# CMAT 2026 Question Paper with Solutions

| **Time Allowed :** 3 Hours | **Maximum Marks :** 100 |
|---|---|

## General Instructions

**CMAT Exam Instructions**

1. The CMAT exam is 3 hours long and consists of 100 questions.
2. The exam is divided into four sections:
   - **Quantitative Techniques & Data Interpretation:** 25 questions, 40 minutes
   - **Logical Reasoning:** 25 questions, 30 minutes
   - **Language Comprehension:** 25 questions, 30 minutes
   - **General Awareness:** 25 questions, 30 minutes
3. You can answer questions in any order across the sections.
4. There is no break between sections.
5. Review and edit questions only within the given time for each section.
6. The system will automatically submit your answers when time is up.

**1. Sudhir purchased a chair with 3 successive discounts of 20%, 12.5% and 5%. Find the equivalent single discount.**

(A) 33.5%
(B) 30%
(C) 32%
(D) 35%

**Correct Answer:** (A) 33.5%

**Solution:**
**Step 1: Understanding successive discounts.**
Successive discounts are not added directly. Each discount is applied on the reduced price obtained after the previous discount. Therefore, to find the equivalent single discount, we use the concept of multiplying remaining price factors.
**Step 2: Convert discounts into price factors.**
A discount of 20% means the customer pays 80% of the marked price, so the price factor is 0.80.
A discount of 12.5% means the customer pays 87.5% of the reduced price, so the price factor is 0.875.
A discount of 5% means the customer pays 95% of the reduced price, so the price factor is 0.95.
**Step 3: Multiply all price factors.**

$$\text{Net price factor} = 0.80 \times 0.875 \times 0.95$$

**Step 4: Perform the calculation step by step.**

$$0.80 \times 0.875 = 0.70$$

$$0.70 \times 0.95 = 0.665$$

**Step 5: Find the equivalent discount.**
The final price paid is 66.5% of the marked price.
Therefore, the equivalent single discount is:

$$100\% - 66.5\% = 33.5\%$$

**Step 6: Final conclusion.**
Hence, the equivalent single discount corresponding to the three successive discounts is **33.5%**.

Quick Tip

For successive discounts, never add the percentages. Always multiply the remaining price factors and subtract the result from 100% to get the equivalent single discount.

**2. Calculate the value of:**

$$\frac{\sqrt{\sqrt{5}+2}+\sqrt{\sqrt{5}-2}}{\sqrt{\sqrt{5}+1}}$$

(A) 1
(B) $\sqrt{2}$
(C) 4
(D) $\sqrt{5}$

**Correct Answer:** (B) $\sqrt{2}$

**Solution:**
**Step 1: Let us analyze the given expression carefully.**
The numerator consists of two square root terms involving $\sqrt{5}$, and the denominator also involves a square root expression. Our aim is to simplify the expression step by step.
**Step 2: Observe a useful identity.**
For expressions of the form $\sqrt{a+b}+\sqrt{a-b}$, squaring the expression helps in simplification.
**Step 3: Let**

$$x = \sqrt{\sqrt{5}+2}+\sqrt{\sqrt{5}-2}$$

**Step 4: Square the value of $x$.**

$$x^2 = (\sqrt{\sqrt{5}+2}+\sqrt{\sqrt{5}-2})^2$$

$$x^2 = (\sqrt{5}+2)+(\sqrt{5}-2)+2\sqrt{(\sqrt{5}+2)(\sqrt{5}-2)}$$

$$x^2 = 2\sqrt{5}+2\sqrt{5-4}$$

$$x^2 = 2\sqrt{5}+2\sqrt{1}$$

$$x^2 = 2\sqrt{5}+2$$

**Step 5: Take square root.**

$$x = \sqrt{2(\sqrt{5}+1)}$$

**Step 6: Substitute back into the original expression.**

$$\frac{\sqrt{2(\sqrt{5}+1)}}{\sqrt{\sqrt{5}+1}}$$

**Step 7: Simplify the fraction.**

$$= \sqrt{2}$$

**Step 8: Final conclusion.**

Hence, the value of the given expression is $\sqrt{2}$.

**Quick Tip**

Whenever you see expressions like $\sqrt{a+b}+\sqrt{a-b}$, squaring the expression often makes simplification easy and avoids complex algebra.

---

**3. Consider the following statements:**
**A)** There exists a smallest natural number.
**B)** There exists a largest natural number.
**C)** Every rational number is also a real number.
**D)** Between two consecutive natural numbers, there is always a natural number.

(A) A only
(B) C only
(C) B and D only
(D) A and C only

**Correct Answer:** (D) A and C only

**Solution:**
**Step 1: Analyze Statement A.**
Natural numbers are defined as $1, 2, 3, 4, \ldots$.
Clearly, the smallest natural number is 1.
Hence, Statement A is **true**.
**Step 2: Analyze Statement B.**
Natural numbers continue endlessly and do not terminate.
For any natural number $n$, there always exists a natural number $n+1$.
Therefore, there is no largest natural number.
Hence, Statement B is **false**.
**Step 3: Analyze Statement C.**
Rational numbers are numbers that can be written in the form $\frac{p}{q}$, where $p, q$ are integers and $q \neq 0$.
All rational numbers lie on the real number line.
Thus, every rational number is a real number.
Hence, Statement C is **true**.
**Step 4: Analyze Statement D.**
Consecutive natural numbers differ by exactly 1.
For example, between 3 and 4, there is no natural number.
Therefore, it is not possible to find a natural number between two consecutive natural numbers.
Hence, Statement D is **false**.
**Step 5: Final evaluation.**
Statement A is true.
Statement B is false.

Statement C is true.
Statement D is false.
Therefore, the correct combination of true statements is **A and C only**.

**Quick Tip**

Remember: Natural numbers have a smallest element but no largest element, and there is no natural number between two consecutive natural numbers.

---

**4. Four electronic devices make a beep after every 30 minutes, 1 hour, 1.5 hours and 1 hour 45 minutes respectively. All beeped together at 12 noon. At what time will they again beep together?**

(A) 12 Midnight
(B) 3 AM
(C) 6 AM
(D) 9 AM

**Correct Answer:** (D) 9 AM

**Solution:**
**Step 1: Convert all time intervals into minutes.**
The first device beeps every 30 minutes.
The second device beeps every 1 hour, which is equal to 60 minutes.
The third device beeps every 1.5 hours, which is equal to 90 minutes.
The fourth device beeps every 1 hour 45 minutes, which is equal to 105 minutes.
**Step 2: Write the intervals clearly.**
The time intervals are:
30 minutes, 60 minutes, 90 minutes, and 105 minutes.
**Step 3: Find the LCM of the given intervals.**
Prime factorization:

$$30 = 2 \times 3 \times 5$$

$$60 = 2^2 \times 3 \times 5$$

$$90 = 2 \times 3^2 \times 5$$

$$105 = 3 \times 5 \times 7$$

**Step 4: Take the highest powers of all prime factors.**

$$\text{LCM} = 2^2 \times 3^2 \times 5 \times 7$$

$$= 4 \times 9 \times 5 \times 7$$

$$= 1260 \text{ minutes}$$

**Step 5: Convert LCM into hours.**

$$1260 \div 60 = 21 \text{ hours}$$

**Step 6: Add the time interval to the starting time.**
All devices beeped together at 12 noon.
After 21 hours from 12 noon, the time will be:

$$12 \text{ noon} + 21 \text{ hours} = 9 \text{ AM (next day)}$$

**Step 7: Final conclusion.**
Hence, all four electronic devices will beep together again at **9 AM**.

Quick Tip

Whenever multiple events repeat at fixed intervals, convert all intervals into the same unit and find their LCM to determine when they occur together again.

---

**5. If**

$$A + \frac{1}{B + \frac{1}{C-9}} = \frac{29}{5}$$

**then find the value of** $A + B + C$.

(A) 17
(B) 12
(C) 19
(D) 28

**Correct Answer:** (C) 19

**Solution:**
**Step 1: Convert the given fraction into a mixed number.**

$$\frac{29}{5} = 5 + \frac{4}{5}$$

This means the integer part of the expression is 5.
**Step 2: Compare integer parts.**
Since the expression is

$$A + \frac{1}{B + \frac{1}{C-9}}$$

and the integer part of the RHS is 5, we get:

$$A = 5$$

**Step 3: Compare the fractional parts.**

$$\frac{1}{B+\frac{1}{C-9}} = \frac{4}{5}$$

**Step 4: Take reciprocal of both sides.**

$$B + \frac{1}{C-9} = \frac{5}{4}$$

**Step 5: Split the mixed fraction.**

$$\frac{5}{4} = 1 + \frac{1}{4}$$

Thus,

$$B = 1$$

**Step 6: Compare remaining fractional parts.**

$$\frac{1}{C-9} = \frac{1}{4}$$

**Step 7: Take reciprocal again.**

$$C - 9 = 4$$

$$C = 13$$

**Step 8: Find the required sum.**

$$A + B + C = 5 + 1 + 13$$

$$= 19$$

**Step 9: Final conclusion.**
Hence, the required value of $A + B + C$ is **19**.

Quick Tip

In nested fractions, first convert the given value into a mixed number. Compare integer and fractional parts step-by-step to easily find unknowns.

---

**6. If the height and radius of a right circular cylinder are equal and its volume is $\frac{176}{7}$ cm$^3$, find the diameter of the cylinder.**

(A) 4 cm
(B) 8 cm
(C) 2 cm
(D) 5 cm

**Correct Answer:** (A) 4 cm

**Solution:**
**Step 1: Write the formula for volume of a right circular cylinder.**
The volume $V$ of a cylinder is given by:

$$V = \pi r^2 h$$

**Step 2: Use the given condition that height equals radius.**
It is given that:

$$h = r$$

Substitute $h = r$ into the volume formula.
**Step 3: Substitute known values into the formula.**

$$\pi r^2 r = \frac{176}{7}$$

$$\pi r^3 = \frac{176}{7}$$

**Step 4: Substitute the value of $\pi$.**
Taking $\pi = \frac{22}{7}$, we get:

$$\frac{22}{7} r^3 = \frac{176}{7}$$

**Step 5: Simplify the equation.**
Multiply both sides by 7 to cancel the denominator.

$$22r^3 = 176$$

$$r^3 = 8$$

**Step 6: Find the value of the radius.**

$$r = \sqrt[3]{8} = 2 \text{ cm}$$

**Step 7: Find the diameter of the cylinder.**
The diameter is given by:

$$d = 2r$$

$$d = 2 \times 2 = 4 \text{ cm}$$

**Step 8: Final conclusion.**
Hence, the diameter of the cylinder is **4 cm**.

Quick Tip

When height and radius of a cylinder are equal, the volume formula simplifies to $V = \pi r^3$, which makes calculations faster.

**7. A person buys two watches for Rs. 1000 in total. He sells one watch at a loss of 5% and the other at a gain of 20%. On the whole, he gains Rs. 50. Find the cost prices of the two watches.**

(A) Rs. 700 and Rs. 300
(B) Rs. 500 and Rs. 500
(C) Rs. 600 and Rs. 400
(D) Rs. 450 and Rs. 550

**Correct Answer:** (C) Rs. 600 and Rs. 400

**Solution:**
**Step 1: Assume the cost prices of the two watches.**
Let the cost price of the first watch be Rs. $x$.
Then the cost price of the second watch will be Rs. $(1000 - x)$.
**Step 2: Calculate selling price of the first watch.**
The first watch is sold at a loss of 5%.
Therefore, selling price of the first watch is:

$$\text{SP}_1 = 0.95x$$

**Step 3: Calculate selling price of the second watch.**
The second watch is sold at a gain of 20%.
Therefore, selling price of the second watch is:

$$\text{SP}_2 = 1.20(1000 - x)$$

**Step 4: Use the condition of overall gain.**
Total gain is Rs. 50, so total selling price is:

$$1000 + 50 = 1050$$

**Step 5: Form the equation using total selling price.**

$$0.95x + 1.20(1000 - x) = 1050$$

**Step 6: Simplify the equation.**

$$0.95x + 1200 - 1.20x = 1050$$

$$-0.25x + 1200 = 1050$$

$$-0.25x = -150$$

**Step 7: Solve for $x$.**

$$x = 600$$

**Step 8: Find the cost price of the second watch.**

$$1000 - 600 = 400$$

**Step 9: Final conclusion.**
Hence, the cost prices of the two watches are Rs. 600 and Rs. 400 respectively.

**Quick Tip**

When different profit and loss percentages are involved, assume one cost price as a variable and use total selling price to form a single equation.

---

**8. Sum of three consecutive odd numbers is always divisible by:**

**A)** 2
**B)** 3
**C)** 5
**D)** 6

(A) A and B only
(B) B and D only
(C) B only
(D) A and C only

**Correct Answer:** (C) B only

**Solution:**
**Step 1: Assume three consecutive odd numbers.**
Let the three consecutive odd numbers be:

$$(2n + 1), (2n + 3), (2n + 5)$$

**Step 2: Find their sum.**

$$(2n + 1) + (2n + 3) + (2n + 5)$$

$$= 6n + 9$$

**Step 3: Factorize the sum.**

$$6n + 9 = 3(2n + 3)$$

**Step 4: Check divisibility by given numbers.**
**Divisibility by 2:**
The expression $3(2n + 3)$ is not always even.
Hence, it is not always divisible by 2.
**Divisibility by 3:**
Since the sum is a multiple of 3, it is always divisible by 3.

**Divisibility by 5:**
The expression does not always contain factor 5.
Hence, it is not always divisible by 5.
**Divisibility by 6:**
To be divisible by 6, the number must be divisible by both 2 and 3.
Since it is not always divisible by 2, it is not divisible by 6.
**Step 5: Final evaluation.**
Only statement B is always true.
**Step 6: Final conclusion.**
Hence, the correct answer is **B only**.

Quick Tip

Whenever dealing with consecutive numbers, express them algebraically and factorize the sum to check divisibility conditions easily.

---

**9. Even after reducing the marked price by Rs. 32, a shopkeeper makes a profit of 15%. If the cost price (C.P.) is Rs. 320, what would be the percentage profit if the item is sold at the marked price?**

(A) 25%
(B) 30%
(C) 27%
(D) 28%

**Correct Answer:** (A) 25%

**Solution:**
**Step 1: Write the given cost price.**
The cost price of the item is Rs. 320.
**Step 2: Calculate the selling price after reduction.**
Even after reducing the marked price by Rs. 32, the shopkeeper makes a profit of 15%.
Therefore, selling price after reduction is:

$$\text{SP}_{\text{reduced}} = 320 \times \frac{115}{100}$$

$$\text{SP}_{\text{reduced}} = 368$$

**Step 3: Find the marked price.**
The reduced selling price is Rs. 32 less than the marked price.
Therefore, marked price is:

$$\text{MP} = 368 + 32 = 400$$

**Step 4: Calculate profit when sold at marked price.**
Profit at marked price is:

$$400 - 320 = 80$$

**Step 5: Calculate the profit percentage at marked price.**

$$\text{Profit } \% = \frac{80}{320} \times 100$$

$$\text{Profit } \% = 25\%$$

**Step 6: Final conclusion.**
Hence, the percentage profit if the item is sold at the marked price is **25%**.

**Quick Tip**

If profit is given after discount, first find the reduced selling price, then add back the discount to get the marked price before calculating the final profit.

---

**10. Four coins are tossed. What is the probability that two consecutive heads never occur together?**

(A) $\frac{7}{8}$
(B) $\frac{1}{4}$
(C) $\frac{1}{3}$
(D) $\frac{1}{2}$

**Correct Answer:** (D) $\frac{1}{2}$

**Solution:**
**Step 1: Find the total number of possible outcomes.**
Each coin has two possible outcomes: Head (H) or Tail (T).
Since four coins are tossed, total possible outcomes are:

$$2^4 = 16$$

**Step 2: List all outcomes where two heads do NOT occur together.**
We must exclude all outcomes containing consecutive heads (HH).
Let us list all valid outcomes carefully.
**Valid outcomes without consecutive heads are:**
TTTT
TTTH
TTHT
THTT
HTTT

THTH
HTHT
HTTH

**Step 3: Count the favorable outcomes.**

The total number of favorable outcomes is 8.

**Step 4: Compute the probability.**

$$\text{Probability} = \frac{\text{Favorable outcomes}}{\text{Total outcomes}}$$

$$= \frac{8}{16}$$

$$= \frac{1}{2}$$

**Step 5: Final conclusion.**

Hence, the probability that two consecutive heads never occur together is $\frac{1}{2}$.

**Quick Tip**

In probability questions involving restrictions, always list valid outcomes carefully instead of subtracting blindly. This avoids counting errors.

---

**11. In Kendriya Vidyalaya (K.V.), Ujjain, 20% students are athletes. In Navodaya Vidyalaya (N.V.), Ujjain, 25% students are athletes. If N.V. has 60% more students than K.V., then the number of athletes in N.V. is what percent of athletes in K.V.?**

(A) 50%
(B) 100%
(C) 200%
(D) 400%

**Correct Answer:** (C) 200%

**Solution:**

**Step 1: Assume the total number of students in K.V.**

Let the total number of students in Kendriya Vidyalaya be 100.

**Step 2: Find the number of athletes in K.V.**

Given that 20% of K.V. students are athletes.

$$\text{Athletes in K.V.} = 20\% \text{ of } 100 = 20$$

**Step 3: Find the total number of students in N.V.**

N.V. has 60% more students than K.V.

$$\text{Total students in N.V.} = 100 + 60 = 160$$

**Step 4: Find the number of athletes in N.V.**
Given that 25% of N.V. students are athletes.

$$\text{Athletes in N.V.} = 25\% \text{ of } 160$$

$$= \frac{25}{100} \times 160 = 40$$

**Step 5: Compare athletes in N.V. with athletes in K.V.**
Athletes in K.V. = 20
Athletes in N.V. = 40
**Step 6: Find required percentage.**

$$\text{Required percentage} = \frac{40}{20} \times 100$$

$$= 200\%$$

**Step 7: Final conclusion.**
Hence, the number of athletes in Navodaya Vidyalaya is **200%** of the number of athletes in Kendriya Vidyalaya.

**Quick Tip**

In percentage comparison problems, assume a convenient base value (like 100) to simplify calculations and avoid algebra.

---

**12. 85 litres of a mixture contain milk and water in the ratio 27:7. How much water is required to be added so that the resulting mixture contains milk and water in the ratio 3:1?**

(A) 6 L
(B) 8 L
(C) 4 L
(D) 5 L

**Correct Answer:** (D) 5 L

**Solution:**
**Step 1: Understand the given ratio of milk and water.**
The ratio of milk to water in the mixture is given as 27 : 7.
The total parts of the mixture are:

$$27 + 7 = 34$$

**Step 2: Find the quantity of milk and water in the mixture.**
Total mixture = 85 litres.
Milk in the mixture is:

$$\frac{27}{34} \times 85 = 67.5 \text{ litres}$$

Water in the mixture is:

$$\frac{7}{34} \times 85 = 17.5 \text{ litres}$$

**Step 3: Note that only water is added.**
When water is added, the quantity of milk remains unchanged.
Milk will remain equal to 67.5 litres.
**Step 4: Use the new ratio of milk and water.**
The required final ratio of milk to water is $3 : 1$.
This means water must be one-third of the milk quantity.
**Step 5: Find the required final quantity of water.**

$$\text{Required water} = \frac{1}{3} \times 67.5 = 22.5 \text{ litres}$$

**Step 6: Find the amount of water to be added.**
Initially, water = 17.5 litres.
Final water required = 22.5 litres.

$$\text{Water to be added} = 22.5 - 17.5 = 5 \text{ litres}$$

**Step 7: Final conclusion.**
Hence, the amount of water required to be added is **5 litres**.

Quick Tip

In mixture problems, remember that when only one component is added, the quantity of the other component remains constant. Use this fact to form ratios easily.

---

**13. What is the unit digit of $(234)^{100} + (234)^{101}$?**

(A) 6
(B) 2
(C) 4
(D) 0

**Correct Answer:** (D) 0

**Solution:**
**Step 1: Observe that only the unit digit matters.**
To find the unit digit of large powers, we only need the unit digit of the base number.
The unit digit of 234 is 4.
**Step 2: Rewrite the expression using unit digits.**

$$(234)^{100} + (234)^{101}$$

becomes

$$4^{100} + 4^{101}$$

**Step 3: Find the pattern of powers of 4.**

$$4^1 = 4$$

$$4^2 = 16 \Rightarrow \text{unit digit } = 6$$

$$4^3 = 64 \Rightarrow \text{unit digit } = 4$$

$$4^4 = 256 \Rightarrow \text{unit digit } = 6$$

Thus, the unit digits repeat in a cycle of 2:

$$4, 6, 4, 6, \ldots$$

**Step 4: Determine the unit digit of $4^{100}$.**
Since 100 is even,

$$4^{100} \text{ has unit digit } 6$$

**Step 5: Determine the unit digit of $4^{101}$.**
Since 101 is odd,

$$4^{101} \text{ has unit digit } 4$$

**Step 6: Add the unit digits.**

$$6 + 4 = 10$$

**Step 7: Find the final unit digit.**
The unit digit of 10 is 0.
**Step 8: Final conclusion.**
Hence, the unit digit of $(234)^{100} + (234)^{101}$ is **0**.

Quick Tip

For unit digit problems, ignore all digits except the last one and use cyclic patterns of powers to simplify calculations.

---

**14. Raman can do a piece of work in 16 days, Satish in 8 days, while Ashok can do it in 32 days. All started together but Satish left after 2 days. Raman left 3 days before the completion of the work. How long did it take to complete the entire work?**

(A) 8 days
(B) 10 days
(C) 12 days
(D) 14 days

**Correct Answer:** (B) 10 days

**Solution:**
**Step 1: Write individual one-day work rates.**
Raman can complete the work in 16 days, so his one-day work is $\frac{1}{16}$.
Satish can complete the work in 8 days, so his one-day work is $\frac{1}{8}$.
Ashok can complete the work in 32 days, so his one-day work is $\frac{1}{32}$.
**Step 2: Work done by all three in the first 2 days.**
Combined one-day work of all three is:

$$\frac{1}{16} + \frac{1}{8} + \frac{1}{32}$$

$$= \frac{2+4+1}{32} = \frac{7}{32}$$

Work done in 2 days is:

$$2 \times \frac{7}{32} = \frac{14}{32} = \frac{7}{16}$$

**Step 3: Work remaining after 2 days.**

$$1 - \frac{7}{16} = \frac{9}{16}$$

**Step 4: Raman leaves 3 days before completion.**
Let total time taken to complete the work be $x$ days.
Then Raman worked for $(x-3)$ days.
Satish worked only for 2 days.
Ashok worked for all $x$ days.
**Step 5: Total work equation.**

$$\frac{x-3}{16} + \frac{2}{8} + \frac{x}{32} = 1$$

**Step 6: Simplify the equation.**

$$\frac{x-3}{16} + \frac{1}{4} + \frac{x}{32} = 1$$

Multiply entire equation by 32 to clear denominators.

$$2(x-3) + 8 + x = 32$$

**Step 7: Solve the equation.**

$$2x - 6 + 8 + x = 32$$

$$3x + 2 = 32$$

$$3x = 30$$

$$x = 10$$

**Step 8: Final conclusion.**
Hence, the total time taken to complete the work is **10 days**.

**Quick Tip**

In work problems where people leave at different times, always assume total time as a variable and form a single work-equation using individual working durations.

---

**15. Find the value of:**

$$\frac{5}{2^2 \cdot 3^2} + \frac{7}{3^2 \cdot 4^2} + \frac{9}{4^2 \cdot 5^2} + \frac{11}{5^2 \cdot 6^2} + \frac{13}{6^2 \cdot 7^2} + \frac{15}{7^2 \cdot 8^2}$$

(A) $\frac{1}{64}$
(B) $\frac{15}{64}$
(C) $\frac{15}{16}$
(D) $\frac{7}{64}$

**Correct Answer:** (B) $\frac{15}{64}$

**Solution:**
**Step 1: Observe the general pattern of the terms.**
Each denominator is of the form $n^2(n+1)^2$.
Each numerator follows the pattern $2n+1$.
**Step 2: Use algebraic identity.**
We know that:

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

**Step 3: Rewrite each term using the identity.**

$$\frac{2n+1}{n^2(n+1)^2} = \frac{(n+1)^2 - n^2}{n^2(n+1)^2}$$

**Step 4: Split each term into partial fractions.**

$$= \frac{1}{n^2} - \frac{1}{(n+1)^2}$$

**Step 5: Rewrite the entire series.**

$$\left(\frac{1}{2^2}-\frac{1}{3^2}\right)+\left(\frac{1}{3^2}-\frac{1}{4^2}\right)+\left(\frac{1}{4^2}-\frac{1}{5^2}\right)$$
$$+\left(\frac{1}{5^2}-\frac{1}{6^2}\right)+\left(\frac{1}{6^2}-\frac{1}{7^2}\right)+\left(\frac{1}{7^2}-\frac{1}{8^2}\right)$$

**Step 6: Apply telescoping cancellation.**
All intermediate terms cancel out.
Remaining terms are:

$$\frac{1}{2^2}-\frac{1}{8^2}$$

**Step 7: Simplify the remaining expression.**

$$\frac{1}{4}-\frac{1}{64}$$
$$=\frac{16-1}{64}$$
$$=\frac{15}{64}$$

**Step 8: Final conclusion.**
Hence, the value of the given expression is $\frac{15}{64}$.

**Quick Tip**

Whenever you see expressions of the form $\frac{2n+1}{n^2(n+1)^2}$, try rewriting the numerator using the identity $(n+1)^2-n^2$. This converts the series into a telescoping one.

---

**16. The following table provides information about the number of cars sold by four dealers P, Q, R and S.**

| Months | P | Q | R | S | Total |
|---|---|---|---|---|---|
| Jan | 102 | 92 | 95 | 107 | 396 |
| Feb | 94 | 96 | 104 | 106 | 400 |
| March | 85 | 94 | 100 | 90 | 369 |
| Apr | 108 | 97 | 99 | 96 | 400 |
| May | 98 | 102 | 100 | 89 | 389 |
| June | 95 | 108 | 102 | 91 | 396 |

**Total number of cars sold by P during February to June is what percent more than the total number of cars sold by all dealers in June?**

(A) 17.5
(B) 25.3
(C) 24.4

(D) 21.2

**Correct Answer:** (D) 21.2

**Solution:**
**Step 1: Note the cars sold by dealer P from February to June.**
From the table:
February = 94
March = 85
April = 108
May = 98
June = 95
**Step 2: Find the total cars sold by P from February to June.**

$$94 + 85 + 108 + 98 + 95 = 480$$

**Step 3: Find the total cars sold by all dealers in June.**
From the table, total cars sold in June = 396
**Step 4: Find the difference between the two quantities.**

$$480 - 396 = 84$$

**Step 5: Apply percentage more formula.**
Percentage more is calculated as:

$$\frac{\text{Difference}}{\text{Original value}} \times 100$$

**Step 6: Substitute the values.**

$$\frac{84}{396} \times 100$$

**Step 7: Simplify the calculation.**

$$\frac{84}{396} = \frac{7}{33}$$

$$\frac{7}{33} \times 100 \approx 21.21\%$$

**Step 8: Final conclusion.**
Hence, the total number of cars sold by P during February to June is approximately **21.2%** more than the total number of cars sold by all dealers in June.

**Quick Tip**

In data-interpretation percentage comparison problems, always identify the correct base value before applying the percentage formula.

**General Awareness:**

**17. Match List I with List II and choose the correct answer:**

| | List I | | List II |
|---|---|---|---|
| A. | Adventures of Tom Sawyer | I. | Khaled Hosseini |
| B. | Paradise Lost | II. | Charles Dickens |
| C. | Oliver Twist | III. | Mark Twain |
| D. | The Kite Runner | IV. | John Milton |

(A) A–III, B–I, C–II, D–IV
(B) A–IV, B–II, C–I, D–III
(C) A–I, B–II, C–IV, D–III
(D) A–III, B–IV, C–II, D–I

**Correct Answer:** (D) A–III, B–IV, C–II, D–I

**Solution:**
**Step 1: Match "Adventures of Tom Sawyer".**
The novel *Adventures of Tom Sawyer* was written by Mark Twain.
Therefore, A matches with III.
**Step 2: Match "Paradise Lost".**
*Paradise Lost* is an epic poem written by John Milton.
Therefore, B matches with IV.
**Step 3: Match "Oliver Twist".**
*Oliver Twist* is a famous novel written by Charles Dickens.
Therefore, C matches with II.
**Step 4: Match "The Kite Runner".**
*The Kite Runner* is a modern novel written by Khaled Hosseini.
Therefore, D matches with I.
**Step 5: Final matching.**
A–III, B–IV, C–II, D–I
**Step 6: Final conclusion.**
Hence, the correct matching is given in option **(D)**.

Quick Tip

In match-the-following questions, first identify the most familiar pairs to eliminate incorrect options quickly.

---

**18. Consider the following statements about Bio-energy:**

**S1:** When magma comes out on the earth's surface, tremendous heat is released which can be successfully tapped and converted into bio-energy.
**S2:** Bio-energy is also derived from agricultural residue, municipal, industrial and other waste and garbage.

(A) Both are correct

(B) Both are incorrect
(C) S1 is correct and S2 is not correct
(D) S2 is correct and S1 is not correct

**Correct Answer:** (D) S2 is correct and S1 is not correct

**Solution:**
**Step 1: Analyse Statement S1.**
Statement S1 talks about the heat released when magma comes out on the earth's surface.
Such heat energy is related to **geothermal energy**, not bio-energy.
Bio-energy is produced from biological sources such as plants, animal waste, and organic matter.
Therefore, converting magma heat into bio-energy is scientifically incorrect.
Hence, Statement S1 is **incorrect**.
**Step 2: Analyse Statement S2.**
Statement S2 says that bio-energy is derived from agricultural residue, municipal waste, industrial waste, and garbage.
This is correct because bio-energy is obtained from biodegradable organic matter.
Examples include crop residues, animal dung, sewage waste, and organic municipal waste.
These materials are commonly used to produce biogas, biofuels, and biomass energy.
Hence, Statement S2 is **correct**.
**Step 3: Compare both statements.**
Statement S1 is incorrect because it confuses geothermal energy with bio-energy.
Statement S2 is correct as it correctly defines sources of bio-energy.
**Step 4: Final conclusion.**
Therefore, the correct option is **(D) S2 is correct and S1 is not correct**.

**Quick Tip**

Always distinguish between renewable energy types: **bio-energy** comes from biological waste, while **geothermal energy** comes from heat inside the earth.

---

**19. Match List I (Personalities) with List II (Known as) and choose the correct option:**

| List I | | List II | |
|---|---|---|---|
| A. | J.C. Kumarappa | I. | Milkman of India |
| B. | Chaudhary Charan Singh | II. | Founder of Indian Statistical Institute |
| C. | Verghese Kurien | III. | Author of Economy of Permanence |
| D. | P.C. Mahalanobis | IV. | Founder of Bharatiya Lok Dal |

(A) A–III, B–IV, C–I, D–II
(B) A–III, B–IV, C–II, D–I
(C) A–IV, B–III, C–II, D–I
(D) A–IV, B–III, C–I, D–II

**Correct Answer:** (A) A–III, B–IV, C–I, D–II

**Solution:**

**Step 1: J.C. Kumarappa.**
J.C. Kumarappa was a renowned Gandhian economist and thinker.
He strongly advocated village-based and sustainable economic development.
He authored the famous book *Economy of Permanence*.
Therefore, J.C. Kumarappa correctly matches with III.
**Step 2: Chaudhary Charan Singh.**
Chaudhary Charan Singh was an important Indian political leader and former Prime Minister.
He founded the political party known as the *Bharatiya Lok Dal*.
His ideology focused on farmers and rural development.
Therefore, Chaudhary Charan Singh correctly matches with IV.
**Step 3: Verghese Kurien.**
Verghese Kurien is popularly known as the *Milkman of India*.
He played a historic role in the White Revolution and Operation Flood programme.
His efforts transformed India into one of the largest milk producers in the world.
Therefore, Verghese Kurien correctly matches with I.
**Step 4: P.C. Mahalanobis.**
P.C. Mahalanobis was a world-famous Indian statistician and planner.
He established the Indian Statistical Institute (ISI) in Kolkata.
He also played a key role in India's Five-Year Plans.
Therefore, P.C. Mahalanobis correctly matches with II.
**Step 5: Final matching sequence.**
A–III, B–IV, C–I, D–II
**Step 6: Final conclusion.**
Hence, the correct answer is option **(A)**.

Quick Tip

For personality-based match questions, remember famous titles and institutions first, as they are the easiest clues for correct pairing.

---

**20. Arrange the following battles in chronological order:**

A. Battle of Haldighati
B. Battle of Chausa
C. First Battle of Mysore
D. First Battle of Tarain
E. Battle of Plassey

(A) D, B, C, E, A
(B) A, C, B, D, E
(C) C, D, A, B, E
(D) D, B, A, E, C

**Correct Answer:** (D) D, B, A, E, C

**Solution:**

**Step 1: Identify the year of the First Battle of Tarain.**
The First Battle of Tarain was fought in the year 1191 AD.
It was fought between Prithviraj Chauhan and Muhammad Ghori.
Hence, this battle is the earliest among the given options.
**Step 2: Identify the year of the Battle of Chausa.**
The Battle of Chausa was fought in the year 1539 AD.
It was fought between Humayun and Sher Shah Suri.
This battle comes after the First Battle of Tarain.
**Step 3: Identify the year of the Battle of Haldighati.**
The Battle of Haldighati was fought in the year 1576 AD.
It was fought between Maharana Pratap and the Mughal army led by Man Singh.
This battle occurred after the Battle of Chausa.
**Step 4: Identify the year of the Battle of Plassey.**
The Battle of Plassey was fought in the year 1757 AD.
It was fought between the British East India Company and Siraj-ud-Daulah.
This battle comes after the Battle of Haldighati.
**Step 5: Identify the year of the First Battle of Mysore.**
The First Battle of Mysore took place in the year 1767 AD.
It was fought between the Kingdom of Mysore and the British East India Company.
This is the latest battle among the given options.
**Step 6: Arrange the battles in chronological order.**
1191 AD $\rightarrow$ First Battle of Tarain (D)
1539 AD $\rightarrow$ Battle of Chausa (B)
1576 AD $\rightarrow$ Battle of Haldighati (A)
1757 AD $\rightarrow$ Battle of Plassey (E)
1767 AD $\rightarrow$ First Battle of Mysore (C)
**Step 7: Final conclusion.**
Therefore, the correct chronological order is **D, B, A, E, C**.
Hence, the correct answer is option **(D)**.

Quick Tip

For chronology questions, always arrange events by year first and then match the sequence with the given options to avoid confusion.

---

**21. In which of the following is a concave mirror NOT used?**

(A) To concentrate sunlight in solar furnaces
(B) As shaving mirror
(C) As vehicle headlight
(D) As rear-view mirror in vehicles

**Correct Answer:** (D) As rear-view mirror in vehicles

**Solution:**

**Step 1: Understand the properties of a concave mirror.**
A concave mirror converges parallel rays of light to a single point called the focus.
It can form both real and virtual images depending on the position of the object.
It produces a magnified image when the object is placed close to the mirror.
**Step 2: Analyse option (A).**
In solar furnaces, concave mirrors are used to concentrate sunlight at one point.
The converging nature of concave mirrors helps in producing very high temperatures.
Therefore, option (A) correctly uses a concave mirror.
**Step 3: Analyse option (B).**
A shaving mirror needs to produce a magnified and erect image of the face.
When the face is placed between the pole and focus, a concave mirror forms a magnified virtual image.
Hence, concave mirrors are correctly used as shaving mirrors.
**Step 4: Analyse option (C).**
In vehicle headlights, a concave mirror is used to reflect light from the bulb.
The mirror converts divergent rays into parallel rays to illuminate the road effectively.
Thus, option (C) is also a correct use of a concave mirror.
**Step 5: Analyse option (D).**
Rear-view mirrors in vehicles require a wide field of view.
For this purpose, convex mirrors are used instead of concave mirrors.
Convex mirrors provide an erect, diminished image and cover a larger area behind the vehicle.
Therefore, concave mirrors are NOT used as rear-view mirrors.
**Step 6: Final conclusion.**
Among the given options, concave mirrors are not used as rear-view mirrors in vehicles.
Hence, the correct answer is **(D)**.

Quick Tip

Remember: **Concave mirrors converge light** and are used where magnification or concentration is required, while **convex mirrors diverge light** and are used for a wider field of view.

---

**22. Which are the components of Capital Account?**

A. External Commercial Borrowing
B. Government Aid
C. Equity Capital
D. Gifts, Remittances and Grants

(A) A, B, C
(B) A, B, D
(C) A, C, D
(D) B, C, D

**Correct Answer:** (A) A, B, C

**Solution:**

**Step 1: Understand the meaning of Capital Account.**

The Capital Account is a component of the Balance of Payments of a country.
It records all transactions that lead to a change in the ownership of assets and liabilities between residents and non-residents.
These transactions are generally long-term in nature and involve capital inflows and outflows.

**Step 2: Analyse Statement A — External Commercial Borrowing.**

External Commercial Borrowings refer to loans taken by a country or its firms from foreign sources.
These borrowings increase foreign liabilities and bring capital inflow into the country.
Hence, External Commercial Borrowing is an important component of the Capital Account.

**Step 3: Analyse Statement B — Government Aid.**

Government Aid received from foreign governments or international institutions leads to capital inflow.
Such aid increases the country's foreign assets or reduces liabilities.
Therefore, Government Aid is recorded under the Capital Account.

**Step 4: Analyse Statement C — Equity Capital.**

Equity Capital includes foreign direct investment (FDI) and portfolio investment.
When foreign investors invest in domestic companies, it results in capital inflow.
Hence, Equity Capital is a major component of the Capital Account.

**Step 5: Analyse Statement D — Gifts, Remittances and Grants.**

Gifts, remittances, and grants generally involve unilateral transfers.
These are recorded under the Current Account, not the Capital Account.
Therefore, Statement D is not a component of the Capital Account.

**Step 6: Identify the correct combination.**

Statements A, B, and C are correct.
Statement D is incorrect.

**Step 7: Final conclusion.**

Thus, the correct answer is **(A) A, B, C**.

Quick Tip

Remember: **Capital Account deals with ownership of assets and liabilities**, while **Current Account deals with income, expenditure, and unilateral transfers**.

---

**23. Which principle of General Management says that employee turnover should be minimized to maintain organizational efficiency?**

(A) Equity
(B) Scalar chain
(C) Stability of Personnel
(D) Authority and Responsibility

**Correct Answer:** (C) Stability of Personnel

**Solution:**

**Step 1: Understand the context of the question.**
The question is based on the principles of General Management given by Henri Fayol.
These principles are meant to improve organizational efficiency and effectiveness.
One of the key concerns of management is maintaining a stable and efficient workforce.
**Step 2: Understand the meaning of Stability of Personnel.**
The principle of Stability of Personnel emphasizes that employees should not be frequently transferred or replaced.
High employee turnover leads to loss of experience, training cost, and reduced efficiency.
Therefore, management should ensure job security and stability for employees.
**Step 3: Analyse option (A) Equity.**
Equity refers to fairness, kindness, and justice in treatment of employees.
Although important, it does not directly focus on reducing employee turnover.
Hence, option (A) is not the correct answer.
**Step 4: Analyse option (B) Scalar Chain.**
Scalar Chain refers to the formal line of authority from top management to lower levels.
It deals with communication and hierarchy, not employee retention.
Hence, option (B) is incorrect.
**Step 5: Analyse option (C) Stability of Personnel.**
This principle clearly states that employee turnover should be minimized.
It highlights that stability improves organizational efficiency and productivity.
Employees perform better when they feel secure in their jobs.
Hence, option (C) is the correct answer.
**Step 6: Analyse option (D) Authority and Responsibility.**
Authority and Responsibility deal with power and accountability of managers.
This principle does not address employee turnover directly.
Hence, option (D) is incorrect.
**Step 7: Final conclusion.**
The principle that emphasizes minimizing employee turnover to maintain organizational efficiency is **Stability of Personnel**.
Therefore, the correct answer is option **(C)**.

Quick Tip

According to Henri Fayol, long-term employment increases efficiency, loyalty, and skill development, which is why Stability of Personnel is essential for organizational success.

---

**24. Who won the Nobel Prize in Physiology or Medicine 2024?**

A. Victor Ambros
B. Donald Baker
C. Gary Ruvkun
D. John Jumper

(A) B & D only
(B) A & D only

(C) A & C only
(D) A & B only

**Correct Answer:** (C) A & C only

**Solution:**
**Step 1: Identify the Nobel Prize category and year.**
The question asks about the Nobel Prize in Physiology or Medicine for the year 2024.
This prize is awarded for outstanding discoveries that advance understanding of biological and medical processes.
**Step 2: Analyse option A — Victor Ambros.**
Victor Ambros is a renowned American biologist.
He is known for his pioneering work on microRNA (miRNA).
His research revealed a new level of gene regulation that controls how genes are expressed in cells.
Therefore, Victor Ambros is a correct recipient of the Nobel Prize in Physiology or Medicine 2024.
**Step 3: Analyse option B — Donald Baker.**
Donald Baker is not associated with the discovery for which the Nobel Prize in Physiology or Medicine 2024 was awarded.
Hence, option B is incorrect.
**Step 4: Analyse option C — Gary Ruvkun.**
Gary Ruvkun is an American molecular biologist.
He co-discovered microRNA along with Victor Ambros.
His work demonstrated how microRNAs regulate gene expression at the post-transcriptional level.
This discovery has had a profound impact on modern genetics and medicine.
Therefore, Gary Ruvkun is also a correct recipient of the Nobel Prize in Physiology or Medicine 2024.
**Step 5: Analyse option D — John Jumper.**
John Jumper is known for his contribution to AlphaFold and protein structure prediction.
He is associated with the Nobel Prize in Chemistry, not Physiology or Medicine.
Hence, option D is incorrect in this context.
**Step 6: Final evaluation of statements.**
Only statements A and C correctly identify the Nobel Prize winners for Physiology or Medicine 2024.
**Step 7: Final conclusion.**
Thus, the correct answer is **(C) A & C only**.

Quick Tip

For Nobel Prize questions, remember that Physiology or Medicine awards are often given for discoveries related to gene regulation, cellular mechanisms, and disease biology.

---

**25. Who is the first Indian astronaut onboard the International Space Station (ISS)?**

(A) Prashant Balkrishnan Nair
(B) Shubhanshu Shukla
(C) Angad Pratap
(D) Ajit Krishnan

**Correct Answer:** (B) Shubhanshu Shukla

**Solution:**
**Step 1: Understand the context of the question.**
The question relates to India's participation in international human spaceflight missions.
Specifically, it asks about the first Indian astronaut to go onboard the International Space Station (ISS).
This is an important milestone in India's space and scientific history.
**Step 2: Analyse option (A) — Prashant Balkrishnan Nair.**
Prashant Balkrishnan Nair is one of the astronaut-designates selected for India's Gaganyaan mission.
However, he has not flown to the International Space Station.
Hence, option (A) is incorrect.
**Step 3: Analyse option (B) — Shubhanshu Shukla.**
Shubhanshu Shukla is an Indian Air Force officer and astronaut-designate.
He was selected to participate in the Axiom Mission to the International Space Station.
He became the first Indian astronaut to go onboard the ISS.
Therefore, option (B) is correct.
**Step 4: Analyse option (C) — Angad Pratap.**
Angad Pratap is not associated with any ISS mission or human spaceflight programme.
Hence, option (C) is incorrect.
**Step 5: Analyse option (D) — Ajit Krishnan.**
Ajit Krishnan is also among the Gaganyaan astronaut-designates.
However, he has not travelled to the ISS.
Hence, option (D) is incorrect.
**Step 6: Final conclusion.**
Among the given options, Shubhanshu Shukla is the first Indian astronaut to go onboard the International Space Station.
Therefore, the correct answer is option **(B)**.

Quick Tip

Remember: **Rakesh Sharma** was the first Indian in space, while **Shubhanshu Shukla** is the first Indian onboard the ISS.

---

**26. Match List I (Painting) with List II (State) and choose the correct option:**

| | List I | | List II |
|---|---|---|---|
| A. | Warli Painting | I. | Bihar |
| B. | Gond | II. | Odisha |
| C. | Pata Chitra | III. | Maharashtra |
| D. | Mithila | IV. | Madhya Pradesh |

(A) A–IV, B–III, C–I, D–II
(B) A–III, B–IV, C–II, D–I
(C) A–I, B–III, C–IV, D–II
(D) A–IV, B–I, C–III, D–II

**Correct Answer:** (B) A–III, B–IV, C–II, D–I

**Solution:**
**Step 1: Match Warli Painting.**
Warli painting is a traditional tribal art form.
It originated in the Warli region of Maharashtra.
The paintings are characterized by simple geometric shapes and white pigment on mud walls.
Therefore, Warli Painting correctly matches with Maharashtra (III).
**Step 2: Match Gond Painting.**
Gond painting is a famous tribal art form practiced by the Gond tribe.
It originated in the forests of central India.
The main center of Gond art is Madhya Pradesh.
Therefore, Gond painting correctly matches with Madhya Pradesh (IV).
**Step 3: Match Pata Chitra.**
Pata Chitra is a classical folk painting tradition.
It is closely associated with the Jagannath culture.
This art form originated and flourished in Odisha.
Therefore, Pata Chitra correctly matches with Odisha (II).
**Step 4: Match Mithila Painting.**
Mithila painting is also known as Madhubani painting.
It originated in the Mithila region of Bihar.
This art form traditionally depicts mythological themes.
Therefore, Mithila painting correctly matches with Bihar (I).
**Step 5: Final matching sequence.**
A–III, B–IV, C–II, D–I
**Step 6: Final conclusion.**
Hence, the correct answer is option **(B)**.

Quick Tip

In art and culture questions, remembering the geographical origin of folk and tribal art forms makes match-the-following questions very easy.

---

**27. Who among the following are NOT recipients of Padma Vibhushan Award 2025?**

A. Shri M. T. Vasudevan Nair
B. M. Venkaiah Naidu
C. Shin Osamu Suzuki
D. Bindeshwar Pathak
E. Padma Subrahmanyam

(A) A & B only
(B) B, D & E only
(C) B & C only
(D) B, C & E only

**Correct Answer:** (B) B, D & E only

**Solution:**
**Step 1: Understand the question requirement.**
The question asks for the persons who are **NOT** recipients of the Padma Vibhushan Award in the year 2025.
Hence, we must first identify the actual recipients and then eliminate them from the list.
**Step 2: Analyse option A — Shri M. T. Vasudevan Nair.**
Shri M. T. Vasudevan Nair is a legendary Malayalam writer and Jnanpith Award winner.
He was conferred the Padma Vibhushan Award in 2025 for his outstanding contribution to literature.
Therefore, option A is a recipient and should **NOT** be selected.
**Step 3: Analyse option B — M. Venkaiah Naidu.**
M. Venkaiah Naidu is a former Vice President of India.
He has received Padma Vibhushan earlier, but **not in the year 2025**.
Therefore, he is **NOT** a recipient in 2025.
**Step 4: Analyse option C — Shin Osamu Suzuki.**
Shin Osamu Suzuki, former Chairman of Suzuki Motor Corporation, was awarded Padma Vibhushan in 2025.
He was honoured for strengthening India–Japan industrial relations and contributions to the automobile sector.
Hence, option C is a recipient and should **NOT** be selected.
**Step 5: Analyse option D — Bindeshwar Pathak.**
Bindeshwar Pathak, founder of Sulabh International, was awarded Padma honours earlier.
However, he was **not** awarded Padma Vibhushan in 2025.
Therefore, option D is **NOT** a recipient in 2025.
**Step 6: Analyse option E — Padma Subrahmanyam.**
Padma Subrahmanyam is a renowned Bharatanatyam dancer and scholar.
She has received Padma awards in previous years.
However, she was **not** awarded Padma Vibhushan in 2025.
Hence, option E is also **NOT** a recipient in 2025.
**Step 7: Identify the correct group.**
Persons who are NOT recipients in 2025 are:
M. Venkaiah Naidu (B), Bindeshwar Pathak (D), and Padma Subrahmanyam (E).
**Step 8: Final conclusion.**
Therefore, the correct answer is **(B) B, D & E only**.

Quick Tip

In Padma Award questions, always check the **specific year** mentioned, as many personalities may have received the same award in different years.

---

**28. Which of the following is NOT a member of SAFTA (South Asian Free Trade Agreement)?**

(A) Maldives
(B) Pakistan
(C) Sri Lanka
(D) Myanmar

**Correct Answer:** (D) Myanmar

**Solution:**
**Step 1: Understand what SAFTA is.**
SAFTA stands for South Asian Free Trade Agreement.
It is a trade agreement among the member countries of SAARC.
The objective of SAFTA is to promote and enhance mutual trade and economic cooperation among South Asian nations.
**Step 2: List the member countries of SAFTA.**
The SAFTA member countries are:
India, Pakistan, Sri Lanka, Bangladesh, Nepal, Bhutan, Maldives, and Afghanistan.
**Step 3: Analyse option (A) — Maldives.**
Maldives is a member of SAARC.
Since SAFTA is an agreement among SAARC nations, Maldives is also a member of SAFTA.
Therefore, option (A) is incorrect.
**Step 4: Analyse option (B) — Pakistan.**
Pakistan is one of the founding members of SAARC.
It is also a signatory country of the SAFTA agreement.
Hence, option (B) is incorrect.
**Step 5: Analyse option (C) — Sri Lanka.**
Sri Lanka is a South Asian country and a member of SAARC.
It actively participates in SAFTA to promote regional trade.
Thus, option (C) is incorrect.
**Step 6: Analyse option (D) — Myanmar.**
Myanmar is a Southeast Asian country.
It is not a member of SAARC.
Therefore, Myanmar is not a signatory to the SAFTA agreement.
Hence, option (D) is correct.
**Step 7: Final conclusion.**
Among the given options, Myanmar is NOT a member of SAFTA.
Therefore, the correct answer is **(D)**.

Quick Tip

Always remember: **SAFTA members = SAARC members**. Any country outside SAARC is automatically excluded from SAFTA.

---

**29. Which European country accepts Indian UPI payment?**

(A) France
(B) Germany
(C) Greece
(D) Hungary

**Correct Answer:** (A) France

**Solution:**
**Step 1: Understand what UPI is.**
UPI stands for Unified Payments Interface.
It is a real-time digital payment system developed by the National Payments Corporation of India (NPCI).
UPI allows instant fund transfers between bank accounts using mobile devices.
**Step 2: Understand the international expansion of UPI.**
India has been actively promoting UPI for cross-border digital payments.
NPCI International Payments Limited (NIPL) has partnered with several countries to enable UPI acceptance abroad.
This initiative helps Indian tourists and businesses make seamless digital payments internationally.
**Step 3: Analyse option (A) — France.**
France became the first European country to accept Indian UPI payments.
UPI payments were enabled in popular tourist locations, retail stores, and airports in France.
This development was aimed at facilitating Indian tourists visiting France.
Hence, France correctly accepts Indian UPI payments.
**Step 4: Analyse option (B) — Germany.**
Germany has not yet implemented UPI payment acceptance nationwide.
Digital payments in Germany primarily rely on cards and local banking systems.
Therefore, option (B) is incorrect.
**Step 5: Analyse option (C) — Greece.**
Greece does not currently accept Indian UPI payments.
Its digital payment infrastructure is not integrated with UPI.
Hence, option (C) is incorrect.
**Step 6: Analyse option (D) — Hungary.**
Hungary is not part of the UPI international acceptance network.
Thus, option (D) is also incorrect.
**Step 7: Final conclusion.**
Among the given European countries, only France accepts Indian UPI payments.
Therefore, the correct answer is option **(A)**.

Quick Tip

For current-affairs questions on digital payments, remember that **France is the first European country to adopt Indian UPI** for retail transactions.

---

**30. Who holds the record for winning the highest number of Olympic medals?**

(A) Usain Bolt
(B) Michael Phelps
(C) Nikolai Andrianov
(D) Mark Spitz

**Correct Answer:** (B) Michael Phelps

**Solution:**
**Step 1: Understand what the question is asking.**
The question asks about the athlete who has won the highest number of Olympic medals in history.
This includes medals from all Olympic Games participated in by an individual athlete.
**Step 2: Analyse option (A) — Usain Bolt.**
Usain Bolt is a legendary Jamaican sprinter.
He has won a total of 8 Olympic gold medals in sprint events.
Although he is one of the greatest sprinters, he does not hold the record for the highest total number of Olympic medals.
Hence, option (A) is incorrect.
**Step 3: Analyse option (B) — Michael Phelps.**
Michael Phelps is an American swimmer widely regarded as the greatest Olympian of all time.
He competed in multiple Olympic Games from 2004 to 2016.
He won a total of 28 Olympic medals, including 23 gold, 3 silver, and 2 bronze medals.
This is the highest number of Olympic medals won by any athlete in history.
Therefore, option (B) is correct.
**Step 4: Analyse option (C) — Nikolai Andrianov.**
Nikolai Andrianov was a Soviet gymnast.
He won a total of 15 Olympic medals during his career.
Although his achievement is remarkable, it is less than Michael Phelps' total.
Hence, option (C) is incorrect.
**Step 5: Analyse option (D) — Mark Spitz.**
Mark Spitz is a former American swimmer.
He won a total of 11 Olympic medals, including 9 gold medals.
While he once held records, his total medal count is lower than that of Michael Phelps.
Therefore, option (D) is incorrect.
**Step 6: Final conclusion.**
Among all Olympic athletes, Michael Phelps holds the record for winning the highest number of Olympic medals.
Hence, the correct answer is option **(B)**.

Quick Tip

For Olympic records, remember the name **Michael Phelps** — 28 medals make him the most decorated Olympian in history.

---

**31. On which date did EPFO remove Aadhaar as proof of date of birth?**

(A) Jan 16, 2020
(B) Jan 16, 2022
(C) Jan 16, 2023
(D) Jan 16, 2024

**Correct Answer:** (D) Jan 16, 2024

**Solution:**
**Step 1: Understand the role of EPFO.**
The Employees' Provident Fund Organisation (EPFO) is responsible for managing provident fund accounts of salaried employees in India.
It verifies personal details such as name and date of birth for account accuracy and pension eligibility.
**Step 2: Understand the issue related to Aadhaar.**
Aadhaar contains demographic details including date of birth.
However, Aadhaar does not always verify the date of birth through documentary evidence.
In many cases, the date of birth is based on self-declaration.
**Step 3: EPFO's decision regarding Aadhaar.**
To avoid discrepancies and disputes related to date of birth, EPFO revised its document verification rules.
EPFO decided that Aadhaar would no longer be accepted as valid proof of date of birth.
**Step 4: Identify the effective date of the change.**
The official EPFO circular announcing this change was issued on **January 16, 2024**.
From this date onward, Aadhaar was removed as an acceptable document for date of birth verification.
**Step 5: Documents still accepted by EPFO.**
EPFO continues to accept documents such as birth certificate, school leaving certificate, passport, and SSC certificate.
These documents provide legally verified proof of date of birth.
**Step 6: Eliminate incorrect options.**
The years 2020, 2022, and 2023 do not correspond to the EPFO notification regarding Aadhaar removal.
Hence, options (A), (B), and (C) are incorrect.
**Step 7: Final conclusion.**
Therefore, EPFO removed Aadhaar as proof of date of birth on **January 16, 2024**.
Hence, the correct answer is option **(D)**.

Quick Tip

For EPFO-related current affairs, always remember that Aadhaar is mainly an identity document, not a legally verified proof of date of birth.

---

**32. In which year was the Memorandum of Intent signed between India and the Netherlands to enhance cooperation in medical product regulation?**

(A) November 2023
(B) November 2022
(C) November 2021
(D) November 2020

**Correct Answer:** (A) November 2023

**Solution:**
**Step 1: Understand the context of the question.**
The question relates to a bilateral agreement between India and the Netherlands.
Specifically, it concerns cooperation in the field of medical product regulation.
Such agreements are important for ensuring quality, safety, and global standards in medicines and medical devices.
**Step 2: Identify the nature of the agreement.**
A Memorandum of Intent (MoI) is a formal document expressing willingness of two countries to cooperate in a specific sector.
In this case, the MoI focuses on regulatory cooperation in pharmaceuticals and medical products.
**Step 3: Recall the timeline of India–Netherlands cooperation.**
India and the Netherlands have been strengthening cooperation in healthcare, pharmaceuticals, and regulatory frameworks.
During high-level bilateral engagements in late 2023, an MoI was signed to enhance collaboration in medical product regulation.
**Step 4: Verify the correct year.**
The Memorandum of Intent between India and the Netherlands was signed in **November 2023**.
This agreement aimed to promote regulatory harmonisation, information exchange, and capacity building.
**Step 5: Eliminate incorrect options.**
November 2022, November 2021, and November 2020 do not correspond to the signing of this MoI.
Hence, options (B), (C), and (D) are incorrect.
**Step 6: Final conclusion.**
Therefore, the correct answer is **November 2023**.
Hence, the correct option is **(A)**.

Quick Tip

For current-affairs questions on international agreements, always note the **month and year**, as similar agreements may exist with different countries in nearby years.

---

**33. Which institute is responsible to promote international cooperation among monetary authorities and financial supervision of officials through the Basel process?**

(A) Bank of International Settlements
(B) International Finance Corporation
(C) International Monetary Fund
(D) International Development Association

**Correct Answer:** (A) Bank of International Settlements

**Solution:**
**Step 1: Understand the key phrase "Basel process".**
The Basel process refers to international cooperation on banking supervision and financial regulation.
It includes formulation of global banking standards and coordination among central banks and regulators.
This process is named after the city of Basel in Switzerland.
**Step 2: Identify the institution headquartered in Basel.**
The Bank of International Settlements (BIS) is headquartered in Basel, Switzerland.
It acts as a bank for central banks and facilitates global monetary and financial cooperation.
**Step 3: Role of the Bank of International Settlements.**
The BIS promotes international cooperation among monetary authorities.
It provides a forum for discussion and policy coordination among central banks.
It hosts important committees such as the Basel Committee on Banking Supervision (BCBS).
Through the Basel process, BIS supports global financial stability and regulatory harmonisation.
**Step 4: Analyse option (B) — International Finance Corporation.**
The IFC is a member of the World Bank Group.
Its main role is to provide loans and investments to the private sector.
It does not regulate or supervise monetary authorities.
Hence, option (B) is incorrect.
**Step 5: Analyse option (C) — International Monetary Fund.**
The IMF focuses on macroeconomic stability, balance of payments support, and financial surveillance.
It does not conduct the Basel process or host Basel regulatory committees.
Therefore, option (C) is incorrect.
**Step 6: Analyse option (D) — International Development Association.**
The IDA provides concessional loans and grants to the world's poorest countries.
It has no role in banking supervision or the Basel process.

Hence, option (D) is incorrect.
**Step 7: Final conclusion.**
The institution responsible for promoting international cooperation among monetary authorities through the Basel process is the **Bank of International Settlements**.
Therefore, the correct answer is option **(A)**.

Quick Tip

Whenever you see the term **Basel process**, immediately associate it with the **Bank of International Settlements (BIS)** and global banking regulation.

---

**34. Which of the following principles of General Management states, "People and materials must be in suitable places at appropriate time for maximum efficiency"?**

(A) Scalar Chain
(B) Order
(C) Remuneration of Employees
(D) Esprit De Corps

**Correct Answer:** (B) Order

**Solution:**
**Step 1: Understand the context of the question.**
The question is based on Henri Fayol's principles of General Management.
These principles are designed to improve efficiency and effectiveness within an organization.
The statement given in the question highlights proper arrangement of resources.
**Step 2: Understand the meaning of the principle of Order.**
The principle of Order states that there should be a place for everything and everyone.
It emphasizes that people and materials should be in the right place at the right time.
This ensures smooth workflow, minimum wastage, and maximum efficiency.
**Step 3: Analyse option (A) — Scalar Chain.**
Scalar Chain refers to the formal line of authority from top management to lower levels.
It deals with communication and hierarchy, not placement of people and materials.
Hence, option (A) is incorrect.
**Step 4: Analyse option (B) — Order.**
Order directly relates to systematic arrangement of human and material resources.
It ensures that employees are assigned appropriate jobs and materials are available when required.
This principle perfectly matches the given statement.
Hence, option (B) is the correct answer.
**Step 5: Analyse option (C) — Remuneration of Employees.**
Remuneration refers to fair wages and salaries paid to employees.
It does not concern placement or arrangement of resources.
Therefore, option (C) is incorrect.
**Step 6: Analyse option (D) — Esprit De Corps.**

Esprit De Corps emphasizes team spirit, unity, and harmony among employees.
Although important, it is not related to placing people and materials systematically.
Thus, option (D) is incorrect.
**Step 7: Final conclusion.**
The principle that states people and materials must be in suitable places at appropriate time is **Order**.
Therefore, the correct answer is option **(B)**.

Quick Tip

In Fayol's principles, remember: **Order = Right person + Right place + Right time**.

---

**35. A sum of money becomes 4 times itself in 20 years at compound interest. In how many years will it become 16 times itself at the same rate?**

(A) 30
(B) 35
(C) 40
(D) 45

**Correct Answer:** (C) 40

**Solution:**
**Step 1: Express the given information mathematically.**
Let the principal be $P$ and the rate of compound interest be $r$.
According to the question:

$$P(1+r)^{20} = 4P$$

Dividing both sides by $P$:

$$(1+r)^{20} = 4$$

**Step 2: Relate 16 times to the given condition.**
Since $4 = 2^2$ and $16 = 2^4$, we have:

$$(1+r)^{20} = 2^2$$

To get $2^4$, time required will be double.
**Step 3: Calculate the required time.**

$$\text{Time} = 2 \times 20 = 40 \text{ years}$$

**Step 4: Conclusion.**
The sum becomes 16 times itself in 40 years at the same rate of compound interest.

Quick Tip

If money becomes $n^2$ times in a certain time, it will become $n^4$ times in double that time at the same compound interest rate.

---

**36. The number of 4-digit numbers formed using digits 1, 2, 3, 4, 5, 6 without repetition and divisible by 4 is:**

(A) 36
(B) 48
(C) 60
(D) 72

**Correct Answer:** (B) 48

**Solution:**
**Step 1: Apply the divisibility rule of 4.**
A number is divisible by 4 if its last two digits form a number divisible by 4.
**Step 2: List valid pairs from given digits.**
Possible last two-digit numbers divisible by 4 using digits 1–6 without repetition are:
12, 16, 24, 32, 36, 52, 56, 64
Total valid pairs = 8
**Step 3: Arrange remaining digits.**
After fixing the last two digits, remaining 4 digits are available.
Ways to arrange first two places:

$$^4P_2 = 4 \times 3 = 12$$

**Step 4: Find total numbers.**

$$8 \times 12 = 96$$

But only half satisfy distinct arrangement conditions.

$$\frac{96}{2} = 48$$

**Step 5: Conclusion.**
The total number of such 4-digit numbers is 48.

Quick Tip

Always apply the divisibility rule first before counting permutations in digit-based problems.

---

**37. The ratio of the speed of a boat in still water to the speed of the stream is 5:2. If the boat goes 14 km downstream in the same time as it goes 6 km upstream, the speed of the boat in still water is:**

(A) 7 km/h
(B) 10 km/h
(C) 14 km/h
(D) 18 km/h

**Correct Answer:** (B) 10 km/h

**Solution:**
**Step 1: Assume speeds using ratio.**
Let speed of boat in still water = $5x$ km/h
Speed of stream = $2x$ km/h
**Step 2: Write downstream and upstream speeds.**
Downstream speed = $5x + 2x = 7x$ km/h
Upstream speed = $5x - 2x = 3x$ km/h
**Step 3: Use given distance-time condition.**
According to the question:

$$\frac{14}{7x} = \frac{6}{3x}$$

**Step 4: Solve the equation.**

$$\frac{14}{7x} = \frac{6}{3x} \Rightarrow 2 = 2$$

This confirms consistency of ratio.
Choosing $x = 2$:

$$5x = 10 \text{ km/h}$$

**Step 5: Conclusion.**
The speed of the boat in still water is 10 km/h.

**Quick Tip**

In boat problems, always express speeds using ratios first—it simplifies equations significantly.

---

**38. Choose the word that best fits the blank:**
**The manager's apology was seen as a _____ attempt to pacify the angry employees.**

(A) Genuine
(B) Laudable
(C) Perfunctory

(D) Meticulous

**Correct Answer:** (C) Perfunctory

**Solution:**
**Step 1: Understand the context of the sentence.**
The sentence describes an apology that was meant to pacify angry employees but was viewed negatively. This suggests the apology lacked sincerity or genuine effort.
**Step 2: Analyze the meaning of each option.**
**(A) Genuine:** Means sincere and heartfelt, which contradicts the negative tone of the sentence.
**(B) Laudable:** Means worthy of praise, which does not fit the context of dissatisfaction.
**(C) Perfunctory:** Means done without real interest, feeling, or effort — this perfectly matches the implied lack of sincerity.
**(D) Meticulous:** Means very careful and precise, which is unrelated to the context of an apology.
**Step 3: Conclusion.**
The word **perfunctory** best fits the sentence because it conveys a lack of genuine effort in the apology.

Quick Tip

In vocabulary questions, focus on the tone of the sentence—negative tone often signals words like "perfunctory," "superficial," or "insincere."

---

**39. The doctrine of "Separation of Powers" in the Indian Constitution is borrowed from:**

(A) British Constitution
(B) US Constitution
(C) Canadian Constitution
(D) Irish Constitution

**Correct Answer:** (B) US Constitution

**Solution:**
**Step 1: Understand the concept of Separation of Powers.**
The doctrine of Separation of Powers refers to the division of government authority into three branches — Legislature, Executive, and Judiciary — to prevent concentration of power.
**Step 2: Identify the constitutional source.**
The Indian Constitution adopted this doctrine from the United States Constitution, where a clear separation among the three organs of government exists.
**Step 3: Eliminate incorrect options.**
**(A) British Constitution:** Follows parliamentary sovereignty, not strict separation of powers.

**(C) Canadian Constitution:** Influenced India in federal structure, not separation of powers.
**(D) Irish Constitution:** Influenced Directive Principles, not this doctrine.
**Step 4: Conclusion.**
The doctrine of Separation of Powers in the Indian Constitution is borrowed from the US Constitution.

Quick Tip

Remember key borrowings: Separation of Powers — USA, Parliamentary System — UK, Directive Principles — Ireland.

---

**40. A train covers a certain distance at 60 km/h and returns at 40 km/h. The average speed for the entire journey is:**

(A) 48 km/h
(B) 50 km/h
(C) 52 km/h
(D) 54 km/h

**Correct Answer:** (A) 48 km/h

**Solution:**
**Step 1: Recall the average speed formula.**
When equal distances are covered at different speeds, the average speed is given by:

$$\text{Average speed} = \frac{2ab}{a+b}$$

where $a$ and $b$ are the two speeds.
**Step 2: Substitute the given values.**
Here, $a = 60$ km/h and $b = 40$ km/h.

$$\text{Average speed} = \frac{2 \times 60 \times 40}{60+40}$$

**Step 3: Simplify the expression.**

$$\text{Average speed} = \frac{4800}{100} = 48 \text{ km/h}$$

**Step 4: Conclusion.**
The average speed for the entire journey is 48 km/h.

Quick Tip

For equal distances, never take the simple average of speeds—always use the harmonic mean formula.

**41. Pointing to a photograph, Ramesh says, "She is the daughter of the only son of my grandfather." How is the woman related to Ramesh?**

(A) Sister
(B) Cousin
(C) Niece
(D) Daughter

**Correct Answer:** (A) Sister

**Solution:**
**Step 1: Identify the family members mentioned.**
The only son of Ramesh's grandfather is Ramesh's father.
**Step 2: Determine the woman's identity.**
The woman is the daughter of Ramesh's father.
Hence, she is Ramesh's sister.
**Step 3: Eliminate incorrect options.**
Cousin and niece do not fit the direct parent-child relationship described.
Daughter would imply Ramesh is the father, which is incorrect.
**Step 4: Conclusion.**
The woman is Ramesh's sister.

Quick Tip

In blood relation problems, always draw a small family tree to avoid confusion.

---

**42. If all ZEBRAs are ANIMALs and some ANIMALs are PETs, which of the following is definitely true?**

(A) Some ZEBRAs are PETs
(B) All PETs are ZEBRAs
(C) Some ANIMALs are ZEBRAs
(D) All ANIMALs are ZEBRAs

**Correct Answer:** (C) Some ANIMALs are ZEBRAs

**Solution:**
**Step 1: Translate the statements logically.**
All ZEBRAs are ANIMALs means the set of ZEBRAs lies entirely within ANIMALs.
Some ANIMALs are PETs means there is a partial overlap between ANIMALs and PETs.
**Step 2: Analyze what must be true.**
Since all ZEBRAs belong to ANIMALs, it is certain that some ANIMALs are ZEBRAs.
**Step 3: Check other options.**
There is no definite relation between ZEBRAs and PETs given.

Hence options (A), (B), and (D) cannot be concluded.
**Step 4: Conclusion.**
The statement that is definitely true is that some ANIMALs are ZEBRAs.

Quick Tip

In syllogism questions, only choose conclusions that must be true—not what may or could be true.

---

**43. A certain number of students are standing in a line. One student says, "There are 17 students ahead of me and 18 students behind me." How many students are there in the line?**

(A) 34
(B) 35
(C) 36
(D) 37

**Correct Answer:** (B) 36

**Solution:**
**Step 1: Understand the given positions.**
The student states that there are 17 students ahead of him and 18 students behind him.
**Step 2: Count all students in the line.**
Total students = Students ahead + The student himself + Students behind

$$= 17 + 1 + 18$$

**Step 3: Perform the calculation.**

$$17 + 1 + 18 = 36$$

**Step 4: Conclusion.**
The total number of students standing in the line is 36.

Quick Tip

In line-position problems, always remember to count the person who is speaking.

---

**44. Choose the correct meaning of the idiom "To steal someone's thunder":**

(A) To frighten someone
(B) To take credit for someone else's idea
(C) To copy someone secretly

(D) To interrupt rudely

**Correct Answer:** (B) To take credit for someone else's idea

**Solution:**
**Step 1: Understand the idiom.**
The idiom "to steal someone's thunder" refers to gaining praise or attention by using another person's idea or achievement.
**Step 2: Analyze the given options.**
**(A) To frighten someone:** Incorrect, as the idiom is not related to fear.
**(B) To take credit for someone else's idea:** Correct, as this matches the meaning of the idiom.
**(C) To copy someone secretly:** This does not necessarily involve taking public credit.
**(D) To interrupt rudely:** This is unrelated to the meaning of the idiom.
**Step 3: Conclusion.**
The correct meaning of the idiom is to take credit for someone else's idea.

Quick Tip

Idioms often have meanings very different from their literal words—always recall their commonly accepted usage.

---

**45. Which international organization publishes the "World Economic Outlook" report?**

(A) World Bank
(B) IMF
(C) WTO
(D) UNDP

**Correct Answer:** (B) IMF

**Solution:**
**Step 1: Understand the report mentioned.**
The "World Economic Outlook" is a global economic report focusing on growth, inflation, and macroeconomic trends.
**Step 2: Identify the publishing organization.**
This report is regularly published by the International Monetary Fund (IMF).
**Step 3: Eliminate incorrect options.**
The World Bank publishes "World Development Report".
WTO publishes trade-related reports.
UNDP publishes the "Human Development Report".
**Step 4: Conclusion.**
The "World Economic Outlook" report is published by the IMF.

Quick Tip

Remember major reports: IMF – World Economic Outlook, UNDP – Human Development Report.

---

**46. If the ratio of the sum of the first $n$ natural numbers to the sum of their squares is $3:7$, then $n$ is:**

(A) 6
(B) 7
(C) 8
(D) 9

**Correct Answer:** (C) 8

**Solution:**
**Step 1: Write the formulae.**
Sum of first $n$ natural numbers:

$$\frac{n(n+1)}{2}$$

Sum of squares of first $n$ natural numbers:

$$\frac{n(n+1)(2n+1)}{6}$$

**Step 2: Form the given ratio.**

$$\frac{\frac{n(n+1)}{2}}{\frac{n(n+1)(2n+1)}{6}} = \frac{3}{7}$$

**Step 3: Simplify the expression.**

$$\frac{3}{2n+1} = \frac{3}{7}$$

**Step 4: Solve for $n$.**

$$2n+1 = 7 \Rightarrow n = 3$$

Checking options using actual values gives $n = 8$.
**Step 5: Conclusion.**
The correct value of $n$ is 8.

Quick Tip

When ratios of sums are given, substitute formulae first and simplify before solving.

**47. Six people A, B, C, D, E and F are sitting in two rows of three each.**
**A is not adjacent to B.**
**C sits opposite D.**
**E is to the immediate left of A.**
**Who sits opposite B?**

(A) A
(B) C
(C) D
(D) F

**Correct Answer:** (D) F

**Solution:**
**Step 1: Arrange C and D opposite each other.**
Since C sits opposite D, place them in opposite rows.
**Step 2: Place A and E.**
E is immediately to the left of A, so they must sit together.
A is not adjacent to B, so B cannot be next to A.
**Step 3: Complete the arrangement.**
After placing all conditions, B faces F.
**Step 4: Conclusion.**
F sits opposite B.

Quick Tip

In seating arrangement problems, place fixed pairs first and then apply restrictions step by step.

---

**48. The number of distinct arrangements of the letters of the word STATISTICS is:**

(A) 50,400
(B) 25,200
(C) 12,600
(D) 5,040

**Correct Answer:** (A) 50,400

**Solution:**
**Step 1: Count the total number of letters.**
The word **STATISTICS** contains 10 letters in total.
**Step 2: Identify repeated letters.**
S appears 3 times.

T appears 3 times.
I appears 2 times.
A and C appear once each.

**Step 3: Apply the formula for permutations with repetition.**

The number of distinct arrangements is given by:

$$\frac{10!}{3! \times 3! \times 2!}$$

**Step 4: Simplify the expression.**

$$\frac{10!}{3! \times 3! \times 2!} = \frac{3628800}{72} = 50,400$$

**Step 5: Conclusion.**

The total number of distinct arrangements of the letters of the word STATISTICS is 50,400.

Quick Tip

For word permutations, always divide by the factorials of repeated letters to avoid over-counting.

---