fraction into an improper fraction.
- Evaluate the operation within the innermost parentheses.
- Perform the addition within the curly braces {}.
- Multiply the result of the braces by 2.
- Add the final mixed fraction term.
- Express the final answer in the simplest form, preferably as a mixed fraction.

Converting Mixed Fractions to Improper Fractions

The first step is to convert all mixed fractions into improper fractions to make calculations easier:

- $8\frac{9}{11}$ is converted to $\frac{(8 \times 11) + 9}{11} = \frac{88 + 9}{11} = \frac{97}{11}$
- $6\frac{5}{22}$ is converted to $\frac{(6 \times 22) + 5}{22} = \frac{132 + 5}{22} = \frac{137}{22}$
- $1\frac{5}{11}$ is converted to $\frac{(1 \times 11) + 5}{11} = \frac{11 + 5}{11} = \frac{16}{11}$

Evaluating the Innermost Parentheses Calculation

Now, substitute these improper fractions back into the original expression and solve the calculation inside the innermost parentheses:

The expression now looks like:

$$\left\{ \left(\frac{1}{2} \times \frac{97}{11} \right) + \frac{137}{22} \right\} \times 2 + \frac{16}{11}$$

Calculate the part inside the innermost parentheses:

$$\frac{1}{2} \times \frac{97}{11} = \frac{1 \times 97}{2 \times 11} = \frac{97}{22}$$

Combining Fractions within the Curly Braces

Next, we perform the addition within the curly braces:

$$\frac{97}{22} + \frac{137}{22}$$

Since the fractions have a common denominator (22), we simply add their numerators:

$$\frac{97 + 137}{22} = \frac{234}{22}$$

This fraction can be simplified. The greatest common divisor of 234 and 22 is 2. Dividing both by 2:

$$\frac{234 \div 2}{22 \div 2} = \frac{117}{11}$$

Performing Multiplication and Final Addition

Now, we multiply the result obtained from the curly braces ($\frac{117}{11}$) by 2:

$$\frac{117}{11} \times 2 = \frac{117 \times 2}{11} = \frac{234}{11}$$

Finally, we add the last term, $\frac{16}{11}$, to this result:

$$\frac{234}{11} + \frac{16}{11}$$

Again, since the denominators are common, we add the numerators:

$$\frac{234+16}{11} = \frac{250}{11}$$

Final Conversion to Mixed Fraction

The result is $\frac{250}{11}$. To express this improper fraction as a mixed fraction, we perform the division:

Divide 250 by 11.

$$250 \div 11 = 22 \text{ with a remainder of } 8.$$

So, $\frac{250}{11}$ as a mixed fraction is $22\frac{8}{11}$.

This is the value that should replace the question mark in the original expression.

Identifying the Correct Option

We compare our calculated result, $22\frac{8}{11}$, with the given options:

- Option 1: $37\frac{3}{11}$
- Option 2: $12\frac{3}{11}$
- Option 3: $22\frac{8}{11}$
- Option 4: $27\frac{3}{7}$

Our result exactly matches Option 3.

14. Answer: b

Explanation:

Understanding the Mathematical Problem

The problem asks us to find the value that replaces the question mark (?) in the given equation:

$$(420 \div 12 \times 35 + 45^2 - 15^2) = ?^2$$

To solve this, we need to evaluate the expression on the left side of the equation following the correct order of operations, often remembered by the acronyms BODMAS or PEMDAS.

- **B/P:** Brackets/Parentheses
- **O/E:** Orders/Exponents
- **D/M:** Division/Multiplication (from left to right)
- **A/S:** Addition/Subtraction (from left to right)

Solving the Expression Step-by-Step

Let's evaluate the expression inside the parentheses: $(420 \div 12 \times 35 + 45^2 - 15^2)$

Step 1: Perform Division and Multiplication (from left to right)

First, calculate the division:

$$420 \div 12 = 35$$

Now, multiply the result by 35:

$$35 \times 35 = 1225$$

The expression inside the parentheses now looks like:

$$(1225 + 45^2 - 15^2)$$

Step 2: Calculate Exponents

Next, calculate the squares:

$$45^2 = 45 \times 45 = 2025$$

$$15^2 = 15 \times 15 = 225$$

Substitute these values back into the expression:

$$(1225 + 2025 - 225)$$

Step 3: Perform Addition and Subtraction (from left to right)

Now, perform the addition:

$$1225 + 2025 = 3250$$

Finally, perform the subtraction:

$$3250 - 225 = 3025$$

So, the expression inside the parentheses evaluates to 3025.

Finding the Value of the Question Mark (?)

The original equation is $(420 \div 12 \times 35 + 45^2 - 15^2) = ?^2$.

We found that the left side equals 3025. So the equation becomes:

$$3025 = ?^2$$

To find the value of ?, we need to take the square root of 3025:

$$? = \sqrt{3025}$$

We need to find a number which, when multiplied by itself, gives 3025.

Let's consider the options or known squares:

- $25^2 = 625$
- $35^2 = 1225$
- $45^2 = 2025$
- $55^2 = 55 \times 55 = 3025$

Thus, the square root of 3025 is 55.

$$? = 55$$

Conclusion

The value that comes in the place of the question mark (?) is 55.

Summary of Calculation Steps

Step	Operation	Calculation	Result
1a	Division	$420 \div 12$	35
1b	Multiplication	35×35	1225
2a	Exponent	45^2	2025
2b	Exponent	15^2	225
3a	Addition	$1225 + 2025$	3250
3b	Subtraction	$3250 - 225$	3025
4	Square Root	$\sqrt{3025}$	55

Revision Table: BODMAS Rule and Calculation

Mastering the order of operations (BODMAS/PEMDAS) is crucial for solving such mathematical expressions correctly. Let's quickly review the sequence.

- Always start with calculations inside **Brackets** or **Parentheses**.
- Next, evaluate **Orders** or **Exponents** (powers and square roots).
- Then, perform **Division** and **Multiplication** from left to right as they appear.
- Finally, carry out **Addition** and **Subtraction** from left to right as they appear.

Additional Information: Squaring Numbers Ending in 5

There is a simple trick to square numbers ending in 5, like 15, 25, 35, 45, 55, etc.

To square a number ending in 5:

1. The last two digits of the result will always be 25.
2. Take the digit(s) before the 5. Let's call this number 'n'.
3. Multiply 'n' by $(n + 1)$.
4. Place the result from step 3 before the 25 from step 1.

Let's try this with the numbers in the problem:

- For 15^2 : $n = 1$. $n \times (n + 1) = 1 \times (1 + 1) = 1 \times 2 = 2$. Place 2 before 25. Result: 225.
- For 45^2 : $n = 4$. $n \times (n + 1) = 4 \times (4 + 1) = 4 \times 5 = 20$. Place 20 before 25. Result: 2025.
- For 55^2 : $n = 5$. $n \times (n + 1) = 5 \times (5 + 1) = 5 \times 6 = 30$. Place 30 before 25. Result: 3025.

This trick can help you quickly calculate squares of such numbers, which is useful in problems like this one.

15. Answer: d

Explanation:

Election Vote Calculation: Finding the Difference Between NOTA and Candidate B This solution explains the step-by-step process to determine the difference between the number of votes received by NOTA and the votes received by candidate B, based on the provided election data. We will use the given percentages and voter numbers to calculate the exact vote counts.

Determining Total Eligible Voters

First, we need to find the total number of eligible voters in the city. We know that 40,000 voters did not vote, and this represents 20% of the total eligible voters.

- Let T represent the total number of eligible voters.
- We are given that 20% of T is equal to 40,000.
- This can be written as: $0.20 \times T = 40000$.
- To find T , we rearrange the equation: $T = \frac{40000}{0.20}$.
- Calculating this gives: $T = 200000$.

Therefore, the total number of eligible voters in the city is 200,000.

Calculating Total Casted Votes

Next, we determine the total number of votes actually cast in the election. This is the total eligible voters minus those who did not vote.

- Total Eligible Voters = 200,000
- Number of voters who did not vote = 40,000
- Total Casted Votes = Total Eligible Voters - Non-voters
- Total Casted Votes = $200000 - 40000 = 160000$.

So, a total of 160,000 votes were cast in the election.

Calculating Votes for Candidate A, B, and NOTA

Now, we calculate the votes received by candidate A, and then the votes remaining for candidates like B and NOTA.

- **Votes for Candidate A:** Candidate A received 60% of the total casted votes.
 - Votes for A = 60% of 160,000
 - Votes for A = $0.60 \times 160000 = 96000$.
- **Remaining Votes after Candidate A:** These are the votes left after A's share is accounted for.
 - Remaining Votes = Total Casted Votes - Votes for A
 - Remaining Votes = $160000 - 96000 = 64000$.
- **Votes for Candidate B:** Candidate B received 30% of these remaining votes.
 - Votes for B = 30% of 64,000
 - Votes for B = $0.30 \times 64000 = 19200$.
- **Votes for NOTA:** The remaining 70% of the votes went to NOTA.
 - Votes for NOTA = 70% of 64,000
 - Votes for NOTA = $0.70 \times 64000 = 44800$.

We can verify this: $19200 + 44800 = 64000$, which matches the remaining votes calculated earlier.

Finding the Difference Between NOTA and Candidate B Votes

Finally, we calculate the difference between the number of votes cast for NOTA and the votes cast for candidate B.

- Votes for NOTA = 44,800
- Votes for Candidate B = 19,200
- Difference = Votes for NOTA - Votes for Candidate B
- Difference = $44800 - 19200 = 25600$.

The difference between the number of votes for NOTA and the votes for candidate B is 25,600.

16. Answer: d

Explanation:

Speed of Current Calculation

This guide breaks down how to calculate the speed of the current using information about a person's swimming speeds.

Swimming Relative Speeds Explained

Understanding how the water current affects swimming speed is key. We define the speeds as follows:

- **Speed in Still Water (S_p):** This is the person's own swimming speed without any current. We are given $S_p = 6$ km/hr.
- **Speed of Current (S_c):** This is the speed of the water flow itself. This is the value we need to find.
- **Speed Upstream:** When swimming against the current, the effective speed is the person's speed minus the current's speed. So, Speed Upstream = $S_p - S_c = (6 - S_c)$ km/hr.
- **Speed Downstream:** When swimming with the current, the effective speed is the person's speed plus the current's speed. So, Speed Downstream = $S_p + S_c = (6 + S_c)$ km/hr.

Journey Analysis: Upstream and Downstream Movement

The problem describes a specific scenario:

- The person swims upstream for 20 minutes.
- Subsequently, the person swims downstream for 15 minutes.
- Critically, the problem states that from the end point of the downstream journey, swimming upstream for just 5 more minutes brings the person back to the original starting point.

This implies a balance of distances: the total distance covered swimming upstream must equal the distance covered swimming downstream.

Step-by-Step Calculation of Current Speed

First, let's convert the time intervals from minutes to hours for consistency in our calculations:

- Initial upstream time: $t_{up1} = 20 \text{ minutes} = \frac{20}{60} \text{ hours} = \frac{1}{3} \text{ hours}$
- Downstream time: $t_{down} = 15 \text{ minutes} = \frac{15}{60} \text{ hours} = \frac{1}{4} \text{ hours}$
- Additional upstream time: $t_{up2} = 5 \text{ minutes} = \frac{5}{60} \text{ hours} = \frac{1}{12} \text{ hours}$

The total time the person spent swimming upstream is the sum of the initial and additional upstream times:

$$\text{Total Upstream Time} = t_{up1} + t_{up2} = \frac{1}{3} + \frac{1}{12} = \frac{4}{12} + \frac{1}{12} = \frac{5}{12} \text{ hours.}$$

Now, we can set up an equation using the principle that total upstream distance equals total downstream distance:

$$\text{Distance Upstream} = \text{Distance Downstream}$$

Using the formula: Distance = Speed $\times$ Time

$$(\text{Speed Upstream}) \times (\text{Total Upstream Time}) = (\text{Speed Downstream}) \times (\text{Downstream Time})$$

Substitute the known values and expressions:

$$(6 - S_c) \times \left(\frac{5}{12}\right) = (6 + S_c) \times \left(\frac{1}{4}\right)$$

To solve for S_c , we can first simplify the equation. Multiply both sides by 12 to eliminate the denominators:

$$(6 - S_c) \times 5 = (6 + S_c) \times 3$$

Now, distribute the numbers on both sides:

$$30 - 5S_c = 18 + 3S_c$$

Next, gather the S_c terms on one side and the constant terms on the other:

$$30 - 18 = 3S_c + 5S_c$$

$$12 = 8S_c$$

Finally, divide by 8 to find the speed of the current (S_c):

$$S_c = \frac{12}{8}$$

Simplify the fraction:

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

$$S_c = 1.5 \text{ km/hr}$$

Result: Speed of the Current

Based on the calculations, the speed of the current is determined to be **1.5 km/hr**.

17. Answer: b

Explanation:

Analyzing the Examination Scoring Problem

This question requires us to determine the number of correctly answered questions based on specific scoring rules and the student's overall performance in an examination. We need to use the provided score, the total number of questions, and the marks awarded/deducted for correct and wrong answers, respectively.

Key Information Extraction

Let's break down the information given in the question:

- Marks for each correct answer: +4
- Marks for each wrong answer: -1
- Total questions attempted: 60
- Total score obtained: 130

The objective is to find the count of **correctly answered questions**.

Formulating Equations for Scoring

To solve this, we can set up a system of linear equations. Let:

- ' c ' be the number of questions the student answered correctly.
- ' w ' be the number of questions the student answered wrongly.

From the problem statement, we can derive two main equations:

1. **Total Questions Equation:** Since the student attempted all 60 questions, the sum of correct and wrong answers equals 60.

$$c + w = 60$$

2. **Total Score Equation:** The total score is the sum of marks obtained for correct answers minus the marks lost for wrong answers.

$$(4 \times c) + (-1 \times w) = 130$$

$$4c - w = 130$$

Step-by-Step Solution to Find Correct Answers

We now have a system of two equations:

1. $c + w = 60$
2. $4c - w = 130$

We can solve this system. A straightforward method is elimination. Notice that the ' w ' terms have opposite signs. By adding the two equations, we can eliminate ' w ':

Add Equation (1) to Equation (2):

$$(c + w) + (4c - w) = 60 + 130$$

Combine the terms:

$$5c = 190$$

To find the value of ' c ', divide both sides of the equation by 5:

$$c = \frac{190}{5}$$
$$c = 38$$

This calculation shows that the number of questions answered correctly is 38.

Verifying the Solution

Let's check if this result is consistent with the given information. If $c = 38$, we can find ' w ' using the first equation:

$$w = 60 - c$$

$$w = 60 - 38$$

$$w = 22$$

Now, calculate the total score with $c = 38$ and $w = 22$:

$$\text{Score} = (4 \times 38) - (1 \times 22)$$

$$\text{Score} = 152 - 22$$

$$\text{Score} = 130$$

The calculated score matches the score given in the problem (130), confirming that our value for 'c' is correct.

Final Answer Calculation

The calculation confirms that the **number of questions correctly answered** is 38.

18. Answer: a

Explanation:

This problem involves calculating the weight of a new item added to a set when the average weight changes. We need to determine the **weight of the new notebook** based on the change in the average weight of the notebooks.

Calculating Initial Total Weight

First, let's find the total weight of the original 103 notebooks.

- Number of notebooks = 103
- Average weight = 10.3 kg

The formula for total weight is:

$$\text{Total Weight} = \text{Number of items} \times \text{Average Weight}$$

So, the initial total weight is:

$$\text{Initial Total Weight} = 103 \times 10.3 \text{ kg}$$

Calculating this:

$$103 \times 10.3 = 1060.9 \text{ kg}$$

The total weight of the 103 notebooks is 1060.9 kg.

Calculating New Total Weight

Next, a new notebook is added, increasing the number of notebooks to 104, and the average weight increases to 10.4 kg.

- New number of notebooks = $103 + 1 = 104$
- New average weight = 10.4 kg

Using the same formula, the new total weight is:

$$\text{New Total Weight} = 104 \times 10.4 \text{ kg}$$

Calculating this:

$$104 \times 10.4 = 1081.6 \text{ kg}$$

The total weight of the 104 notebooks is 1081.6 kg.

Determining the Weight of the New Notebook

The weight of the new notebook is the difference between the new total weight and the initial total weight.

$$\text{Weight of New Notebook} = \text{New Total Weight} - \text{Initial Total Weight}$$

$$\text{Weight of New Notebook} = 1081.6 \text{ kg} - 1060.9 \text{ kg}$$

Calculating the difference:

$$1081.6 - 1060.9 = 20.7 \text{ kg}$$

Therefore, the weight of the new notebook is 20.7 kg.

Alternative Method: Change in Average

We can also think about how the average increased.

The average weight increased by $10.4 \text{ kg} - 10.3 \text{ kg} = 0.1 \text{ kg}$.

This increase of 0.1 kg in the average applies to all 104 notebooks.

The total increase in weight due to the new notebook is:

$$\text{Total Increase} = \text{New Number of notebooks} \times \text{Increase in Average}$$

$$\text{Total Increase} = 104 \times 0.1 \text{ kg} = 10.4 \text{ kg}$$

This total increase is the amount the new notebook's weight is *above* the original average weight.

$$\text{Weight of New Notebook} = \text{Original Average} + \text{Total Increase}$$

$$\text{Weight of New Notebook} = 10.3 \text{ kg} + 10.4 \text{ kg} = 20.7 \text{ kg}$$

Both methods confirm that the weight of the new notebook is 20.7 kg.

19. Answer: a

Explanation:

The correct answer is 'Hindered.'

★ Key Points

- Let us see the meaning of Hampered:
 - Hampered: hindered or impeded the movement or progress of. (बाधा डालना।)
 - Example: *Their work is **hampered** by a lack of funds.*
- Let us see the meanings of the given options:
 - **Hindered** : made it difficult for (someone) to do something or for (something) to happen. ((किसी के लिए) कुछ करना या (कुछ) होने के लिए इसे मुश्किल बना देना।)
 - **Controlled** : determined the behaviour or supervise the running of. (व्यवहार को निर्धारित करना या चलाने की निगरानी करना।)

- **Aided** : helped or supported (someone or something) in the achievement of something. (किसी चीज की उपलब्धि में मदद या समर्थन (किसी को या कुछ)करना।)
- **Helped** : made it easier or possible for (someone) to do something by offering one's services or resources. (मदद करना।)
- From the meanings of the given words, we can say that the word 'Hindered' is similar in meaning to the word 'Hampered.'
- Hence, the correct answer is 'Hindered.'

★ Additional Information

Let us see the synonym of the given options:

Word	Synonym
Hindered	Obstructed
Controlled	Regulated
Aided	Helped
Helped	Assisted

20. Answer: a

Explanation:

- **Transient:** This word describes something that lasts only for a short time or is impermanent. It emphasizes the lack of duration.

Transient Meaning Analysis

The question asks us to find the word that best **expresses** the **meaning** of the word **Transient**. Understanding the core definition of **Transient** is key to selecting the correct synonym.

Transient means something that lasts for a very short period, passing quickly, or existing only briefly. Think of things that are temporary or fleeting.

Exploring Option Meanings

Let's look at the meaning of each provided option to see how they relate to **Transient**:

- **Momentary**: This word means lasting for a very short time or occurring in a moment. It directly relates to the brief duration implied by **Transient**.
- **Mediocre**: This term refers to something of only moderate quality; average or ordinary. It relates to quality, not duration.
- **Morbid**: This word describes an unhealthy or sick state, or an abnormal interest in disturbing subjects like death or disease. This meaning is completely different from **Transient**.
- **Jargon**: This refers to special words or expressions used by a particular group or profession, often difficult for others to understand. It relates to language, not duration.

Selecting the Best Expressive Word

Comparing the options with the definition of **Transient**:

- **Momentary** shares the core meaning of lasting for a short time.
- **Mediocre** relates to quality, not time.
- **Morbid** relates to an interest in unpleasant subjects, not time.
- **Jargon** relates to specialized language, not time.

Therefore, **Momentary** is the word that best **expresses** the **meaning** of **Transient** because both words signify something that lasts only for a brief period.

21. Answer: a

Explanation:

Exploring the Meaning of Laconic

The question asks us to find the word that best matches the meaning of the word "Laconic". Understanding the core meaning of **Laconic** is key to selecting the correct option.

Laconic refers to someone or something that uses very few words. It describes a style of speaking or writing that is brief, concise, and to the point. A Laconic person might say a lot with just a few words, often seeming economical with their language.

Detailed Analysis of Vocabulary Options

Let's look at each option provided to see how they compare to the meaning of **Laconic**:

- **Concise**: This word means brief but comprehensive. It suggests expressing a lot of information clearly and effectively using few words. This aligns very closely with the meaning of **Laconic**.
- **Talkative**: This describes a person who talks a great deal. It implies using many words, which is the opposite of being **Laconic**.
- **Verbose**: This term means using or containing too many words; wordy. Someone who is verbose tends to elaborate excessively, which is contrary to the brief nature of **Laconic** communication.
- **Chatty**: Similar to talkative, this describes someone who engages in a lot of informal conversation. It implies speaking readily and often, making it an antonym for **Laconic**.

Identifying the Best Synonym for Laconic

Comparing the definitions, we can see which option best expresses the meaning of **Laconic**:

- **Laconic** means brief and using few words.
- **Concise** also means brief and using few words effectively.
- **Talkative**, **Verbose**, and **Chatty** all describe using many words, which is the opposite of **Laconic**.

Therefore, the word that best expresses the meaning of **Laconic** is **Concise**.

22. Answer: c

Explanation:

Intrepid means fearless, bold, and undaunted by danger. Its antonym must convey timidity or lack of courage.

Meek — quiet, submissive, easily intimidated — is the direct opposite. "Greed" denotes desire, "kind" denotes generosity, and "sigh" is an exhalation; none contrast with bravery. Hence the answer is **Meek**.

23. Answer: a

Explanation:

Identifying the Antonym for the Word *Mull*

This question requires us to identify the word that has the opposite meaning to the given word, **Mull**. We need to understand the core meaning of **Mull** and then compare it with the meanings of the provided options to find the best antonym.

Understanding the Meaning of 'Mull'

The word **Mull** essentially means to think about something carefully and for a prolonged period. It involves deep consideration, pondering, or contemplation, often

before making a decision or forming an opinion. Key aspects include focus and thoughtfulness.

Analyzing the Provided Options

Let's examine the meanings of each option given:

- **Ignore:** This means to refuse to take notice of or acknowledge something; to disregard it.
- **Consider:** This means to think carefully about something, often before making a decision. This is very close in meaning to **Mull**.
- **Delay:** This means to make something happen later than originally planned or expected. It relates to timing rather than the process of thinking.
- **Deliberate:** This means to think about something carefully and in detail. This is also a synonym for **Mull**.

Finding the Opposite Word

We are looking for the word that represents the opposite action to carefully thinking about or pondering something (**Mull**).

- Both **Consider** and **Deliberate** are synonyms of **Mull**, as they both involve careful thought.
- **Delay** is related to time and is not directly related to the process of thinking, so it's not the opposite of **Mull**.
- **Ignore** means to pay no attention or disregard something. This is the direct opposite of giving something careful thought and consideration, which is what **Mull** implies.

Therefore, the word that is opposite in meaning to **Mull** is **Ignore**.

24. Answer: a

Explanation:

Idiom Meaning: Exploring 'At One's Beck and Call'

This question asks for the meaning of the specific English idiom, "At one's beck and call". Understanding idioms is crucial for grasping the nuances of the English language.

Understanding the Idiom 'At One's Beck and Call'

The phrase "At one's beck and call" describes a situation where a person is completely under someone else's control and is always ready and available to obey their commands instantly. It signifies a high degree of subservience or readiness to serve.

Let's break down the meaning:

- **Beck:** Refers to a nod or a gesture.
- **Call:** Refers to a verbal command or summons.
- **At one's beck and call:** Means being ready to respond immediately to any sign (beck) or command (call) from a particular person.

Analysis of Options

We need to find the option that best matches this meaning:

- **Option 1: ready to obey someone**
This option directly aligns with the meaning of being readily available to follow someone's orders or commands immediately.
- **Option 2: A good thing that initially seemed bad**
This describes a different concept, often represented by the idiom "a blessing in disguise". It does not relate to being obedient.
- **Option 3: To make a bad situation even worse**
This describes idioms like "adding insult to injury" or "making matters worse". It is unrelated to the meaning of "at one's beck and call".
- **Option 4: Doing nothing at a moment's notice**
The idiom implies prompt action and obedience, not inaction. "At a moment's notice" means quickly, but the core idea of the idiom is about responding to commands, not about doing nothing.

Conclusion

Based on the analysis, the phrase "At one's beck and call" means being completely ready and willing to obey someone instantly. Therefore, the option that best expresses this meaning is the one describing readiness to obey.

The best expression for the idiom "At one's beck and call" is **ready to obey someone**.

25. Answer: a

Explanation:

Draw a Bead On: Idiom Meaning

Idioms are phrases where the collective meaning differs from the individual words. Understanding idioms like "To draw a bead on" is key for mastering English vocabulary and nuances. This explanation breaks down the idiom's meaning and analyzes the given options.

Understanding the Idiom's Core Concept

The phrase "To draw a bead on" originates from the practice of aiming firearms. The "bead" refers to the small metal sight at the front end of a gun's barrel. To "draw a bead" means to align this front sight bead with the rear sight and the target, indicating a precise aim. Figuratively, it means to **aim** carefully and deliberately at a specific target, person, or goal, often with a sense of focused intent or anticipation of action.

Detailed Analysis of Options

Here's a breakdown of why each option is correct or incorrect:

- Option 1: To aim at someone

This option accurately captures the essence of the idiom. "Drawing a bead on" someone implies targeting or focusing intently on them, much like aiming a weapon.

- **Option 2: Taking risky shortcuts to save time and/or money**

This describes the idiom "cut corners." It is unrelated to the meaning of aiming or focused intention inherent in "to draw a bead on."

- **Option 3: To be exactly right**

This meaning relates to accuracy or precision, but it describes the *result* of an action rather than the action itself. The idiom "to draw a bead on" specifically refers to the act of aiming, not necessarily achieving perfect accuracy.

- **Option 4: Not holding someone responsible for something**

This relates to concepts like forgiveness or absolution. It does not align with the focused, intentional meaning of aiming associated with the idiom "to draw a bead on."

Final Selection for the Idiom

Therefore, the alternative that best expresses the meaning of the idiom "To draw a bead on" is **To aim at someone**.

26. Answer: d

Explanation:

Filling the Blank: Identifying Resilient Sectors in Difficult Times

The question asks us to choose the most appropriate word to complete the sentence:

"According to experts, some sectors remain _____ during these difficult times, including banking and financial services, FMCG, food, and technology."

The sentence describes sectors that are doing well or holding up during challenging economic conditions. Let's look at the meaning of each option provided:

- **Repentant:** Feeling or showing regret for something done. This relates to feelings or actions, not the performance of business sectors.
- **Redundant:** Not or no longer needed or useful; superfluous. In the context of business, it can also mean being laid off from a job. This doesn't fit the idea of sectors performing well.
- **Repugnant:** Extremely distasteful; unacceptable. This describes something offensive or disagreeable, not how a business sector performs.
- **Resilient:** Able to recoil or spring back into shape after bending, stretching, or being compressed. In the context of business or economics, it means able to withstand or recover quickly from difficult conditions.

Considering the phrase "during these difficult times," the word needed should describe sectors that can withstand or recover from economic challenges. The sectors listed (banking and financial services, FMCG – Fast-Moving Consumer Goods, food, and technology) are often considered essential or adaptable, allowing them to perform relatively well even when the overall economy is struggling.

Let's analyze why 'resilient' is the best fit:

- A **resilient** sector is one that can absorb shocks and continue to function effectively.
- Banking and financial services, while sometimes facing risks, are fundamental to the economy's structure.
- FMCG and food sectors deal with essential consumer needs, making demand relatively stable even in difficult times.
- The technology sector often finds new opportunities or provides solutions that increase efficiency, which can be valuable during downturns.

These characteristics align perfectly with the definition of being **resilient**. The other options do not describe the ability of a sector to endure or recover from economic difficulties.

Therefore, the word that best fits the blank is **resilient**.

Understanding Resilient Sectors

Certain sectors are often described as **resilient** because they tend to be less affected by economic downturns compared to others. Key characteristics often include:

- Providing essential goods or services (like food, basic healthcare, utilities).
- Having stable demand regardless of economic cycles.
- Benefiting from long-term trends (like technological advancement).
- Being able to adapt quickly to changing conditions.

The sentence correctly identifies banking/financial services, FMCG, food, and technology as examples of potentially **resilient** sectors, though the degree of **resilience** can vary depending on specific conditions and companies within the sector.

Revision Table: Key Vocabulary

Word	Meaning	Relevance to Sentence Context
Repentant	Feeling regret	Not related to sector performance
Redundant	Unnecessary; laid off	Does not describe a sector doing well
Repugnant	Distasteful; unacceptable	Not related to sector performance
Resilient	Able to recover quickly from difficult conditions	Fits the description of sectors performing well during difficult times

Additional Information: Economic Resilience

Economic **resilience** is a concept that applies not only to individual sectors but also to entire economies. It refers to the capacity of an economy to prepare for, withstand, and recover from shocks, such as financial crises, natural disasters, or pandemics. Building **resilience** often involves diversifying the economy, maintaining strong institutions, fostering innovation, and ensuring social safety nets are in place. Understanding which sectors are naturally more **resilient** helps economists and policymakers assess the overall health and stability of an economy, especially during challenging periods.

27. Answer: a

Explanation:

Understanding the Idiom for Lawyers' Skills

This question asks us to identify the most suitable idiom to complete the sentence: "Lawyers are often born with the _____. The sentence suggests an innate talent or characteristic commonly associated with lawyers, specifically related to their profession.

Analyzing the Idiom 'Gift of the Gab'

The phrase 'gift of the gab' refers to the natural ability to speak easily, fluently, and persuasively. People with a 'gift of the gab' are often charming and convincing in their speech.

Considering the profession of a lawyer, effective communication, persuasion, and the ability to articulate arguments clearly are crucial skills. These skills are often essential in presenting cases, debating points, and influencing judges or juries. Therefore, possessing a natural talent for speaking well ('gift of the gab') aligns perfectly with the requirements and common perceptions of the legal profession.

Evaluating Other Idiomatic Expressions

Let's examine why the other options are less suitable for this sentence:

- **'Hitting the nail on the head':** This idiom means to describe exactly what is causing a situation or problem, or to say or do something exactly right. While accuracy is important for lawyers, this idiom doesn't describe a general speaking ability.
- **'On the ball':** This idiom means to be alert, competent, and quick to understand or react to things. While lawyers need to be competent, this idiom focuses on awareness and efficiency, not primarily on speaking ability.
- **'Cutting corners':** This idiom means doing something in the easiest, cheapest, or fastest way, often by omitting something important or ignoring rules. This is generally seen as a negative trait and is unrelated to a lawyer's essential speaking skills.

Conclusion on Lawyer's Innate Ability

Based on the meaning of the idioms, the ability to speak persuasively and fluently is a key characteristic often attributed to successful lawyers. The idiom **'gift of the gab'** best captures this specific skill, suggesting it's a natural talent lawyers might possess.

28. Answer: a

Explanation:

Choosing the Correct Preposition for 'Afraid'

The question asks to complete the sentence "He is afraid _____ the dog" by selecting the most appropriate preposition. This involves understanding common English collocations, specifically the preposition that typically follows the adjective 'afraid'.

Understanding the Idiom 'Afraid Of'

In English grammar, the adjective 'afraid' is almost always followed by the preposition 'of' when indicating the object or cause of the fear. This forms a standard idiomatic expression.

- The structure is: *Subject + verb 'to be' + afraid + preposition 'of' + noun/pronoun.*

This means the subject experiences fear concerning the object mentioned.

Evaluating the Options

Let's examine the given options to see which one fits the sentence correctly:

- **Option 1: of**
Using 'of' completes the sentence as "He is afraid **of** the dog." This aligns with the standard English idiom and correctly expresses that the dog causes him fear.
- **Option 2: to**
The preposition 'to' is used differently, often indicating direction or purpose, or following certain adjectives like 'happy' or 'pleased' before an infinitive verb (e.g., 'afraid to go'). It does not fit here to indicate the object of fear. "He is afraid to the dog" is grammatically incorrect in this context.
- **Option 3: for**
The preposition 'for' usually indicates purpose, duration, or benefit. It is not used with 'afraid' to denote the source of fear. "He is afraid for the dog" would imply he is scared **on behalf of** the dog, which is a different meaning and not the standard usage for expressing personal fear.
- **Option 4: None of these**
Since 'of' is the correct preposition, this option is incorrect.

Correct Usage Example

The sentence "He is afraid **of** the dog" is the grammatically correct way to state that the person feels fear when encountering or thinking about the dog.

Other examples include:

- She is afraid of heights.
- They are afraid of losing their jobs.

Therefore, the preposition 'of' is the most appropriate choice to complete the sentence.

29. Answer: b

Explanation:

The least possible Venn diagram that best represents the relationship among wood, woodblocks, woodcock is as follows:

- 1) **Woodblocks** are **blocks of wood** from which woodcut prints are made.
- 2) **Woodcock** is a **bird**.

Hence, the correct answer is "Option 2".

30. Answer: c

Explanation:

Unscrambling the Jumbled Letters

The first step is to rearrange the jumbled letters for each option into their natural sequence to form meaningful words.

- Option 1: **IKHUSO**
 - Letters: {H, I, K, O, S, U}
 - Rearranged Word: KUSHIO (This is recognized as a Japanese name).
- Option 2: **GEIRAM**
 - Letters: {A, E, G, I, M, R}
 - Rearranged Word: MARGIE (This is a common English name).

- Option 3: **OKIHNOC**
 - Letters: {C, H, I, K, N, O, O}
 - Rearranged Word: CHINOOK (This refers to a type of wind or a type of salmon).
- Option 4: **LEFARA**
 - Letters: {A, A, E, F, L, R}
 - Rearranged Word: ALFARA (This is recognized as a place name).

Categorizing the Unscrambled Words

After unscrambling, we analyze the nature of the words found:

- **KUSHIO** (from IKHUSO) is a Proper Noun, specifically a given name.
- **MARGIE** (from GEIRAM) is a Proper Noun, a commonly used given name.
- **ALFARA** (from LEFARA) is a Proper Noun, identified as a place name.
- **CHINOOK** (from OKIHNOC) is a Common Noun, referring to a type of wind or fish. While often capitalized when referring to the specific wind or people, its primary classification is a common noun describing a category.

Based on this, three of the unscrambled words (KUSHIO, MARGIE, ALFARA) fall into the category of Proper Nouns (names or places). The word CHINOOK falls into the category of Common Nouns.

Finding the Odd One Out

The question asks to find the odd one out after rearranging the letters. Comparing the categories identified:

- Options 1, 2, and 4 unscramble to KUSHIO, MARGIE, and ALFARA, respectively. These are all Proper Nouns.
- Option 3 unscrambles to CHINOOK, which is a Common Noun.

Therefore, the word derived from the letters of OKIHNOC is the odd one out because it does not share the common characteristic (being a Proper Noun) of the words derived from the other options.

31. Answer: a

Explanation:

Understanding the Analogy: Cow and Herd Relationship

This question asks us to find a word that relates to **Dolphin** in the same way that **herd** relates to **Cow**. This is a classic analogy problem testing knowledge of collective nouns.

Identifying the Cow-Herd Relationship

The word **herd** is the specific term used to describe a group of **Cows**. It functions as a collective noun, grouping multiple individuals of the same species.

Finding the Dolphin Collective Noun

To solve the analogy, we must identify the correct collective noun for a group of **Dolphins**. Let's analyze the provided options:

- **Pods:** A group of dolphins is commonly referred to as a 'pod'.
- **Dole:** This term refers to a group of pigeons.
- **Brace:** This term is used for a pair or group of ducks or pheasants.
- **Bed:** This term describes a group of oysters.

Determining the Correct Match for Dolphins

Based on the standard English collective nouns for animals:

- Cow : **herd**
- Dolphin : **pod**

Comparing this to the options, 'Pods' is the correct collective noun for dolphins.

Final Answer Derivation

The relationship between Cow and herd is that 'herd' is the collective noun for cows. Similarly, the correct collective noun for dolphins is 'pod'. Therefore, the word that completes the analogy **Cow : herd :: Dolphin : ?** is **Pods**.

32. Answer: b

Explanation:

Analogy Breakdown: Connecting Poem Types

This question asks us to identify a word that relates to 'Poem' in the same way that 'Fable' relates to 'Story'. This is a classic example of an analogy question, specifically focusing on the relationship where one term is a specific type or example of the other.

Analyzing the Fable : Story Relationship

Let's first examine the given pair: **Fable : Story**.

- A **Fable** is a specific kind of **Story**. Fables are typically short, fictional tales, often featuring animals, that convey a moral lesson.
- Therefore, the relationship is: "A is a type of B".

Identifying the Correct Poem Type

Now, we need to apply this same relationship ("A is a type of B") to the second pair: _____ : **Poem**.

We are looking for a word that represents a specific type or form of a **Poem**.

Evaluating the Options for Poem Type

Let's look at each option provided:

- **Option 1: Syllables** – Syllables are units of sound within words, crucial for rhythm and meter in poetry, but they are not a **type** of poem itself. A poem is made up of words, and words are made up of syllables, but syllables don't define a genre or form of poetry.
- **Option 2: Haiku** – A **Haiku** is a traditional Japanese poetic form consisting of three phrases composed of 17 phonemes (or **morae**) in a 5, 7, 5 pattern. This clearly fits the relationship, as a **Haiku** is a specific **type** of **Poem**.
- **Option 3: Mythos** – **Mythos** refers to the underlying or aggregate myth or body of myths of a particular person, place, or group. It relates to mythology, not directly to a form or type of poem.
- **Option 4: Allegory** – An **Allegory** is a narrative (like a story or poem) where characters, events, or settings represent abstract ideas or principles. While a poem **can be** an allegory, 'allegory' describes a characteristic or a way of interpreting the poem, not a specific **form** or **type** of poem in the same way 'Fable' is a type of 'Story'.

Conclusion on Analogy

Comparing the options, only 'Haiku' represents a specific type of poem, mirroring the relationship between 'Fable' and 'Story'. Therefore, 'Haiku' is the correct word to complete the analogy.

The completed analogy is: **Haiku : Poem :: Fable : Story**.

33. Answer: d

Explanation:

This question asks us to identify a logical relationship between the first pair of words, **GOVERNMENT** and **OGVENRMETN**, and then apply that same relationship to the word **CONTINUOUS** to find the missing word.

Understanding the Letter Rearrangement Pattern

First, let's figure out the pattern used to transform **GOVERNMENT** into **OGVENRMETN**. We need to see how the letters are rearranged.

Let's number the letters of **GOVERNMENT**:

G O V E R N M E N T
1 2 3 4 5 6 7 8 9 10

Now let's look at the second word, **OGVENRMETN**, and see where the letters from the original word ended up:

O G V E N R M E T N

- The 1st letter (G) moves to the 2nd position.
- The 2nd letter (O) moves to the 1st position.
- The 3rd letter (V) stays in the 3rd position.
- The 4th letter (E) stays in the 4th position.
- The 5th letter (R) moves to the 6th position.
- The 6th letter (N) moves to the 5th position.
- The 7th letter (M) stays in the 7th position.
- The 8th letter (E) stays in the 8th position.
- The 9th letter (N) moves to the 10th position.
- The 10th letter (T) moves to the 9th position.

We can describe this transformation based on the original positions:

The sequence of original positions forming the new word is: 2, 1, 3, 4, 6, 5, 7, 8, 10, 9.

In simpler terms, the pattern involves swapping letters in pairs:

- Swap the 1st and 2nd letters (GO → OG).
- Keep the 3rd and 4th letters (VE → VE).
- Swap the 5th and 6th letters (RN → NR).
- Keep the 7th and 8th letters (ME → ME).
- Swap the 9th and 10th letters (NT → TN).

Applying this pattern: GOVERNMENT → OGVENRTN. Let me recheck the target word and derived positions.

Rethinking based on the mapping 2, 1, 3, 4, 6, 5, 7, 8, 10, 9:

GOVERNMENT $\rightarrow$ O(2) G(1) V(3) E(4) N(6) R(5) M(7) E(8) T(10) N(9) $\rightarrow$ OGVENRMETN.

This confirms the positional mapping.

Applying the Pattern to CONTINUOUS

Now, we apply the same positional rearrangement rule (2, 1, 3, 4, 6, 5, 7, 8, 10, 9) to the word **CONTINUOUS**.

First, let's number the letters of **CONTINUOUS**:

C O N T I N U O U S
1 2 3 4 5 6 7 8 9 10

Using the positional rule (take the letter from position 2, then 1, then 3, etc.):

- New 1st letter is the old 2nd letter: O
- New 2nd letter is the old 1st letter: C
- New 3rd letter is the old 3rd letter: N
- New 4th letter is the old 4th letter: T
- New 5th letter is the old 6th letter: N
- New 6th letter is the old 5th letter: I
- New 7th letter is the old 7th letter: U
- New 8th letter is the old 8th letter: O
- New 9th letter is the old 10th letter: S
- New 10th letter is the old 9th letter: U

Identifying the Correct Option

Combining these letters in the new order, we get: **OCNTNIUOSU**.

Now, let's compare this result with the given options:

1. ONTICUOSUN
2. OCNTNUIOSU
3. OTINCUSUN
4. OCNTNIUOSU

5. (No text provided for option 5)

Our result, OCNTNIUOSU, exactly matches option 4.

34. Answer: b

Explanation:

The figure which will complete the pattern of question figure is shown below:



Hence, the correct answer is "option (2)".

35. Answer: c

Explanation:

The least possible Venn diagram that best represents the relationship among boys, engineer, employee is as follows:

1. Some boys are engineers.
2. Some boys are employees.
3. Some engineers are employees. There are some engineers who might be unemployed or self-employed.

★ Additional Information

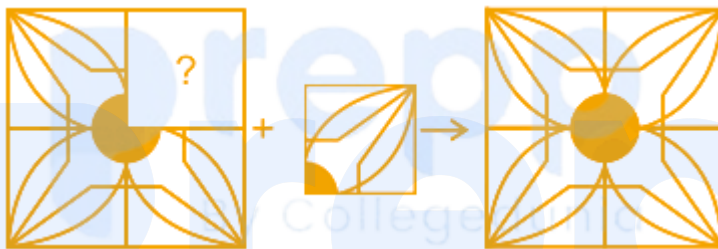
- An employee is a person who is paid to work for an organization or for another person.

Hence, the correct answer is "Option 3".

36. Answer: a

Explanation:

The figure which will complete the pattern of question figure:



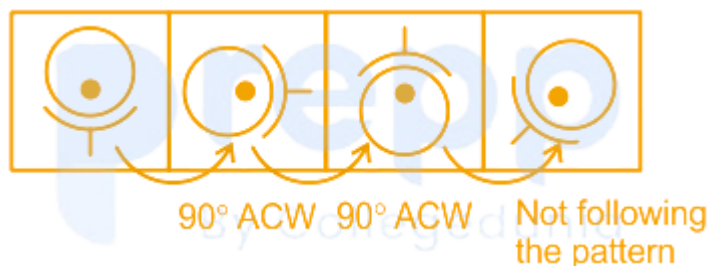
Hence, the correct answer is "option (1)".

37. Answer: c

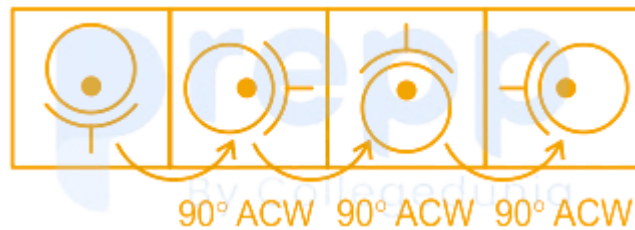
Explanation:

The logic followed is:

The given shape is rotating by $+90^\circ$ Anticlockwise except for figure D which is not following the pattern.



The correct pattern is:



Thus the Option D is odd from the rest of the image.

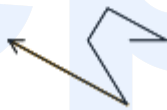
Hence, the correct answer is "Option D".

38. Answer: a

Explanation:

The option in which the given figure is embedded when rotation is NOT allowed is shown below:



No.	Option	Question	Answer
1.			Embedded
2.			Not Embedded
3.			Not Embedded
4.			Not Embedded

Hence, the correct answer is "option (1)".

39. Answer: c

Explanation:

On observing the given figure carefully, we get:

In the question figure,

- 1) One of the dots lies in the region common to the circle and triangle,
- 2) Second dot lies in the region common to circle and quadrilateral and

3) The other dot lies in the region common to semi – circle and triangle.

Figure a: All the required conditions are fulfilled.

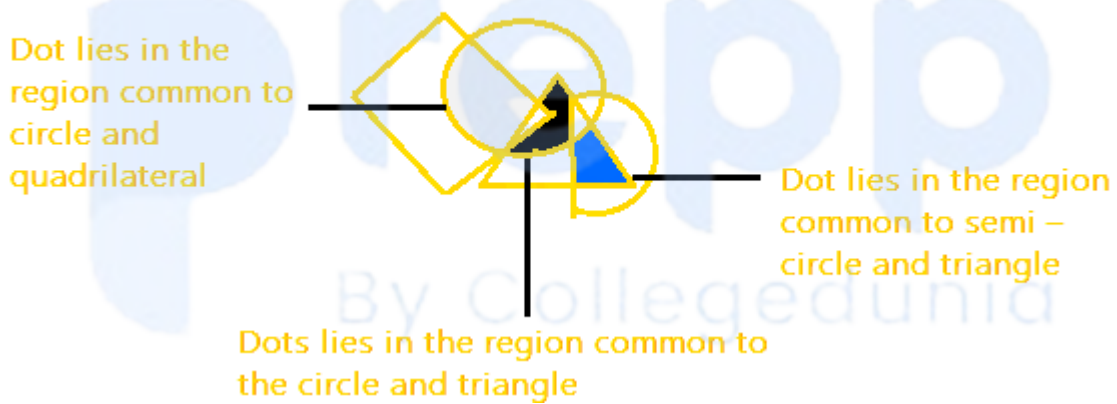


Figure b:



Here, One of the dots doesn't lies in the region common to the circle and triangle, Second dot doesn't lies in the region common to circle and quadrilateral and the other dot doesn't lies in the region common to semi – circle and triangle.

Figure c: All the required conditions are fulfilled.

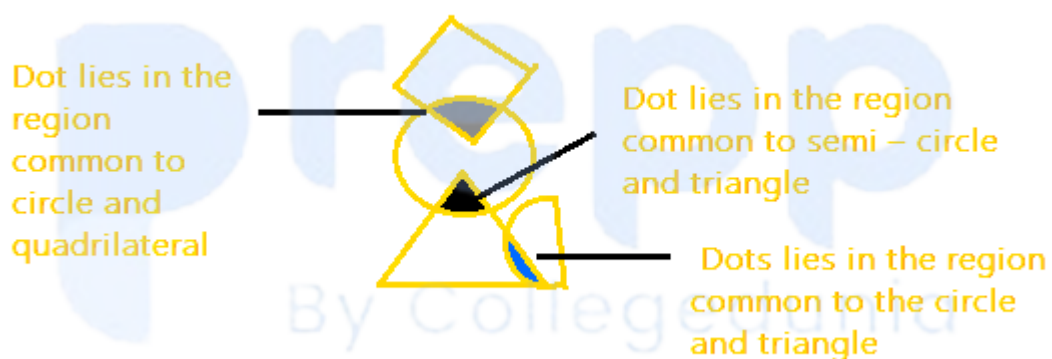


Figure d:



Here, one of the dots doesn't lie in the region common to the circle and triangle, second dot lies in the region common to circle and quadrilateral and the other dot doesn't lie in the region common to semi-circle and triangle.

Figure (a) and (c) consists of same type of region.

Hence, the correct answer is "figure (a) and (c)".

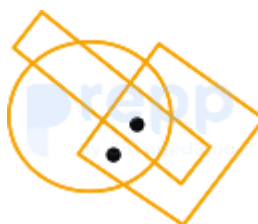
40. Answer: c

Explanation:

In figure (X), one of the dots lies in the region which is common to all the three figures.



one dot lies in the region common to the circle and square only



And the other dot lies in the rectangle only.



Only figure (D) consists of these types of regions.

Hence, 'figure (D)' is the correct answer.

41. Answer: b

Explanation:

In the question figure, one dots lies in the common region of Square, Triangle and Circle.



The second dot lie in the common region of Circle and Triangle.



The third dot lie in the common region of Triangle and Square.



Only figure (A) consists of these types of regions.



Hence, the correct answer is "Option 2".

42. Answer: c

Explanation:

On observing the figures carefully, we get:

In figure (X),

- 1) The dot lies in the region which is common to all the three figures.



Figure A:



Here, dot doesn't lie in the region which is common to all the three figures.

Figure B: All the conditions are fulfilled in this figure.

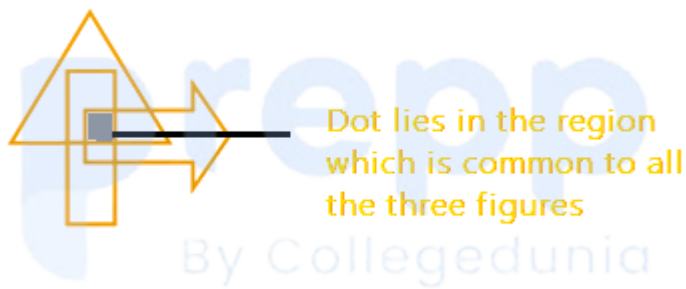


Figure C:



Here, dot doesn't lies in the region which is common to all the three figures.

Figure D:



Here, dot doesn't lies in the region which is common to all the three figures.

Only **figure (B)** consists of this type of region.

Hence, the correct answer is "**Figure (B)**".

43. Answer: d

Explanation:

In the question figure, one of the dot lies in the region which is common to all four figures.



The second dot lies in the region common to the circle, triangle and rectangle only.



The third dot lies in the region common to triangle and circle only.



Only Figure (C) consists of these types of regions.

In Figure (A) & (D) the region of common figure four figures is not available.

In Figure (C) the region of common to triangle and circle only is not available.

Hence, the correct answer is "Option 4".

44. Answer: d

Explanation:

★ Hint

If the exact figure is not shown in options, mark the most appropriate option present.

In figure (X),

1. One of the dots lies in the region common to the circle and the pentagon only.
2. The other dot lies in the region common to all the shapes.

Only figure (A) consists of both types of regions.



Hence, **figure (A)** is the correct one.

★ Important Points

We should not think of the exact shape and size of the figures in these questions.

Just resemblance will work like if an Equilateral triangle is given in the question figure, any shape of a triangle in the answer figure will work, be it right triangle or scalene triangle.

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45. Answer: a

Explanation:

The correct Venn diagram representation is:



Both Train and Aeroplane are traveling vehicles.

Hence, the correct answer is " option (1)".

46. Answer: c

Explanation:

Analyzing the Argentina : Brazil :: Iran : ? Analogy

This question asks us to identify a word that has the same relationship to **Iran** as **Brazil** has to **Argentina**. This type of question tests our understanding of relationships, often based on geography, characteristics, or function.

Understanding the Core Relationship

First, let's examine the relationship between the first pair: **Argentina** and **Brazil**.

- **Argentina** and **Brazil** are both major countries located in **South America**.
- They are **neighboring countries**, sharing a significant border.
- They have substantial economic, political, and cultural interactions.

The primary relationship here is that of two significant, **neighboring countries** within the same continent (**South America**).

Applying the Relationship to Iran

Now, we need to find a word from the options that relates to **Iran** in a similar way. **Iran** is a country located in **Western Asia** (also known as the Middle East).

We are looking for another country in **Western Asia** that is a significant neighbor to **Iran**, similar to how **Brazil** is a neighbor to **Argentina**.

Evaluating the Options

Let's analyze each option:

- **Option 1: Dubai** – Dubai is a major city and emirate within the United Arab Emirates (UAE). It is not a country itself, and while located in the Middle East, it is not a direct neighboring country to Iran in the same sense as Brazil is to Argentina.
- **Option 2: Jordan** – Jordan is a country in the Middle East. However, it does not share a border with Iran. Its neighbors include Syria, Iraq, Saudi Arabia, Israel, and Palestine.
- **Option 3: Iraq** – Iraq is a country in Western Asia. Crucially, **Iraq shares a long border with Iran**. Both countries are significant players in the Middle East region and have a long history of interaction. This fits the established relationship of neighboring countries within the same geographical area.
- **Option 4: Syria** – Syria is a country in the Middle East. It borders countries like Iraq, Jordan, Lebanon, Turkey, and Israel, but it does not share a border with Iran.

Conclusion

Based on the geographical relationship between Argentina and Brazil (major neighboring countries in South America), the country that best fits the analogous relationship with Iran is **Iraq**, as they are major neighboring countries in Western Asia.

Your Personal Exams Guide

47. Answer: d

Explanation:

The logic follows is:

Number of arrows in each figure is 5 except in option (4).



So, the option (4) is the odd one out.

Hence, the correct answer is "option (4)".

48. Answer: c

Explanation:

The figure which will complete the pattern of the question figure is given below:



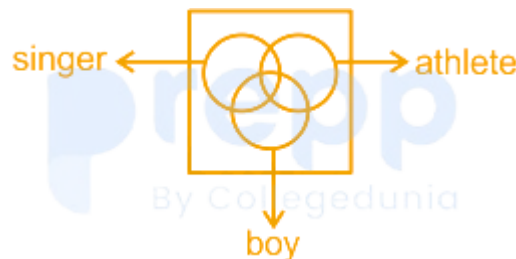
Hence, the correct answer is "Option (3)".

49. Answer: a

Explanation:

1. Some boys are singers.
2. Some boys are athletes.
3. Some athletes are singers.

Thus, the Venn diagram that best represents the relationship among singer, boy, athlete is as follows:



Hence, " option 1 " is the correct answer.

50. Answer: b

Explanation:

Identifying the Different Response Among Energy, Erg, Power, and Pressure

This question asks us to identify which term among the given options is different from the others. We need to understand the meaning and context of each term: Energy, Erg, Power, and Pressure.

Understanding the Physical Quantities and Units

Let's define each term to understand their relationships:

- **Energy:** Energy is a fundamental concept in physics, representing the capacity to do work. It exists in various forms, such as kinetic energy, potential energy, thermal energy, etc. The standard SI unit for energy is the Joule (J). However, other units exist, including the erg.
- **Erg:** The erg is a unit of energy defined in the centimeter-gram-second (CGS) system of units. Specifically, 1 erg is the energy transferred or work done when a force of one dyne acts upon an object over a distance of one centimeter. Mathematically, $1 \text{ erg} = 1 \text{ dyne} \cdot \text{cm} = 10^{-7} \text{ Joules}$. Therefore, the erg is a specific *unit* used to measure energy.
- **Power:** Power is defined as the rate at which energy is transferred, used, or converted, or the rate at which work is done. The SI unit for power is the Watt (W), where 1 Watt equals 1 Joule per second ($1 \text{ W} = 1 \text{ J/s}$). In the CGS system, power is measured in ergs per second (erg/s). Power is a distinct physical quantity from energy.

- **Pressure:** Pressure is a measure of force applied perpendicular to the surface of an object per unit area. The SI unit for pressure is the Pascal (Pa), which is equivalent to one Newton per square meter ($1 \text{ Pa} = 1 \text{ N/m}^2$). In the CGS system, pressure is measured in dynes per square centimeter (dyne/cm^2). Pressure is another distinct physical quantity.

Comparing the Concepts

Now, let's compare the options to find the one that stands out:

- Energy is a physical **quantity** or concept.
- Erg is a specific **unit** used to measure energy, particularly in the CGS system.
- Power is a physical **quantity** representing the rate of energy transfer or work done.
- Pressure is a physical **quantity** representing force per unit area.

From this comparison, we can see that Energy, Power, and Pressure are all names of fundamental physical quantities or concepts. In contrast, Erg is specifically a unit of measurement for energy. This makes 'Erg' different from the other three options because it represents a unit, not the physical quantity itself.

Conclusion

The term that is different from the others is 'Erg'. While Energy, Power, and Pressure are physical quantities, 'Erg' is a unit of measurement for Energy within the CGS system.

51. Answer: a

Explanation:

Odd Pair Identification

The task is to identify the **odd pair of words** from the given options. This requires analyzing the connection between the words in each pair and finding the one pair whose relationship differs from the pattern established by the other pairs.

Analyzing the Word Pairs

Let's examine the relationship presented in each option:

- **Patient – hospital:** A patient is an individual receiving medical care. A hospital is the facility where such care is provided. This represents a relationship between a person and their place of treatment or care.
- **Victim – court:** A victim is a person who has suffered harm or injury. A court is a formal institution where legal matters, potentially involving the victim's experience, are adjudicated. This links a person affected by an event to the venue for legal proceedings related to it.
- **Criminal – prison:** A criminal is a person convicted of a crime. A prison is an establishment where convicted individuals are incarcerated. This represents a relationship between an offender and their place of punishment or confinement.
- **Principal – school:** A principal is the senior leader or administrator responsible for managing a school. A school is the educational institution where the principal works and exercises authority.

Identifying the Dissimilar Relationship

We observe a pattern in three of the pairs:

- The **hospital** is the place where the **patient** receives service.
- The **court** is the place where the legal process concerning the **victim** occurs.
- The **prison** is the place where the **criminal** serves their sentence.

In these examples (Patient-hospital, Victim-court, Criminal-prison), the first word denotes a person in a specific condition or role (patient, victim, criminal), and the second word denotes the place intrinsically associated with that condition or role, where the person is often a recipient, a participant in a process, or subject to confinement.

The pair **Principal – school** represents a different kind of relationship. While the school is the principal's place of work, the principal's role is one of leadership, management, and authority *over* the school. This contrasts with the roles of the patient, victim, and criminal, who typically hold positions of less authority or are passive subjects within their respective associated places.

Therefore, the **odd pair** is **Principal – school** because the relationship is characterized by management and authority, unlike the other pairs which depict a relationship where the individual is primarily a recipient or subject within the associated location.

52. Answer: c

Explanation:

The pattern followed here is:

1)



– The arrow and the circle are **towards the same side**.

2)



– The arrow and the circle are **towards the same side**.

3)



- The arrow and circle are on the opposite sides.
- 4)



- The arrow and the circle are towards the same side.

In each figure, the arrow and the circle are towards the same side but in figure (3) the arrow and circle are on the opposite sides.

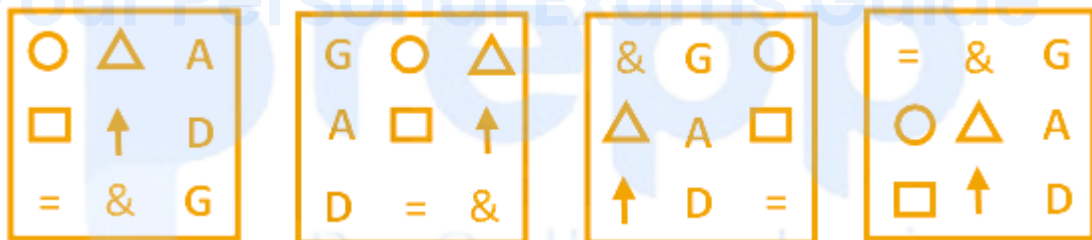
Hence, option (3) is the correct answer.

53. Answer: d

Explanation:

The pattern followed here is :

All the elements are moving continuously from left to right in the row then shift to the next row and again start from left to right and goes on.



Hence, figure 4 of the given options will replace the question mark.

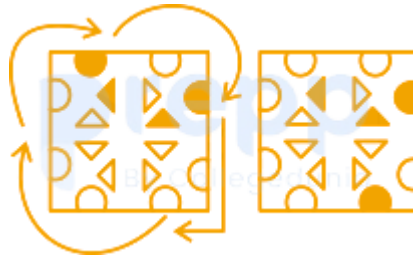
54. Answer: a

Explanation:

The pattern followed here is:

Starting from the top left corner,

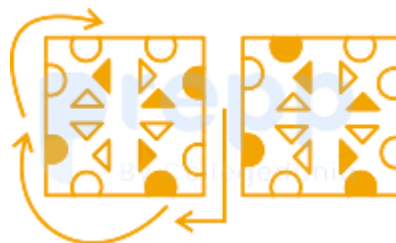
1. In the first figure, two alternate semicircles and two alternate triangles are shaded.
2. In the second figure, all the semicircles rotate clockwise by replacing the position of the next semicircle (alternately) while all the triangles remain at their position.



3. In the third figure, all the semicircles and all the triangles remain at their position and a new alternate semicircle and alternate triangle are shaded from clockwise direction.



4. In the fourth figure, again all the semicircles rotate clockwise by replacing the position of the next semicircle (clockwise) while all the triangles remain at their position.



5. Thus, in the fifth figure, a new alternate semicircle and triangle will be shaded whereas there will be no change in the position of any semicircle and triangle.



Hence, the correct answer is "Option 1".

55. Answer: b

Explanation:

The pattern followed here is:

1. The figure with the least number of sides from the outer four figures shifts to the centre and the earlier central figure vanishes.
2. The vacant position of the figure which moves to the centre is occupied by its diagonally opposite figure.
3. Remaining two diagonal elements or figures also interchange their positions.
4. And the vacant position thus created is occupied by a new figure whose number of sides is one more than the previously highest-sided figure.



Hence, figure in **option 2** will come next in the series.

56. Answer: b

Explanation:

The pattern followed is,

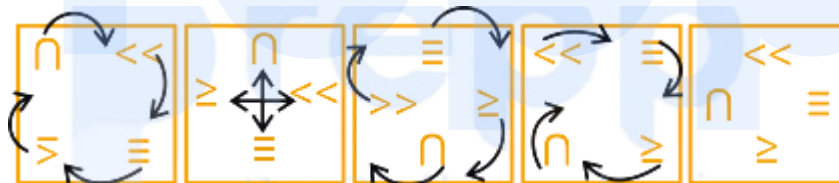
Step 1 : From figure 1 to figure 2, each symbol moves in a clockwise direction.



Step 2: From figure 2 to figure 3, if symbols are at the middle of the side, then they get swapped vertically and horizontally.



These two steps are repeated one after the other throughout the series.



The figure which will come next is,



Hence, **option 2** is the correct answer.

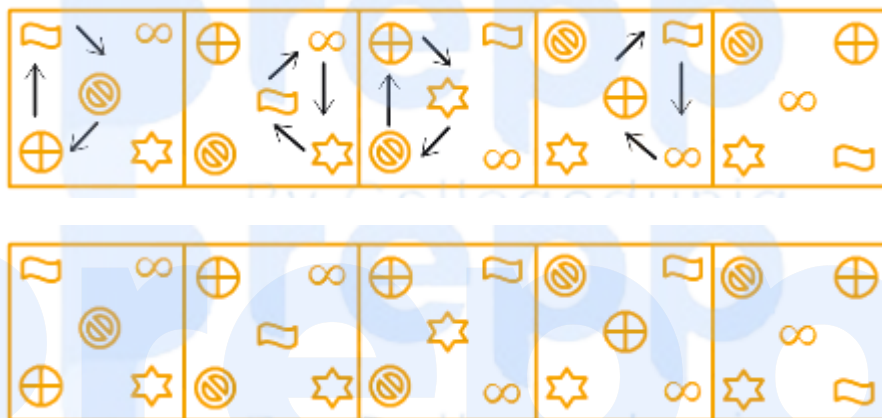
57. Answer: b

Explanation:

The pattern followed is,

- 1) Starting from the first figure, in alternate steps, symbols on the left side along with the middle symbol move in a clockwise direction.
- 2) Starting from the second figure, in alternate steps, symbols on the right side along with the middle symbol move in a clockwise direction.

The figure which will come next is,



Hence, **option 2** is the correct answer.

58. Answer: d

Explanation:

The logic followed here is:

The least possible Venn diagram that best represents the relationship among "employed, graduate, computer-skilled" is as follows:

1. Some graduates are employed.
2. Some graduates are computer-skilled.
3. There are also some graduates who both are employed and computer-skilled.

Hence, the correct answer is " **Option 4**".

59. Answer: b

Explanation:

Identifying the Odd Word Out

The task is to identify which word among the given options is different from the others. This means we need to find a common characteristic shared by three of the words and then select the word that does not fit this characteristic.

Analyzing the Provided Words

Let's look at each word and its typical function:

- **Mouse:** A mouse is a common input device used with computers to control the cursor and interact with the graphical interface. It is directly associated with computer systems.
- **Grinder:** A grinder is an appliance, often found in a kitchen, used for grinding items like coffee beans, spices, or herbs. It is primarily a kitchen tool.
- **Keyboard:** A keyboard is another essential input device for computers, used for typing text and commands. Like the mouse, it's integral to computer operation.
- **Charger:** A charger is a device used to supply power to recharge batteries in electronic devices such as mobile phones, laptops, and other gadgets. It is an accessory for electronic items.

Comparison of Word Categories

We can categorize these items based on their primary function and association:

Word	Primary Function	Associated Category
Mouse	Computer Input Device	Computer Hardware / Electronic Device
Keyboard	Computer Input Device	Computer Hardware / Electronic Device
Charger	Power Supply for Electronics	Electronic Accessory / Device
Grinder	Grinding Ingredients (Kitchen Use)	Kitchen Appliance

Finding the Different Word

From the analysis, the words 'Mouse', 'Keyboard', and 'Charger' are all related to the world of electronics and computing. The mouse and keyboard are direct computer peripherals, while a charger is a common accessory for electronic devices, often including computers.

The word 'Grinder' stands apart because it belongs to a different category – kitchen appliances. Its primary use is in food preparation, unlike the others which are related to computers or general electronic devices.

Therefore, 'Grinder' is the odd word out in this list.

60. Answer: a

Explanation:

Identifying the Odd One Out: Metals vs. Alloys

This question asks us to identify the material that doesn't belong with the others in the list. We need to look for a property that distinguishes one option from the rest.

Materials Analysis

Let's examine each option provided:

- **Aluminium (*Al*)**: Aluminium is a chemical *element* found on the periodic table. It is a pure metal.
- **Copper (*Cu*)**: Copper is also a chemical *element*. It's a pure metal known for its conductivity.
- **Silver (*Ag*)**: Silver is another chemical *element*. It is a pure metal, often valued for its luster and conductivity.
- **Brass**: Brass is different from the others because it is not a pure chemical element. Brass is an *alloy*, which means it is a mixture of metals. Specifically, brass is typically an alloy of copper and zinc.

Conclusion: Why Brass is the Odd One Out

The key difference lies in the composition of the materials. Aluminium, Copper, and Silver are all *pure elements*. Brass, on the other hand, is an *alloy*, meaning it's a mixture created by combining different elements (primarily copper and zinc in this case). Therefore, Brass is the odd one out because it is a mixture, while the others are pure substances (elements).

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61. Answer: d

Explanation:

Choosing the Correct Preposition for 'Yielded'

The question asks us to select the most appropriate preposition to complete the sentence: "At last he yielded _____ the temptation." This involves understanding the correct usage of prepositions with the verb "yield", particularly in the context of facing temptation.

Understanding 'Yield' with Prepositions

The verb "**yield**" signifies giving way, submitting, or surrendering to something. The choice of preposition is important to convey what the subject is yielding *to*.

Evaluating Prepositional Options

Let's look at how each option fits with the verb "yield" and the noun "temptation":

- **About:** Using "yield about" is not a standard idiomatic construction in English for this meaning. It doesn't correctly link the action of yielding with the object of temptation.
- **On:** The preposition "on" is typically used with "yield" when discussing concessions or agreements, such as "yielding on a point of policy." It does not fit the context of succumbing to temptation.
- **For:** "Yield for" is grammatically incorrect in this context. The preposition "for" usually indicates purpose or a beneficiary, neither of which applies here.
- **To:** The preposition "**to**" is the standard choice when expressing the idea of giving in or succumbing to something like pressure, influence, or, as in this case, **temptation**. The phrase "**yield to**" correctly captures the meaning of succumbing.

The Correct Choice: 'To'

The idiomatic phrase is "**to yield to** something". This means to stop resisting and allow something to happen or someone to influence you. In the sentence, the temptation is what the subject eventually gives in to.

Therefore, the complete and grammatically correct sentence is: "At last he yielded **to** the temptation."

Illustrative Example

Consider this similar sentence structure: "The negotiator finally yielded **to** the demands of the opposition." Here, "to" correctly shows what the negotiator gave in to.

Summary of Preposition Usage

The correct preposition to use after "yield" when indicating submission to an external force or influence like **temptation** is "to".

62. Answer: b

Explanation:

Prepositional Phrase Selection for Wiping Lipstick

This explanation focuses on finding the correct prepositional phrase to complete the sentence: "She wiped her lipstick off _____. " The goal is to identify the phrase that accurately describes the tool used for wiping.

Preposition Usage: 'with', 'in', 'by'

Prepositions connect words in a sentence, often indicating relationships like the instrument used for an action, location, or manner. Understanding their specific function is key:

- **'With':** This preposition is commonly used to indicate the instrument or tool used to perform an action. For example, "He signed the letter *with* a pen."
- **'In':** This preposition typically denotes location or being inside something. For example, "The information is *in* the report."
- **'By':** This preposition can indicate proximity, a method, or the agent performing an action. For example, "She stood *by* the window."

Analysis of Options for Lipstick Wiping

Let's evaluate each provided option in the context of the sentence "She wiped her lipstick off _____":

- **Option 1: in a tissue**

Using the preposition 'in' suggests the lipstick was wiped **inside** the tissue. While the tissue might contain the removed lipstick, 'in' does not clearly express

that the tissue was the tool *used for* wiping. This phrasing is less common and sounds unnatural for this specific action.

- **Option 2:** with a tissue

This is the correct prepositional phrase. The preposition 'with' perfectly signifies the instrument used for the action. Wiping lipstick is an action performed *using* a tissue as the tool. The sentence "She wiped her lipstick off *with* a tissue" is both grammatically correct and idiomatic, clearly stating the means by which the action was done.

- **Option 3:** by the tissue

The preposition 'by' is not appropriate here for indicating the instrument. The phrase "wiped her lipstick off *by* the tissue" is grammatically awkward and does not convey the intended meaning of using the tissue as a tool for wiping.

- **Option 4:** with an tissue

This option uses 'with', which correctly indicates the instrument. However, it contains a grammatical error in the choice of the indefinite article. The word 'tissue' begins with a consonant sound (/t/), so the correct article should be 'a', not 'an'. The correct phrase is 'with a tissue', making this option incorrect due to the article usage.

Choosing 'with a tissue'

In summary, the preposition 'with' is the standard and correct choice to indicate the instrument used in the action of wiping. Option 2, "with a tissue", is grammatically sound and contextually appropriate for the sentence, making it the best fit.

63. Answer: c

Explanation:

Grammar Error Analysis in Sentence Parts

The task is to identify the grammatically incorrect part among the four given options (A, B, C, D) in the sentence provided.

The sentence is: "He has been spending (A)/ a lifetime (B)/ imbibing (C)/ his local club's history. (D)"

Analyzing the Sentence Components

Let's examine each part of the sentence to find the grammatical flaw:

- Part (A): He has been spending
- Part (B): a lifetime
- Part (C): imbibing
- Part (D): his local club's history

Detailed Examination of Each Part

We will scrutinize each segment for grammatical correctness, focusing on tense, verb forms, and idiomatic usage.

Part (A): Evaluating "He has been spending"

This segment uses the Present Perfect Continuous tense. This tense highlights an action that began in the past and continues up to the present moment, often emphasizing the duration or the ongoing nature of the activity.

The sentence employs the common idiom "spend a lifetime doing something". While the idiom itself is correct, the tense choice needs careful consideration. "A lifetime" typically signifies the entire duration of a person's life, which is usually considered a completed period or a whole span. In English grammar, when describing an action or experience over a completed time period, the Present Perfect tense (e.g., "has spent") is often preferred over the Present Perfect Continuous tense ("has been spending").

Consider these examples:

- *"She has been reading that book for hours."* (Correct: emphasizes the ongoing action of reading.)
- *"She has read that book."* (Correct: states the completion or fact of having read it.)

Applying this to our sentence, "spending a lifetime" refers to the whole period of his life. Using the Present Perfect Continuous ("has been spending") might suggest the process is still ongoing within that lifetime. However, if "a lifetime" is viewed as the total, completed span, the Present Perfect tense ("has spent") would be more conventional to express the cumulative experience or the fact of having dedicated his life to the activity.

Therefore, the use of "has been spending" in Part (A) is likely the grammatical error, as the Present Perfect tense ("has spent") might be more suitable for describing the totality of an action over a completed lifetime.

Part (B): Examining "a lifetime"

"A lifetime" functions as a noun phrase indicating the duration. It's used idiomatically here and is grammatically correct in this context.

Part (C): Assessing "imbibing"

"Imbibing" is the present participle of the verb "imbibe," meaning to absorb or take in. It correctly functions here as part of the idiomatic structure "spend [time] doing [activity]".

Part (D): Checking "his local club's history"

This is a standard possessive noun phrase ("club's history") acting as the object of the verb "imbibing". The possessive form is correctly used, making this part grammatically sound.

Identifying the Error

The analysis indicates that the most likely grammatical error resides in Part (A), specifically the tense choice. The Present Perfect Continuous tense ("has been

spending") may be inappropriate for the phrase "a lifetime" when the entire lifespan is considered as a completed period.

64. Answer: b

Explanation:

Identifying the Grammatical Error in Sentence Segment

This question requires us to find the part of the sentence that contains a grammatical mistake. The sentence is: "The news of his (A)/ accident was not (B)/ declared so far. (C)/ No error (D)". We need to choose the option corresponding to the incorrect segment.

Understanding Verb Tense Usage with 'so far'

The phrase "so far" is an important clue here. It means "up until the present moment". Actions or states described using "so far" usually require the **present perfect tense** (formed with "has" or "have" + past participle) to show that something started in the past and continues to the present, or has been true up until now.

In the given sentence, the structure "was not declared" uses the **simple past passive tense**. This tense refers to a completed action in the past.

Using "was not declared" with "so far" creates a mismatch. The correct tense to use with "so far" in this context would be the present perfect passive: "**has not been declared**".

For example:

- Incorrect: "The report was not submitted so far."
- Correct: "The report **has not been submitted** so far."

Step-by-Step Analysis of Segments

Let's examine each segment:

- **Segment (A): "The news of his"**
This part is grammatically correct. "News" is correctly treated as a singular noun, and "his" is the appropriate possessive pronoun.
- **Segment (B): "accident was not"**
This segment contains the grammatical error. The word "accident" completes the subject phrase ("The news of his accident"). The verb phrase begins with "was not". The error lies specifically in the auxiliary verb "**was**". Because "so far" requires the present perfect tense, "was" should be "has".
- **Segment (C): "declared so far."**
This segment contains the past participle "declared" and the adverb "so far". While the participle is correct, the overall verb phrase "was not declared" is incorrect due to the tense mismatch explained above, originating from the auxiliary verb in segment (B).

Identifying the Segment with the Error

The core grammatical mistake is the use of the simple past tense ("was") instead of the present perfect tense ("has") when used with the adverb "so far". Segment (B) contains the incorrect auxiliary verb "was", making it the segment with the identified grammatical error.

65. Answer: b

Explanation:

Identifying the Sentence Error

This question asks us to identify a grammatical error within the given sentence: "It is me (A)/ who am (B)/ sorry.(C)/No error(D)". We need to carefully examine each part of the sentence to find the mistake.

Understanding Pronoun Case After Linking Verbs

A key grammar rule involves the use of pronouns after linking verbs, such as forms of the verb "to be" (is, am, are, was, were). When a pronoun follows a linking verb and acts as a subject complement (renaming or describing the subject), it should be in the subjective case.

- Subjective cases: I, you, he, she, it, we, they
- Objective cases: me, you, him, her, it, us, them

In the sentence "It is me", the verb "is" is a linking verb. The subject is "It". The pronoun "me" follows the linking verb and functions as the subject complement. Therefore, the subjective case pronoun "I" should be used instead of the objective case pronoun "me".

The correct structure is "It is I".

Relative Pronoun Agreement

The sentence also includes a relative clause: "...who am sorry".

The relative pronoun "who" refers back to the noun or pronoun that comes immediately before it (the antecedent). In the corrected sentence "It is I who am sorry", the antecedent for "who" is "I".

The verb in the relative clause must agree in number and person with its antecedent. Since the antecedent is "I", the first-person singular verb form "am" is the correct choice. Thus, the clause "who am sorry" is grammatically correct when preceded by "It is I".

Sentence Analysis Breakdown

Let's analyze each part of the original sentence:

- **Part (A) It is me:** This part contains the error. The objective pronoun "me" is used incorrectly after the linking verb "is". It should be the subjective pronoun "I".
- **Part (B) who am:** This part is correct because "who" refers to "I", and the verb "am" agrees with "I".
- **Part (C) sorry:** This is the predicate adjective and is used correctly.

- **Part (D) No error:** This option is incorrect as an error has been identified in Part A.

Conclusion on the Error

Based on the grammatical rules for pronoun case following linking verbs, the error lies in the phrase "It is me". The correct phrasing should be "It is I". Therefore, Part A is the incorrect part of the sentence.

66. Answer: c

Explanation:

Pheidippides' Historic Run to Athens

The passage describes the significant events surrounding the Battle of Marathon in 490 BC between the Persians and the Greeks. After the surprising Greek victory despite being heavily outnumbered, the Persian army fled to their ships with the intention of sailing to Athens to attack the unguarded city.

Why Pheidippides Ran 40 Kilometers to Athens

The messenger, Pheidippides, who had previously run to Sparta for help, was tasked with a crucial second mission after the battle. According to the passage, he ran the approximately 40 kilometers distance to Athens for two main reasons:

- To inform the people of Athens that the Greek soldiers had won the battle against the Persians at Marathon.
- To warn the Athenians that the defeated Persian army was sailing towards the city to try and capture it.

His message was vital so that Athens could prepare for the impending arrival of the Persian ships. The passage states, "He ran 40 kilometers to Athens to tell the Greeks

that they had won and to tell them that the Persians were coming." This confirms the dual purpose of his famous run.

Upon arriving, exhausted, he delivered his message of victory and warning before collapsing and dying. This historic run of 40 kilometers is commemorated by the modern marathon race.

67. Answer: a

Explanation:

Analyzing the Battle of Marathon Passage

The question asks us to identify the statement that is incorrect based on the provided passage about the Battle of Marathon.

We need to read each statement and compare it with the information given in the passage.

Let's examine each option:

- **Statement 1:** "Greek arrows flew through the air on the Persian soldiers."
Looking at the passage, it says, "Persian arrows flew through the air on the Greek soldiers." The passage specifically mentions Persian arrows flying at Greeks, not Greek arrows flying at Persians. Therefore, this statement appears to be incorrect according to the passage.
- **Statement 2:** "The Persians ran to their ships and tried to escape."
The passage explicitly states, "The Persians ran to their ships and tried to escape." This matches the passage content, so this statement is correct.
- **Statement 3:** "The first marathon race of modern Olympic was won by a Louis."
The passage says, "The first marathon race of the modern Olympic Games was run in 1896. It was won by a Greek runner, Spiridon Louis." This statement aligns with the passage content, identifying the winner as Louis (Spiridon Louis). So, this statement is correct.

- **Statement 4:** "The Greeks could not wait and attacked the Persian army."
- The passage states, "The Greeks could not wait and attacked the Persian army." This is directly from the passage and is correct.

Based on the comparison, the statement that is incorrect according to the passage is the one claiming Greek arrows flew at Persian soldiers. The passage only mentions Persian arrows being used against Greek soldiers.

Therefore, the incorrect statement is "Greek arrows flew through the air on the Persian soldiers."

68. Answer: c

Explanation:

Reason for the Marathon War

The passage describes the war between the Persians and the Greeks that took place in 490 BC. It provides information about the context of this significant historical event, often referred to as the Battle of Marathon.

According to the passage, the reason for this war is clearly stated:

- Persia is described as a "huge empire, much bigger than Greece."
- The passage explicitly says, "It wanted to capture Athens."

Athens was a major city-state in Greece. Therefore, Persia's objective was to capture part of Greece.

Let's look at the provided options in light of this information:

- Option 1 suggests Greece wanted to rule Persia, which contradicts the passage indicating Persia was the aggressor aiming to capture Athens.
- Option 2 suggests Greece wanted Persia's wealth. The passage mentions Persia's size but not its wealth as the motive for Greece.

- Option 3 states that Persia was a huge empire and wanted to capture Greece. This aligns directly with the passage's information that Persia, a huge empire, wanted to capture Athens, a key part of Greece.
- Option 4 suggests Greece attacked Persia for revenge. The passage describes this war as the initial conflict in 490 BC and presents Persia as the invader.

Based on the details given in the passage, the primary reason for the Marathon war was Persia's ambition to expand its empire by capturing Greek territory, specifically Athens.

69. Answer: d

Explanation:

Understanding Blank (1): Seeking Parliamentary Approval

The sentence focuses on the action taken by Nirmala Sitharaman, the Finance Minister of India, concerning additional spending approved by the Indian Parliament. We need to select the most appropriate verb to describe her interaction with the Parliament to get permission for spending funds.

Let's analyze the options provided for blank (1):

- **amazed:** This means to surprise someone greatly. It does not fit the context of obtaining approval from a legislative body like the Parliament. The Finance Minister's role involves seeking approval, not surprising the Parliament.
- **arranged:** This means to organize or make plans for something. While the process of getting approval might involve arrangements, the phrase "arranged the nod" is not idiomatic or standard in this context.
- **organized:** Similar to "arranged," this implies putting things into a specific order. "Organized the nod" doesn't logically fit the scenario of getting parliamentary consent.

- **sought:** This verb means to ask for, request, or try to obtain something. In this context, "**sought** the nod of the Indian Parliament" means the Finance Minister requested or pursued the Parliament's approval for the additional expenditure. This is a common and accurate way to describe the process of gaining legislative sanction.

Choosing the Correct Verb for Parliamentary Action

The core action described is obtaining consent or approval, referred to as "the nod," from the Indian Parliament. The Finance Minister needs to actively pursue this approval. Among the choices, "**sought**" best describes this action of requesting or aiming to obtain permission.

The sentence should read: "On 20th July, Nirmala Sitharaman, Finance Minister of India, **sought** the nod of the Indian Parliament so as to spend an additional Rs 23,675 crore in the current financial year..." This phrasing correctly indicates that she requested or looked for the Parliament's approval for the supplementary funds, particularly the allocation for the Health Ministry amidst concerns related to Covid and health preparedness.

70. Answer: a

Explanation:

Understanding Prepositions with 'Related'

The question asks us to fill in the blank marked as (2) in the passage. The specific sentence fragment we need to focus on is: "To meet the various issues **related** ____ (2) ____ Covid and other health preparedness...". We need to find the correct preposition to complete the phrase "related ____ Covid".

Analyzing the Phrasal Verb 'Related to'

In English grammar, the word 'related' is typically followed by the preposition 'to' when indicating a connection or association with something. The phrasal verb is '**related to**'. This means connected with or concerning something.

Let's look at the options provided for blank (2):

- **Option 1: to** – This forms the phrase '**related to** Covid'. This is the standard and grammatically correct way to express a connection between 'issues' and 'Covid'. It means the issues that concern or are connected with Covid.
- **Option 2: with** – While 'with' is used in many phrasal verbs, 'related with' is not the standard or correct form. The correct preposition here is 'to'.
- **Option 3: across** – The preposition 'across' suggests movement or distribution over an area or throughout something. It does not fit the meaning of connection or concern in this context. 'Related across Covid' is grammatically incorrect and semantically unsuitable.
- **Option 4: none of these** – Since option 1 ('to') is correct, this option is incorrect.

Conclusion for Blank (2)

Based on standard English usage and grammar, the correct preposition to use with 'related' when indicating a connection or relevance is 'to'. Therefore, the phrase should be '**related to** Covid'.

The complete sentence would read: "To meet the various issues **related to** Covid and other health preparedness, Rs 16,463 crore extra spending has been ____ (3) ____ for the health and family welfare department."

Thus, the correct answer for blank (2) is 'to'.

71. Answer: b

Explanation:

This solution provides a detailed explanation to determine the correct word for blank (3) in the given passage. The passage discusses additional financial spending

allocated by the Indian Finance Minister for health preparedness.

Context of Additional Spending in the Passage

The passage focuses on a financial announcement made by Nirmala Sitharaman, India's Finance Minister. She secured approval from the Indian Parliament to increase spending by Rs 23,675 crore in the current financial year. A significant portion of this additional amount, Rs 17,000 crore, is designated for the Health Ministry. The text highlights that this extra spending is intended to address challenges related to COVID-19 and improve health readiness. Specifically, the health and family welfare department is set to receive an additional Rs 16,463 crore. Blank (3) appears in the sentence describing how this extra spending was allocated.

Grammar Focus: Verb Tense and Passive Voice for Blank (3)

The relevant part of the sentence is: "...Rs 16,463 crore extra spending has been ____ (3) ____ for the health and family welfare department."

To correctly fill blank (3), we need to understand the verb tense and voice used. The phrase "has been" indicates the **present perfect passive voice**.

The structure for the present perfect passive voice is:

- Subject + has/have + been + **past participle** of the main verb.

In this sentence, the subject is "Rs 16,463 crore extra spending". The auxiliary phrase "has been" is already present. Therefore, the word required for blank (3) must be the **past participle** of the verb 'issue'.

Option Analysis for Blank (3): Selecting the Past Participle

Let's examine the provided options for blank (3) to find the correct past participle:

- **Option 1: issue** – This is the base form of the verb. It is incorrect because the structure requires a past participle, not the base form.
- **Option 2: issued** – This is the **past participle** of the verb 'issue'. This form correctly fits the "has been + past participle" structure required for the present perfect passive voice. The sentence would mean the spending was officially authorized or released.
- **Option 3: issuing** – This is the present participle (or gerund). It's used in continuous tenses (e.g., "is issuing") or as a gerund, but not after "has been" in this context.
- **Option 4: issues** – This is the third-person singular present tense form of the verb. It does not fit the passive voice structure required here.

Based on the grammatical analysis, the past participle 'issued' is the only option that correctly completes the sentence according to the present perfect passive voice structure.

The completed sentence reads: "...Rs 16,463 crore extra spending has been **issued** for the health and family welfare department."

Conclusion: Correct Word for Blank (3)

The grammatical structure "has been ____" necessitates the use of the past participle. Out of the given choices, 'issued' is the past participle of the verb 'issue' and accurately completes the sentence, indicating that the extra spending allocation was officially granted or released.

72. Answer: d

Explanation:

Understanding the Idiom "An Iron-Will"

The question asks for the meaning of the English idiom "An iron-will". Understanding idioms involves grasping their figurative meaning, which often differs from the literal

meaning of the words.

Defining "Iron-Will"

The term "iron-will" describes a person possessing remarkable **determination** and **resolve**. It signifies a strong, unyielding mental strength that allows someone to pursue their goals despite difficulties or opposition. Think of it like iron – strong, firm, and difficult to bend or break. This strength of character is key to the idiom's meaning.

Analyzing the Options

Let's examine each provided option to see which best matches the meaning of "An iron-will":

- **Option 1: No longer in use** – This phrase refers to something obsolete or discontinued. It has no connection to willpower or determination.
- **Option 2: By all means** – This is an expression used to give permission or indicate agreement enthusiastically. It doesn't relate to the concept of an "iron-will".
- **Option 3: To make sacrifice** – While individuals with a strong will might make sacrifices, the act of sacrifice itself is not the definition of having an "iron-will".
- **Option 4: A firm opinion** – This option relates to having a strong, fixed belief or viewpoint. Someone with an "iron-will" demonstrates immense determination, which often translates into holding their beliefs or pursuing their objectives with great firmness, much like having a "firm opinion". While "unwavering determination" is a more direct definition, "a firm opinion" captures the aspect of firmness and steadfastness associated with an "iron-will".

Meaning Comparison Table

Option Text	Meaning	Relation to "Iron-Will"
No longer in use	Obsolete	None
By all means	With permission / Certainly	None
To make sacrifice	Giving something up	Indirectly related; a consequence, not the definition
A firm opinion	A strong, fixed belief	Captures the firmness and steadfastness aspect

Conclusion on "An Iron-Will"

Based on the analysis, the idiom "An iron-will" refers to strong, unshakeable determination. Among the choices, "A firm opinion" best reflects this characteristic of firmness and steadfastness, even if it focuses on opinion rather than the broader concept of will or determination.

73. Answer: d

Explanation:

Understanding the Idiom: All Greek to Me

The question asks for the meaning of the common English idiom "All Greek to me". Idioms are phrases where the words together have a meaning that is different from the dictionary definitions of the individual words. Understanding idioms is crucial for mastering the nuances of the English language.

Meaning of "All Greek to Me"

The phrase "**All Greek to me**" is used to express that something is completely **incomprehensible** or impossible to understand. Imagine trying to read ancient Greek without knowing the language – it would just look like a series of confusing symbols. That's the feeling this idiom captures.

Analyzing the Options

Let's look at each option provided to determine the correct meaning:

- **Option 1: Very dear**

This meaning relates to affection or high cost, which is not associated with the idiom "All Greek to me". For example, something "dear" could mean "loved" or "expensive", neither of which connects to the idiom.

- **Option 2: Out of danger**

This phrase typically means that a difficult or dangerous situation has ended. It has no connection to the idiom about understanding something.

- **Option 3: Consulting seriously**

This suggests a deep discussion or consultation. While consultations can sometimes be complex, the idiom "All Greek to me" specifically refers to a lack of understanding, not the act of discussing.

- **Option 4: Incomprehensible**

This option perfectly matches the meaning of the idiom. When something is **incomprehensible**, it means it cannot be understood. This aligns directly with the sentiment expressed by "**All Greek to me**". For instance, if someone is explaining a complex scientific concept using highly technical jargon, you might say, "The lecture was all Greek to me."

Conclusion on Idiom Meaning

Based on the analysis, the phrase "**All Greek to me**" signifies that something is completely **incomprehensible**. The idiom likely originated from a time when Greek was a language studied by scholars but unfamiliar to the general population, making texts written in Greek difficult for many to read and understand.

74. Answer: a

Explanation:

The correct answer is 'Dishonesty '.

★ Key Points

- Let us see the meaning of Probity:-
 - Probity: complete honesty.
 - Example: *Her **probity** and integrity are beyond question.*
- Let us see the meanings of the given options:-

Word	Meaning
Dishonesty	not honest.
Timidity	lack of courage or confidence.
Integrity	approving the quality of being honest and having strong moral principles that you refuse to change
Insincerity	pretending to feel something that you do not really feel, or not meaning what you say.

- From the meanings of the given words, we can say that the word 'Dishonesty ' is the word almost opposite in meaning to the word 'Probity' .
- Hence, the correct answer is 'Dishonesty ' .

75. Answer: b

Explanation:

Understanding the Boss's Reaction to Inefficiency

The question asks us to find the most suitable phrasal verb to complete the sentence: "The boss simply could not _____ his inefficiency anymore." The key terms here are "boss", "inefficiency", and the structure "could not ... anymore". This suggests a situation where the boss has reached a limit regarding someone's (or perhaps their own) lack of effectiveness or inability to produce the desired results.

Meaning of Phrasal Verb Options

Let's look at the meaning of each phrasal verb provided in the options to see which one best fits the sentence:

Explaining 'put off'

The phrasal verb "put off" generally means to postpone something or to make someone dislike something or someone.

- Example (Postpone): *We had to put off the meeting until next week.*
- Example (Discourage): *The bad smell from the drains really put me off my food.*

In the context of the sentence, "The boss could not put off his inefficiency anymore," neither meaning fits well. A boss doesn't typically "postpone" inefficiency, nor do they usually "discourage" inefficiency in this direct way.

Explaining 'put up with'

The phrasal verb "put up with" means to tolerate or endure something or someone that you find unpleasant or annoying.

- Example: *I know he's grumpy, but you'll have to put up with him.*

Applying this to the sentence: "The boss simply could not **put up with** his inefficiency anymore." This makes logical sense. It implies the boss was tolerating the inefficiency but has now reached his limit.

Explaining 'put down'

The phrasal verb "**put down**" has several meanings, including to criticize someone, to place something on a surface, or to euthanize an animal.

- Example (Criticize): *Stop putting your colleagues down; they are doing their best.*
- Example (Place): *Please put the box down gently.*

In the sentence, "The boss could not put down his inefficiency anymore," the meaning of criticism might seem possible, but "put up with" is a more direct and common fit for expressing a limit of tolerance for a negative trait like inefficiency. The other meanings of "put down" don't fit at all.

Explaining 'put across'

The phrasal verb "**put across**" means to express your ideas or opinions clearly so that they are understood easily.

- Example: *She tried to put her point across, but the audience didn't seem convinced.*

Using this in the sentence, "The boss could not put across his inefficiency anymore," doesn't make sense. Inefficiency is usually something to be overcome, not communicated clearly by the boss in this manner.

Choosing the Correct Phrasal Verb for Inefficiency

Based on the meanings:

- "**put off**" does not fit the context of dealing with inefficiency.
- "**put up with**" means to tolerate, which perfectly matches the idea of a boss reaching a limit with someone's inefficiency.
- "**put down**" (criticize) is less likely than tolerating, and other meanings are irrelevant.
- "**put across**" means to communicate, which does not fit the sentence structure or meaning.

Final Answer Explanation

The sentence describes a situation where the boss can no longer endure or tolerate the inefficiency he is observing. The phrasal verb that means to tolerate or endure something unpleasant is **"put up with"**. Therefore, the completed sentence is: "The boss simply could not **put up with** his inefficiency anymore." This accurately conveys that the boss's tolerance for the inefficiency has ended.

76. Answer: d

Explanation:

Country Currency Mismatch Identification

This question requires identifying the incorrect pairing between a country and its official currency. Accurate knowledge of global currencies and their corresponding nations is essential for understanding international finance and trade.

Understanding Currency Matching

Each country typically has a specific official currency used for economic transactions. Matching a country to its correct currency involves knowing these official denominations. Let's examine each option provided:

Analysis of Country-Currency Pairs

We will review each country-currency combination presented in the options to determine the accuracy of the match.

Option 1: Albania-Lek

Albania's official currency is the Albanian Lek, denoted as ALL. This is a correct match.

Option 2: Cambodia-Riel

The official currency of Cambodia is the Cambodian Riel, denoted as KHR. This is also a correct match.

Option 3: Ethiopia-Birr

Ethiopia uses the Ethiopian Birr as its currency, denoted as ETB. This pairing is correct.

Option 4: Finland-Pound

Finland is a member of the European Union and uses the Euro (€) as its official currency. The Pound (£) is the currency used in the United Kingdom and some other territories. Therefore, the pairing of Finland with the Pound is incorrect.

Summary Table of Currency Matches

Country	Provided Currency	Actual Currency	Status
Albania	Lek	Lek (ALL)	Correct
Cambodia	Riel	Riel (KHR)	Correct
Ethiopia	Birr	Birr (ETB)	Correct
Finland	Pound	Euro (EUR)	Incorrect

Identifying the Incorrect Match

Based on the analysis, the country-currency pair that is not correctly matched is Finland-Pound. Finland's currency is the Euro, not the Pound.

77. Answer: b

Explanation:

Explaining the Term "Jab" and its Associated Game

This question requires identifying the specific sport or **game** linked to the term "**Jab**". We need to understand what a "**Jab**" signifies within the context of sports terminology.

Definition of a "Jab" in Sports

A "**Jab**" is a specific type of punch commonly used in combat sports. It is characterized as a fast, straight punch thrown with the dominant hand (or the lead hand when in a typical fighting stance). The primary purposes of a **jab** include:

- Establishing range and distance control.
- Testing the opponent's defenses.
- Setting up more powerful follow-up punches.
- Maintaining pressure without excessive energy expenditure.
- Scoring points.

"Jab" Terminology Across Different Games

Let's analyze the relevance of the term "**Jab**" to the options provided:

- **Boxing:** The "**Jab**" is arguably the most important punch in **boxing**. It is a staple technique for virtually all boxers, forming the foundation of offensive and defensive strategies.
- **Basket ball:** Basketball involves skills like shooting, dribbling, and passing. The term "**Jab**" is not a standard term in basketball vocabulary.
- **Chess:** Chess is a strategic board game. Its terminology includes moves like 'castling', 'en passant', and pieces like 'king' and 'queen'. "**Jab**" is irrelevant to chess.
- **Football:** Football (soccer or American football) uses terms related to kicking, passing, tackling, and scoring. The term "**Jab**" does not apply to football.

Final Determination for "Jab" Game Link

Considering the definitions and common usage in sports, the term "**Jab**" is fundamentally and exclusively associated with **boxing** among the choices given. It is a core offensive manoeuvre that defines much of the sport's dynamics.

78. Answer: c

Explanation:

Chhatrapati Shivaji Maharaj and the Maratha Empire's Foundation

Chhatrapati Shivaji Maharaj was a celebrated warrior king who established and consolidated the Maratha Empire. The year **1674** is a landmark year, signifying the official coronation of Shivaji Maharaj as the Chhatrapati (Emperor), which marked the formal beginning of the Maratha Empire as a sovereign entity.

Establishing the Empire's Capital

A strong and strategically located capital is vital for the administration, governance, and military command of any empire. For the newly founded Maratha Empire, selecting and developing a capital was a crucial step towards consolidating power and asserting sovereignty.

Raigad Fort as the Capital

In **1674**, upon his coronation, Chhatrapati Shivaji Maharaj designated **Raigad** fort as the capital of the Maratha Empire. Raigad was meticulously chosen for its formidable natural defenses, strategic position on the Sahyadri mountain range, and its suitability for constructing administrative buildings and royal residences. Shivaji Maharaj invested significantly in developing Raigad, building structures like the Durbar Hall, the Raj Bhavan (Queen's quarters), and granaries, making it the heart of his burgeoning empire and the site of his coronation.

Analysis of Other Places Mentioned

While other locations hold historical significance in the life and campaigns of Shivaji Maharaj, they were not established as the capital in 1674:

- **Pratapgad:** This fort is famously associated with the historic battle where Shivaji Maharaj defeated the Bijapur general Afzal Khan. While strategically important and a symbol of early Maratha victories, it was not the designated capital of the consolidated empire.
- **Daulatabad:** Located in present-day Maharashtra, Daulatabad fort (formerly Devagiri) was a powerful fortress that served as a capital for various Deccan sultanates before Shivaji Maharaj's time. While it remained an important stronghold, Raigad was specifically chosen and developed as the capital for the newly established Maratha Empire in 1674.
- **Sinhagad:** Known for its intense battles and the bravery displayed, especially the story of Tanaji Malusare, Sinhagad was a vital military outpost and a key fort in the Maratha Swarajya. However, it served primarily as a defensive fortress rather than the administrative capital of the empire.

Therefore, **Raigad** was the place established as the capital when Chhatrapati Shivaji Maharaj founded and consolidated the Maratha Empire in 1674.

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79. Answer: b

Explanation:

Women's First Olympic Participation

This section provides a detailed explanation regarding the year when women first participated in the Olympic Games, addressing the historical context and the specific events that marked this significant milestone.

Historical Overview of Women in Olympics

The modern Olympic Games began in Athens in the year **1896**. Initially, the founder, Pierre de Coubertin, intended for the Games to be exclusively for male athletes. Consequently, women were not permitted to compete in the inaugural modern Olympic Games held in **1896**.

The Turning Point: 1900 Paris Games

The situation changed four years later at the **1900 Olympic Games**, hosted in Paris, France. These Games represented a major shift as they allowed women to compete for the first time. Although their participation was limited, it was a groundbreaking moment in Olympic history.

- **Year of Debut:** Women first competed in the Olympics in **1900**.
- **Host City:** Paris, France.
- **Participating Sports:** Women competed in several sports, including tennis, golf, sailing, croquet, and equestrian events.
- **Number of Participants:** It is estimated that around 22 women (out of over 990 athletes) participated in the **1900 Games**.
- **Significance:** This marked the official, albeit limited, inclusion of women in the Olympic program.

Analyzing Olympic Participation Years

Let's examine why the other options are not the correct answer for the first time women participated in the Olympics:

- **1896 Olympics (Athens):** Women were not allowed to compete.
- **1904 Olympics (St. Louis):** While some women participated, notably in archery, golf, and tennis, this was not the first instance of female participation; **1900** holds that distinction.
- **1924 Olympics (Paris):** By this time, women's participation had grown significantly, but it was many years after their initial debut in **1900**.

Therefore, the correct year when women participated in the Olympics for the first time was **1900**.

80. Answer: c

Explanation:

Author of the Famous Book 'Animal Farm'

The question asks to identify the author of the well-known book, 'Animal Farm'. This book is a significant allegorical novella. Let's examine the provided options to determine the correct author.

Analyzing the Options for 'Animal Farm' Author

We need to check the literary contributions of each author listed to find who wrote 'Animal Farm'.

- **Leo Tolstoy:** Leo Tolstoy was a Russian writer, widely regarded as one of the greatest novelists of all time. He is famous for his masterpieces like '*War and Peace*' and '*Anna Karenina*'. He is not the author of 'Animal Farm'.
- **Mark Tully:** Sir Mark Tully is a British journalist and broadcaster who spent many years reporting from India. His work primarily focuses on Indian politics and society. He did not write 'Animal Farm'.
- **George Orwell:** Eric Arthur Blair, most famously known by his pen name **George Orwell**, was an English novelist, essayist, journalist, and critic. He is celebrated for his clear prose, social criticism, opposition to totalitarianism, and support for democratic socialism. He is indeed the author of the critically acclaimed book 'Animal Farm', published in 1945. He also wrote the dystopian novel '*Nineteen Eighty-Four*'.
- **Ben Okri:** Ben Okri is a Nigerian poet and novelist. He is best known for his Booker Prize-winning novel '*The Famished Road*'. He is not associated with writing 'Animal Farm'.

Identifying the Correct Author of 'Animal Farm'

Based on the analysis of the authors and their notable works, it is clear that **George Orwell** is the acclaimed author of the book 'Animal Farm'. His work serves as a

satirical allegory of the events leading up to the Russian Revolution of 1917 and the subsequent Stalinist era in the Soviet Union.

Therefore, the correct author for the famous book 'Animal Farm' is **George Orwell**.

81. Answer: b

Explanation:

This question asks to identify the female athlete who has secured the maximum number of gold medals in the Olympic Games among the given options.

Analyzing Women's Olympic Gold Medal Records

To answer this question accurately, let's review the Olympic achievements of the prominent female athletes listed:

- **Larisa Latynina:** A legendary Soviet gymnast, Larisa Latynina holds an impressive record in Olympic history. She competed in the 1956, 1960, and 1964 Olympic Games. Across these Games, she accumulated a total of **9 gold medals**, along with 5 silver and 4 bronze medals, making her one of the most decorated Olympians of all time.
- **Simone Biles:** Considered one of the greatest gymnasts in history, Simone Biles has represented the United States in the 2016 and 2020 Olympic Games. She has won a total of 7 Olympic medals, including **2 gold medals** (one in Rio 2016 and one in Tokyo 2020 team event), plus 2 silver and 3 bronze medals.
- **Mary Kom:** An iconic Indian boxer, Mary Kom has represented India at the Olympic level. Her Olympic career highlight includes winning a **bronze medal** at the 2012 London Olympics. She did not win any gold medals.
- **Michael Phelps:** While Michael Phelps is the most decorated Olympian in history with 23 gold medals, he is a male athlete and therefore not relevant to the question asking specifically about women.

Comparing Top Female Olympians' Gold Medals

Comparing the gold medal counts of the female athletes mentioned:

- Larisa Latynina: 9 gold medals
- Simone Biles: 2 gold medals
- Mary Kom: 0 gold medals (1 bronze medal)

Based on these records, Larisa Latynina has won the maximum number of gold medals (9) among the female athletes listed.

Conclusion on Maximum Olympic Gold Medals by a Woman

Therefore, the woman who has won the maximum number of gold medals in the Olympics among the given choices is Larisa Latynina.

82. Answer: c

Explanation:

Understanding India Standard Time (IST) Relative to GMT

This explanation details the time difference between India Standard Time (IST) and Greenwich Mean Time (GMT). Understanding this difference is key to knowing how time zones work globally.

What is Greenwich Mean Time (GMT)?

Greenwich Mean Time (GMT) is the time based on the Prime Meridian (0° longitude), which passes through Greenwich, London. It serves as the world's primary time standard and a reference point for calculating time differences across other time zones.

Establishing India Standard Time (IST)

India observes a single, uniform time zone known as India Standard Time (IST). This is determined by the local time at **82.5° East longitude**. This specific meridian was chosen to provide a consistent time reference throughout India.

Calculating the Time Gap: IST vs. GMT

The Earth rotates 360 degrees in approximately 24 hours. This rotation dictates the time differences between locations based on their longitude.

- The Earth rotates 15 degrees of longitude every hour. This can be calculated as $\frac{360^\circ}{24 \text{ hours}} = 15^\circ/\text{hour}$.
- This means that for every degree of longitude, there is a 4-minute time difference. This is derived from $\frac{60 \text{ minutes}}{15^\circ} = 4 \text{ minutes}/^\circ$.

India's standard meridian is located at 82.5° East. To find how far IST is ahead of GMT (which is at 0° longitude), we calculate:

- Total Time Difference = (Longitude Difference) × (Time per degree)
- Longitude Difference = $82.5^\circ - 0^\circ = 82.5^\circ$
- Time Difference = $82.5^\circ \times 4 \text{ minutes}/^\circ$
- Time Difference = 330 minutes

Converting the total minutes into hours and minutes:

- $330 \text{ minutes} \div 60 \text{ minutes/hour} = 5.5 \text{ hours}$
- 5.5 hours is equal to 5 full hours plus half an hour.
- Half an hour (0.5 hours) is $0.5 \times 60 = 30 \text{ minutes}$.

Therefore, India Standard Time (IST) is **5 hours and 30 minutes** ahead of Greenwich Mean Time (GMT).

Final Answer Explanation

This calculation confirms that India's time zone is 5 hours and 30 minutes ahead of the GMT reference time. For example, if it's 12:00 PM GMT, it would be 5:30 PM IST in India.

83. Answer: a

Explanation:

Exploring the Indigo Movement's Bengal Starting Point: Nadia

The Indigo movement was a significant farmers' uprising that took place in Bengal during the 1850s. It was a protest against the exploitative practices of British indigo planters who forced Indian farmers, known as ryots, to cultivate indigo under unfair contract terms and at very low prices.

Origin of the Indigo Rebellion in Bengal

The Indigo movement originated and gained momentum in the rural districts of Bengal. Farmers were compelled to grow indigo on their most fertile lands, often facing violence and coercion from the planters if they refused or failed to meet the demanding quotas.

Nadia stands out as a key district where this resistance first began to take organized shape. Farmers in Nadia, along with neighbouring districts like Pabna and Jessore, were among the first to refuse to cultivate indigo and to collectively resist the planters' demands. The uprising involved boycotts, refusal to pay rent to planters, and sometimes violent confrontations.

Analyzing Other Locations

- **Alipore:** While Alipore is a locality within Kolkata (Calcutta), the Indigo movement was primarily a rural peasant revolt, not an urban-based protest.
- **Howrah:** Howrah is another district in West Bengal, but the initial and most concentrated centers of the Indigo revolt were further north and east in districts like Nadia.
- **Calcutta:** Calcutta (now Kolkata) was the capital of British India and a major administrative and intellectual center. While intellectuals and newspapers in

Calcutta supported the farmers' cause, the movement itself did not start in the city but rather in the countryside where indigo cultivation was enforced.

Therefore, focusing on the grassroots beginnings of the Indigo movement in Bengal, **Nadia** is identified as the region where the protest initially sparked and gained traction among the affected farmers.

84. Answer: b

Explanation:

Identifying the Water-Soluble Vitamin

The question asks us to identify which vitamin among the given options is water-soluble. Vitamins are essential nutrients required by the body for various functions. They are broadly classified into two categories based on their solubility: fat-soluble vitamins and water-soluble vitamins.

Understanding Water-Soluble Vitamins

Water-soluble vitamins dissolve in water. This means they are easily absorbed into the bloodstream and the body uses them as needed. Since they are not stored in large amounts in the body, excess amounts are typically excreted in the urine. Therefore, a regular intake of these vitamins is necessary.

Analyzing the Vitamin Options

Let's examine each option provided:

Vitamin A: Fat-Soluble Vitamin

- Vitamin A is a **fat-soluble** vitamin.
- It dissolves in fat and oil.
- The body can store **Vitamin A** in the liver and fatty tissues for later use.

- Deficiency is less common than with water-soluble vitamins because of this storage capacity.

Vitamin C: The Water-Soluble Choice

- **Vitamin C**, also known as ascorbic acid, is a **water-soluble** vitamin.
- It readily dissolves in water and is absorbed directly into the bloodstream.
- The body does not store large amounts of **Vitamin C**; excess is usually excreted.
- It plays crucial roles in immune function, collagen synthesis, and acts as an antioxidant.
- Common sources include citrus fruits, berries, tomatoes, and bell peppers.

Vitamin D: Another Fat-Soluble Vitamin

- **Vitamin D** is classified as a **fat-soluble** vitamin.
- Like Vitamin A, it requires dietary fat for absorption and can be stored in the body's fatty tissues and liver.
- It is essential for calcium absorption and bone health.

Vitamin K: Fat-Soluble Vitamin Overview

- **Vitamin K** is also a **fat-soluble** vitamin.
- It is important for blood clotting and bone metabolism.
- The body stores **Vitamin K** in the liver and other fatty tissues.

Conclusion

Based on the solubility classification, **Vitamin C** is the only water-soluble vitamin among the choices. Vitamins A, D, and K are all fat-soluble and are stored in the body's fatty tissues.

85. Answer: c

Explanation:

First Chairman of India Finance Commission Revealed

The **Finance Commission of India** is a vital constitutional body established under **Article 280** of the Constitution. Its main purpose is to advise the President on financial matters, including the distribution of taxes between the Union and states, and the allocation of grants-in-aid.

The question asks for the individual who served as the **first Chairman** of this important commission when it was initially constituted.

Based on the historical establishment of the Finance Commission, **K.C. Niyogi** was appointed as the **first Chairman**. The First Finance Commission was set up in November 1951, and K.C. Niyogi led this inaugural body.

Understanding the role and leadership of the first Chairman helps in appreciating the historical context and the evolution of fiscal relations in India.

Therefore, K.C. Niyogi holds the distinction of being the **first Chairman of the Finance Commission of India**.

86. Answer: a

Explanation:

Understanding Dhuandhar Falls and the Narmada River

The question asks which river is responsible for creating the well-known Dhuandhar Falls. Understanding major rivers and their features is important in geography.

Identifying the River Forming Dhuandhar Falls

Dhuandhar Falls is a famous waterfall located near Jabalpur in the state of Madhya Pradesh, India. The name 'Dhuandhar' literally translates to 'smoke flow', describing the misty spray created by the water plunging down.

The river that forms this spectacular waterfall is the Narmada River.

- The Narmada River is one of the major rivers of peninsular India.
- It flows westwards, unlike most other major peninsular rivers which flow east.
- It originates from Amarkantak in Madhya Pradesh.
- The Dhuandhar Falls are formed when the Narmada River, flowing through the Marble Rocks (Bhedaghat), drops about 30 meters.

Analyzing the Options

Let's look at why the other options are not correct:

- **Kali Sind:** The Kali Sind River is a river in Madhya Pradesh and Rajasthan. It is a tributary of the Chambal River. It is not associated with Dhuandhar Falls.
- **Chambal:** The Chambal River is a tributary of the Yamuna River, flowing through Madhya Pradesh, Rajasthan, and Uttar Pradesh. While it has its own significant features and historical importance, it does not form Dhuandhar Falls.
- **Tapi:** The Tapi River (also Tapti) is another major west-flowing river of peninsular India, flowing through Madhya Pradesh, Maharashtra, and Gujarat. It flows parallel to the Narmada but further south and forms different waterfalls and features. It is not the river behind Dhuandhar Falls.

Based on geographical facts, the Dhuandhar Falls are formed by the Narmada River.

Location and Significance of Dhuandhar Falls

The falls are particularly known for the Marble Rocks gorge nearby, where the Narmada flows through stunning white marble cliffs before plummeting down at Dhuandhar.

Revision Table: Major Rivers and Associated Falls

River	Famous Falls / Features	State(s)
Narmada	Dhuandhar Falls, Marble Rocks	Madhya Pradesh, Maharashtra, Gujarat
Chambal	Chulia Falls (Rajasthan)	Madhya Pradesh, Rajasthan, Uttar Pradesh
Tapi	Flows parallel to Narmada, forms estuaries	Madhya Pradesh, Maharashtra, Gujarat
Kali Sind	Tributary of Chambal	Madhya Pradesh, Rajasthan

Additional Information on Indian Waterfalls and Rivers

India is home to numerous beautiful waterfalls formed by its diverse river systems. Waterfalls are not just tourist attractions but also provide insight into the geological formations and river dynamics of a region.

- Some other notable waterfalls in India include Jog Falls (Sharavati River), Shivanasamudra Falls (Kaveri River), Dudhsagar Falls (Mandovi River), and Athirappilly Falls (Chalakudy River).
- Rivers are vital resources, supporting agriculture, providing drinking water, generating hydroelectric power, and serving as important transportation routes.
- Understanding the course and characteristics of major rivers like the Narmada, Chambal, and Tapi is fundamental to studying the geography of India.

In summary, the Dhuandhar Falls, famous for its misty cascade, is definitively formed by the Narmada River near Jabalpur.

87. Answer: a

Explanation:

National Anthem Adoption by Constituent Assembly

This section details the date when India's National Anthem was officially accepted by the Constituent Assembly, a key event in the formation of modern India.

Significance of the National Anthem Adoption

The **National Anthem**, "Jana Gana Mana", composed by Rabindranath Tagore, is a symbol of national identity and pride. Its official adoption by the nation's primary legislative body, the **Constituent Assembly**, marked a significant step in establishing India's national symbols.

Timeline of Key National Events

To understand when the National Anthem was adopted, let's consider the significant dates surrounding India's independence and the establishment of the Republic:

- **15 August 1947:** India achieved independence. This date is celebrated as India's Independence Day.
- **26 January 1950:** India officially became a Republic, and its Constitution came into effect. This date is celebrated as Republic Day.
- **24 January 1950:** This date is specifically linked to the adoption of national symbols by the Constituent Assembly shortly before the Republic Day celebrations.
- **26 January 1948:** This date does not hold significance for the adoption of the National Anthem.

Constituent Assembly Proceedings

The **Constituent Assembly** was tasked with preparing India for its transition into a sovereign nation. Part of this responsibility included adopting official symbols.

Historical records show that the **Constituent Assembly** made the final decision regarding the National Anthem on:

- **24 January 1950:** On this day, the Assembly formally declared "Jana Gana Mana" as India's National Anthem. It's noteworthy that on the same date,

"Vande Mataram" was also adopted as the National Song.

While 26 January 1950 is celebrated as Republic Day, the adoption of the National Anthem occurred just two days prior, on 24 January 1950, during the concluding sessions of the Constituent Assembly.

Final Decision on Anthem Adoption

The official acceptance of "Jana Gana Mana" as the National Anthem by the Constituent Assembly occurred on **24 January 1950**.

88. Answer: d

Explanation:

Identifying the Famous Sitar Player

This question requires identifying the musician famous for playing the **Sitar** from the given choices. Indian classical music features various instruments, and each maestro is associated with a specific one. Let's clarify the primary instrument for each artist listed:

Musicians and Their Instruments

- **Ali Akbar Khan:** He was a globally acclaimed maestro, but his instrument was the **Sarod**. The Sarod is a fretless stringed instrument, different from the Sitar.
- **Alla Rakha:** Alla Rakha was a legendary master of the **Tabla**, the pair of drums used extensively in Hindustani classical music for rhythm.
- **Zakir Hussain:** Ustad Zakir Hussain is a world-renowned virtuoso of the **Tabla**, continuing the legacy of his father, Alla Rakha.
- **Pt. Ravi Shankar:** Pandit Ravi Shankar was an Indian composer and sitarist. He is widely regarded as the most famous Sitar player in history, achieving international fame for his mastery of the Sitar and his work in popularizing Indian classical music globally.

Conclusion on Sitar Expertise

Comparing the instruments associated with each musician, it is clear that **Pt. Ravi Shankar** is the distinguished Sitar player mentioned in the options.

89. Answer: a

Explanation:

Supreme Court of India's First Woman Judge

The Supreme Court of India is the highest judicial body in the country. Appointing judges involves careful consideration of legal expertise, experience, and integrity. The question asks to identify the **first woman judge** appointed to the Supreme Court of India, a significant milestone in the history of the Indian judiciary.

Justice M. Fathima Beevi: A Judicial Pioneer

Justice Mannathoor Fathima Beevi holds the distinction of being the **first woman judge** to be appointed to the Supreme Court of India. Her appointment was a landmark event, breaking barriers for women in the legal profession. She became a judge of the Supreme Court on **October 6, 1989**. Her presence on the bench marked a crucial step towards greater gender inclusivity in India's highest court.

Justice Fathima Beevi had a distinguished career before her Supreme Court appointment. She served as a judge in the Kerala High Court and later became the first woman Chief Justice of a High Court in India when she was appointed Acting Chief Justice of the Kerala High Court in 1988. Her journey exemplifies perseverance and excellence in the field of law.

Examining Other Judicial Figures

Let's look at the other options provided:

- **Justice Rama Paul:** While a notable figure, Justice Rama Paul was appointed to the Supreme Court much later, in 2021. She was the second woman judge to be appointed to the Supreme Court.
- **Justice Sujata Manohar:** Justice Sujata V. Manohar was appointed as a judge of the Supreme Court of India in 1994. While she was one of the early women judges, she was not the very first. She succeeded Justice Fathima Beevi after the latter's retirement.
- **None of the above:** This option is incorrect as Justice M. Fathima Beevi was indeed the first woman judge of the Supreme Court of India.

Key Takeaway on India's First Woman Supreme Court Judge

The appointment of Justice M. Fathima Beevi as the **first woman judge** of the Supreme Court of India in 1989 is a historically significant event. Her pioneering role paved the way for future generations of women in the Indian legal system, demonstrating that gender is not a barrier to reaching the highest echelons of the judiciary.

90. Answer: a

Explanation:

Understanding the Haryanka Dynasty Founder

The question asks about the founder of the Haryanka Dynasty. Identifying the founder of a dynasty is crucial for understanding its origin and history, particularly in the context of ancient Indian kingdoms like Magadha.

Identifying the Founder

Let's examine the options provided:

- **Bimbisara:** Historical records widely recognize Bimbisara as the founder of the Haryanka Dynasty. He was a contemporary of Gautama Buddha and played a significant role in expanding the kingdom of Magadha.
- **Ajatshatru:** Ajatshatru was the son of Bimbisara. He succeeded Bimbisara as the king of Magadha and was also a prominent ruler of the Haryanka Dynasty, but he was not the founder.
- **Brihadaratha:** Brihadaratha is mentioned in some ancient texts as a ruler of Magadha, possibly preceding the Haryanka Dynasty, but he is not considered the founder of the Haryanka Dynasty itself.
- **Amatya:** 'Amatya' is a term for a minister or official, not a specific person or a ruler of a dynasty.

Based on historical evidence, **Bimbisara** is credited with establishing the Haryanka Dynasty, which laid the foundation for the powerful Magadhan Empire.

Role of Bimbisara

Bimbisara ruled Magadha from around 544 BCE to 492 BCE. He significantly expanded the territory of Magadha through conquests and strategic matrimonial alliances. He established the city of Rajagriha (modern Rajgir) as his capital. His reign is considered a crucial period in the rise of Magadha as a dominant power in ancient India.

Haryanka Dynasty Overview

The Haryanka Dynasty was one of the early ruling dynasties of the kingdom of Magadha. Following Bimbisara, his son Ajatshatru and grandson Udayin ruled. The dynasty played a key role in consolidating power in the Magadha region.

Revision Table: Haryanka Dynasty Rulers

Ruler	Relation to Predecessor	Key Achievements
Bimbisara	Founder	Expanded Magadha, Capital at Rajagriha, Contemporary of Buddha
Ajatshatru	Son of Bimbisara	Conquered Vaishali, Strengthened Magadha, Contemporary of Buddha & Mahavira
Udayin	Son of Ajatshatru	Shifted Capital to Pataliputra

Additional Information on Magadha and Haryanka Dynasty

The kingdom of Magadha was located in present-day Bihar. Its strategic location and fertile land contributed to its prosperity and eventual rise as a major empire. The Haryanka Dynasty was succeeded by the Shishunaga Dynasty, followed by the Nanda Dynasty, and then the Mauryan Empire, which was founded by Chandragupta Maurya after overthrowing the Nandas.

The Haryanka Dynasty's rule marked a period of consolidation and expansion for Magadha, setting the stage for future empires that would govern large parts of the Indian subcontinent.

91. Answer: a

Explanation:

Understanding Ain-i Akbari and Akbarnama

The question asks us to identify the larger text of which Ain-i Akbari, written by Abul Fazl, is a part. Ain-i Akbari is a significant historical document from Medieval India,

detailing the administrative structures and regulations during the reign of Emperor Akbar.

Let's look at the options provided:

1. Akbarnama
2. Tabakat-i-Akbari
3. Bhaktamal
4. Takmila-i-Akbarnama

Analyzing the Texts

To answer this, we need to understand the relationship between Ain-i Akbari and the other mentioned texts.

- **Ain-i Akbari:** This text was compiled by Abul Fazl at the request of Emperor Akbar. It is essentially a detailed record of Akbar's administration, including statistics, rules, and descriptions of various aspects of the empire, from the court to the provinces, military, revenue system, and even social customs.
- **Akbarnama:** This is the official chronicle of the reign of Akbar, also written by Abul Fazl. It is a monumental work covering the history of Akbar's ancestors, Akbar's life and reign, and importantly, the administrative details of his empire.

Historically, it is well-documented that the Ain-i Akbari is not a standalone work but forms the third and final volume of the Akbarnama. The first two volumes of Akbarnama deal with the historical narrative of Akbar's predecessors and his reign up to the 46th regnal year, while the third volume, Ain-i Akbari, focuses specifically on the administrative aspects.

Text	Author	Main Subject	Relation to Ain-i Akbari
Ain-i Akbari	Abul Fazl	Akbar's administration, statistics, rules	Part of Akbarnama
Akbarnama	Abul Fazl	History of Akbar's reign and administration	Contains Ain-i Akbari as Volume 3
Tabakat-i-Akbari	Nizamuddin Ahmad	General history of India up to 1593-94, including Akbar's reign	Separate historical work
Bhaktamal	Nabhadas	Biographies of Hindu saints (Bhakti movement)	Religious text, unrelated to Akbar's administration
Takmila-i-Akbarnama	Inayatullah	Continuation of Akbarnama covering the final years of Akbar's reign	Continues Akbarnama, but Ain-i Akbari is part of the original Akbarnama

Based on this analysis, Ain-i Akbari is definitively a part of the Akbarnama.

Detailed Explanation of the Correct Relationship

Abul Fazl's Akbarnama is structured into three main books:

- **The First Book:** Deals with the history of Akbar's ancestors from Adam to Babur and Humayun.
- **The Second Book:** Covers the history of Akbar's reign from his first regnal year up to the 46th regnal year (1601-1602 AD).
- **The Third Book (Ain-i Akbari):** This is the comprehensive administrative report and statistical account of Akbar's empire, divided into five books itself. It details the imperial household, the army, the financial system, the provinces, weights and measures, revenue rates, and various other administrative regulations.

Therefore, Ain-i Akbari is the third volume of the Akbarnama.

Revision Table: Key Texts of Akbar's Reign

Text	Author	Significance
Akbarnama	Abul Fazl	Official history of Akbar's reign; includes Ain-i Akbari.
Ain-i Akbari	Abul Fazl	Detailed administrative and statistical account of Akbar's empire; Volume 3 of Akbarnama.
Tabakat-i-Akbari	Nizamuddin Ahmad	Important general history covering different rulers, including a significant section on Akbar.
Bhaktamal	Nabhadas	Anthology of biographies of Bhakti saints; important for religious history.
Takmila-i-Akbarnama	Inayatullah	Adds the final events of Akbar's reign not covered in the original Akbarnama.

Additional Information: The Significance of Ain-i Akbari

Ain-i Akbari is invaluable for understanding the Mughal administration under Akbar. It provides detailed insights into:

- The organization of the central and provincial governments.
- The structure and ranks of the army (Mansabdari system).
- The revenue system, including detailed records of land classification and assessments (Todar Mal's reforms).
- Social and economic conditions, prices of goods, wages, and even descriptions of the flora, fauna, and geography of the empire's provinces.
- Customs, traditions, and religious practices of the diverse population.

Its systematic presentation makes it a unique source of administrative history, different from purely narrative historical chronicles.

92. Answer: b

Explanation:

Advanced Light Helicopter (ALH) Explained

The question asks to identify the common name or designation for the Advanced Light Helicopter (ALH) that was designed and developed by Hindustan Aeronautics Limited (HAL). HAL is India's state-owned aerospace and defence company responsible for designing and manufacturing aircraft, helicopters, and related equipment. The Advanced Light Helicopter (ALH) project was initiated to create a modern, versatile helicopter for various roles.

HAL's ALH: Identifying the Correct Designation

The Advanced Light Helicopter (ALH) project by HAL resulted in a highly capable, multi-role, twin-engine helicopter. Over time, this helicopter gained a specific, widely recognized name. We need to find this name among the given options.

Analyzing the Helicopter Options

Let's examine each option to determine which one correctly refers to the HAL-designed Advanced Light Helicopter (ALH):

- **Tejas:** The **Tejas** is a Light Combat Aircraft (LCA), a completely different type of aircraft than a helicopter. It is a single-engine, multi-role fighter jet, also developed by HAL. Therefore, **Tejas** is not the answer.
- **Dhruv:** The **Dhruv** is the official common name given to the Advanced Light Helicopter (ALH) designed and manufactured by HAL. It serves various roles, including transport, utility, casualty evacuation, and reconnaissance. This aligns perfectly with the question's description.
- **Chetak:** The **Chetak** helicopter is a product of HAL, but it is a licensed version of the French Aérospatiale Alouette III. While historically significant for HAL, it is not the Advanced Light Helicopter (ALH) designed by them.

- **Rudra:** The **Rudra** is an advanced variant of the **Dhruv** ALH. It is specifically designed as an armed and weaponized version, often referred to as the HAL Dhruv Weapons System Integrated (LWI). While related to the ALH, the fundamental design and common name for the base ALH is **Dhruv** itself. The question asks for the name of the ALH, not its specific attack variant.

Conclusion on ALH Name

Based on the analysis, the Advanced Light Helicopter (ALH) designed and developed by HAL is commonly known as the **Dhruv**. The other options represent different aircraft types or variants.

93. Answer: b

Explanation:

Montreal Protocol Overview

The **Montreal Protocol** is a landmark international environmental agreement. Its primary objective is to protect the Earth's **ozone layer** by setting out plans for phasing out the production and consumption of numerous chemicals that are responsible for ozone depletion. Adopted in 1987, it is widely recognized as one of the most successful international treaties.

Analyzing Options Related to the Montreal Protocol

Let's examine the options provided to understand which area the **Montreal Protocol** specifically addresses:

- **Substances that Deplete the Ozone Layer:** This option accurately reflects the core purpose of the **Montreal Protocol**. The treaty specifically targets the production and use of **ozone-depleting substances** (ODS), such as chlorofluorocarbons (CFCs) and halons. These substances were found to cause significant damage to the stratospheric ozone layer, which protects life

on Earth from harmful ultraviolet (UV) radiation. The Protocol mandates a gradual phase-out of these chemicals, leading to a significant recovery of the ozone layer observed in recent decades.

- **Conservation of wetlands:** The protection and sustainable use of **wetlands** are primarily addressed through international agreements like the Ramsar Convention. The **Montreal Protocol** does not deal with wetland conservation efforts.
- **Persistent organic pollutants (POPs):** **Persistent organic pollutants** are hazardous chemical substances that persist in the environment, accumulate in living organisms, and pose risks to human health and the environment. These are regulated under a different international treaty, the Stockholm Convention, not the **Montreal Protocol**.
- **Space debris:** **Space debris** refers to man-made objects left in orbit around Earth, such as defunct satellites and rocket stages. While managing space debris is an important issue, it falls under the purview of space governance and international space law, and is unrelated to the environmental objectives of the **Montreal Protocol**.

94. Answer: b

Explanation:

The correct answer is **Option 2 – 22**.

Explanation:

The **8th Schedule of the Indian Constitution** originally included 14 languages, but through various constitutional amendments, more languages were added. Currently, it lists **22 official languages** recognized under the Schedule.

So, the correct choice is **22 languages**.

95. Answer: a

Explanation:

Sardar Sarovar Dam Location Across Which River?

This question asks to identify the specific river that the significant Sardar Sarovar dam is constructed upon. Understanding the geography and major infrastructure projects like dams is crucial for many subjects, including geography and civil engineering. The Sardar Sarovar dam is one of the largest and most debated dam projects in India.

Identifying the River for Sardar Sarovar Dam

The Sardar Sarovar dam is a concrete gravity dam built on the **Narmada river**. This project involves several states, primarily Gujarat and Madhya Pradesh, and is a vital source of water and electricity for the region. The Narmada river flows through a significant portion of central India before emptying into the Arabian Sea.

Analysis of Options

Let's look at the options provided:

- **Narmada:** This is the correct river on which the Sardar Sarovar dam is built.
- **Tapi:** The Tapi river is another major west-flowing river in India, but the Sardar Sarovar dam is not located on it.
- **Mahi:** The Mahi river is also a significant river in western India, but it is distinct from the Narmada and does not host the Sardar Sarovar dam.
- **Karjan:** The Karjan River is a tributary of the Narmada River, and while dams exist on tributaries, the main Sardar Sarovar project is directly on the Narmada itself.

Conclusion on Sardar Sarovar Dam

Therefore, based on geographical facts and the details of the Sardar Sarovar project, the dam is unequivocally built across the **Narmada** river. This dam is a critical component of water resource management in its basin.

96. Answer: a

Explanation:

Understanding the Navratnas of Vikramaditya's Court

The question asks which of the listed individuals was NOT part of the famous 'Navratnas' or 'Nine Gems' associated with the court of the legendary King Vikramaditya. The concept of 'Navratnas' refers to a group of nine extraordinary scholars, poets, dramatists, and artists who adorned the king's court, contributing significantly to various fields of knowledge and art.

Historically, the most famous 'Navratna' court is associated with Chandragupta II, who adopted the title 'Vikramaditya' of the Gupta dynasty (circa 4th–5th century CE). While the exact list varies slightly across different texts and traditions, a commonly accepted list of the Navratnas at Vikramaditya's court includes:

- Kalidasa (Renowned playwright and poet)
- Dhanvantari (Physician)
- Kshapanaka (Astrologer)
- Amarasingha (Lexicographer)
- Shanku (Architect)
- Vetala Bhatta (Magician or scholar)
- Ghatakarpara (Poet)
- Vararuchi (Grammarians)
- Varahamihira (Astronomer/Mathematician)

Now let's examine the given options in the context of this list:

- **Option 1: Surdas** – Surdas was a 16th-century blind devotional poet and singer, known for his works dedicated to Lord Krishna. He is associated with the Bhakti movement and lived much later than the period of King Vikramaditya (Chandragupta II).
- **Option 2: Vararuchi** – Vararuchi is traditionally listed among the Navratnas. He is often identified as a Sanskrit grammarian.

- **Option 3: Kshapanaka** – Kshapanaka is also commonly mentioned as one of the Navratnas, often described as an astrologer or scholar.
- **Option 4: Kalidasa** – Kalidasa is arguably the most famous member of the Navratnas and is universally associated with Vikramaditya's court, celebrated for his epic poems and plays.

Based on the historical accounts and traditional lists of Vikramaditya's Navratnas, Surdas lived centuries after the Gupta period and was not part of that court.

Therefore, Surdas was NOT a part of the 'Navratna' at Vikramaditya's court.

Individual	Associated with Vikramaditya's Navratnas?	Brief Note
Surdas	No	16th-century devotional poet
Vararuchi	Yes	Traditionally listed as a grammarian
Kshapanaka	Yes	Traditionally listed as an astrologer/scholar
Kalidasa	Yes	Most famous poet/playwright of the court

Revision Table: Key Figures at Vikramaditya's Court

Revisiting the notable figures associated with Vikramaditya's court helps solidify understanding. The Navratnas represent the intellectual peak of that era.

Navratna Member	Field (Traditional Association)
Kalidasa	Poetry & Drama
Dhanvantari	Medicine
Kshapanaka	Astrology
Amarasingha	Lexicography
Shanku	Architecture
Vetala Bhatta	Magic/Scholarship
Ghatakarpura	Poetry
Vararuchi	Grammar
Varahamihira	Astronomy & Mathematics

Additional Information on Navratnas and the Gupta Period

The concept of 'Navratnas' symbolizes the patronage of arts and learning by a ruler. While Vikramaditya's court is famous for this, another well-known instance is the 'Navratna' of Emperor Akbar's court in the Mughal era, which included figures like Birbal, Tansen, and Todar Mal. These were different individuals from a much later period.

The Gupta period, during which Chandragupta II Vikramaditya ruled, is often referred to as the 'Golden Age' of ancient India due to the significant advancements made in arts, science, literature, and philosophy. The presence of scholars like the Navratnas at the royal court indicates the importance placed on intellectual pursuits during this time.

Understanding the key personalities of historical periods is crucial for grasping the cultural and intellectual environment of that era.

97. Answer: a

Explanation:

Mughal Emperor's Capital Shift to Fatehpur Sikri

The question asks to identify the **Mughal Emperor** who relocated his imperial court and residence from **Agra** to a new location called Sikri, which was subsequently renamed **Fatehpur Sikri**.

Understanding the Shift

During the Mughal era, the capital city often reflected the emperor's vision and strategic priorities. Moving the court was a significant undertaking, involving the relocation of administration, military, and royal household.

Emperor Akbar's Decision

The Mughal Emperor responsible for this major shift was **Akbar**. Around 1569, Akbar began the construction of a new capital city at Sikri, located about 35 kilometers west of Agra.

Several reasons contributed to this decision:

- **Personal Significance:** The site was chosen partly due to Akbar's personal connection with the Sufi saint Shaikh Salim Chishti, who resided there. It was after receiving blessings from the saint that Akbar's first son and heir, Prince Salim (later Emperor Jahangir), was born.
- **Strategic Location:** Sikri offered a potentially more defensible location compared to Agra and was situated in a region that was becoming increasingly important for the empire.
- **Architectural Vision:** Akbar intended to create a grand new capital that showcased the grandeur and power of the Mughal Empire. Fatehpur Sikri became a masterpiece of Mughal architecture, featuring stunning palaces, mosques, and administrative buildings.

Akbar officially moved his court to Fatehpur Sikri in 1571, making it the Mughal capital until 1585 when it was abandoned due to issues with water supply and strategic considerations. However, the move cemented Fatehpur Sikri's place in history as a city founded and established by Akbar.

Other Mughal Emperors

The other emperors listed had different primary residences and capitals:

- **Jahangir:** While he spent time in Fatehpur Sikri, his reign primarily saw the court based in Agra and Lahore.
- **Shahjahan:** Known for building Shahjahanabad (Old Delhi) as his capital, shifting the centre of power from Agra.
- **Aurangzeb:** His capital was primarily Aurangabad in the Deccan, although he also operated from Delhi.

Therefore, **Akbar** is the correct answer as the Mughal Emperor who initiated the shift and construction of the capital at Sikri, later Fatehpur Sikri.

98. Answer: c

Explanation:

The correct answer is Roopa Unnikrishnan

- Roopa Unnikrishnan is the first Indian female athlete to win the first gold medal in the Commonwealth.

★ Key Points

- Roopa Unnikrishnan became the first Indian woman to win a gold medal at the Commonwealth Games, clinching the 50m rifle prone title at CWG 1998 in Kuala Lumpur.
- India had been participating in the Commonwealth Games since 1934 but no Indian woman had stood on top of the podium in 11 appearances.
- The Indian shooter was bestowed with the **Arjuna Award** on her return.



★ Additional Information

- Vinesh Phogat was the first Indian woman wrestler to win gold in both Commonwealth and Asian Games.
 - She is also the first woman to be nominated for Laureus World Sports Awards in 2019 .
- Manika Batra is a table tennis player.
 - She was awarded the Major Dhyan Chand Khel Ratna in the year 2020.
- PV Sindhu is the first and only Indian to become the Badminton World Champion .
 - She is only the second individual athlete from India to win two consecutive medals at the Olympic Games.

99. Answer: d

Explanation:

America's Cup Association with Sailing

The **America's Cup** is one of the oldest and most prestigious international trophies in the world of sports. It is a one-on-one sailing yacht race with a history dating back

to 1851.

Understanding the America's Cup

The competition involves two sailing yacht clubs: one representing the current defender of the Cup and the other being the challenger. The challenger must win a series of preliminary races (known as the Louis Vuitton Cup) to earn the right to face the defender in the America's Cup match.

Key aspects of the America's Cup include:

- **Type of Competition:** It's a match race between two sailing yachts.
- **Historical Significance:** The oldest active trophy in international sport.
- **Technology and Innovation:** Teams invest heavily in designing and building cutting-edge racing yachts, pushing the boundaries of naval architecture and sailing technology.
- **Global Event:** It attracts significant international attention and participation from various countries.

Correct Sport Identification

When considering the options provided:

- **Baseball:** This is a bat-and-ball game, completely unrelated to the America's Cup.
- **Football:** This typically refers to sports like soccer or American football, which involve kicking or throwing a ball and are not connected to the America's Cup.
- **Swimming:** This is an aquatic sport involving propelling oneself through water, which is different from the yacht racing associated with the America's Cup.
- **Sailing:** This sport involves racing boats propelled by wind using sails. The America's Cup is exclusively a **sailing** event, showcasing high-performance yacht racing.

Therefore, the **game** or sport fundamentally associated with the **America's Cup** is **sailing**.

100. Answer: c

Explanation:

Understanding the Green Planet in Our Solar System

The question asks to identify the planet in our solar system that is known as the "green planet". The color of a planet as viewed from space depends on the composition of its atmosphere and surface.

Why Planets Appear Different Colors

Planets have different appearances because of what they are made of and how their atmospheres interact with sunlight. For example:

- Rocky planets like Earth and Mars have colors influenced by their surface materials (like rocks, water, or iron oxide).
- Gas giants like Jupiter and Saturn show colors from clouds made of different chemicals high in their atmospheres.
- Ice giants like Uranus and Neptune appear blue or green due to gases like methane in their upper atmospheres, which absorb red light and reflect blue/green light.

Analyzing the Options

Let's look at the typical appearance of the planets listed in the options:

Planet	Typical Appearance/Color	Reason for Color
Earth	Blue and white	Oceans (blue), clouds and ice (white), land (green/brown)
Jupiter	Orange, white, and brown bands	Clouds of ammonia and other chemicals
Uranus	Bluish-green	Methane in the atmosphere absorbs red light and reflects blue/green light
Saturn	Pale yellow/gold with rings	Ammonia crystal clouds

Identifying the Green Planet

Based on their appearance, Uranus is often described as having a bluish-green color. This distinctive hue comes from the presence of methane gas in its upper atmosphere. Methane absorbs red and orange wavelengths of light from the Sun, while reflecting blue and green wavelengths back into space. This reflected light is what we see, making Uranus appear bluish-green.

While Neptune is also blue due to methane, Uranus is the one among the given options that fits the description of a "green planet" or more accurately, bluish-green, distinguishing it from the other choices.

Conclusion

Considering the typical colors of the planets in our solar system, Uranus is the planet known for its distinct bluish-green appearance due to methane in its atmosphere. Therefore, it is often referred to in this context.

Revision Table: Planets and Appearance

Planet	Common Description	Primary Color Cause
Earth	Blue Planet	Water, atmosphere
Jupiter	Giant with Great Red Spot	Cloud chemistry
Uranus	Sideways planet, Bluish-green	Methane absorption
Saturn	Ringed planet	Cloud chemistry

Additional Information on Uranus and its Color

Uranus is the seventh planet from the Sun. It is classified as an ice giant, along with Neptune. Its atmosphere is primarily made up of hydrogen and helium, with a significant amount of methane (about 2.3%). This methane plays a crucial role in the planet's color.

The term "green planet" for Uranus highlights its visual characteristic when observed through telescopes or spacecraft. While not purely green, the mix of blue and green wavelengths reflected makes this description common.

Uranus also has a unique tilt, causing it to essentially orbit the Sun on its side. This extreme axial tilt leads to very unusual seasons.

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