SNAP 2024 Question Paper with Solutions

Time Allowed :1 Hour	**Maximum Marks :**60	**Total questions :**60

General Instructions

1. No clarification on the Question paper can be sought. Answer the questions as they are.
2. There are 60 multiple choice objective type questions of one mark each which has to be answered in the OMR Sheet. **Total Marks are 60**.
3. Candidates have to indicate the most appropriate answer by darkening one of the four responses provided, with **BLACK/BLUE BALL POINT PEN** in the OMR Answer Sheet.
4. There will be **Negative Marking** for multiple choice objective type questions. 0.25 marks will be deducted for every wrong answer.
5. The candidate shall not write anything on the OMR Answer Sheet other than the details required and in the spaces provided for.
6. After the examination is over, the candidate can carry the test booklet along with candidate's copy of the OMR after handing over the original OMR to the invigilator.
7. The use of any unfair means by any candidate will result in the cancellation of his/her candidature.
8. Impersonation is an offence and the candidate, apart from disqualification, may have to face criminal prosecution.
9. Electronic gadgets like mobile phones, pagers and calculators etc. are strictly not permitted inside the Test Centre/Hall.
10. The candidates shall not leave the hall before the end of the test.

GENERAL ENGLISH

1. In the question below, each passage consists of six sentences. The first (S1) and sixth (S6) sentences are fixed. The middle four sentences P, Q, R, S are jumbled. Find the proper order of the four sentences.

S1: The library is a place where knowledge is preserved and shared with all.

P: Students and researchers often visit to find useful information for their studies.

Q: It houses thousands of books, journals, and digital resources on various subjects.

R: The peaceful environment helps visitors focus and absorb knowledge effectively.

S: Librarians play a crucial role in organizing and maintaining these resources.

S6: Thus, the library serves as a treasure trove of wisdom for generations.

(a) RSQP

(b) PQRS

(c) SQPR

(d) QSPR

Correct Answer: (d) QSPR

Solution:

Step 1: Start from S1 and look for a definition-expansion.

S1 gives a general statement about a library. A natural continuation is to specify *what it contains*. Sentence Q does exactly this by listing "books, journals, and digital resources."

$\Rightarrow$ Q should come immediately after S1.

Step 2: Resolve the anaphora "these resources."

Sentence S mentions "*these resources*," which must refer to something introduced earlier. Only Q introduces resources explicitly, so S must follow Q.

$\Rightarrow$ partial order: S1 $\rightarrow$ Q $\rightarrow$ S.

Step 3: Bring in the users, then the effect on them.

After resources and their management (Q, S), the next logical idea is *who uses them*. Sentence P introduces "Students and researchers ... visit to find useful information," which connects naturally to the resources.

Sentence R talks about "visitors" focusing due to the peaceful environment—this refers back to the visitors in P, so R must follow P.

$\Rightarrow$ order of the middle four becomes: Q $\rightarrow$ S $\rightarrow$ P $\rightarrow$ R.

Step 4: Conclude with S6.

With contents (Q), management (S), users (P), and environment (R) established, S6's "Thus" provides a coherent summary.

Proper sequence of the four sentences: **QSPR**.

Quick Tip

For para-jumbles, track pronoun references (e.g., "these resources") and noun continuity (e.g., "visitors") to lock relative positions before checking global coherence.

DIRECTIONS (Qs. 2-3): Some proverbs/idioms are given below together with their meanings. Choose the correct meaning of proverb/idiom

2. To burn the midnight oil

(a) To waste time

(b) To work late into the night

(c) To celebrate all night

(d) To sleep early

Correct Answer: (b) To work late into the night

Solution: The idiom "to burn the midnight oil" originated from the days when people used oil lamps for light. Working or studying until late night meant literally burning oil.

$\Rightarrow$ Therefore, it refers to working hard late into the night, especially on important tasks or studies.

To burn the midnight oil = To work late into the night

Quick Tip

Think of "midnight oil" as lamp oil burned during late-night study or work sessions. The literal image helps recall the figurative meaning.

3. Hit the nail on the head

(a) To make a mistake

(b) To be very precise or accurate

(c) To get hurt while working

(d) To start an argument

Correct Answer: (b) To be very precise or accurate

Solution: The phrase "hit the nail on the head" comes from carpentry: hitting the nail at its head is the correct and precise action. Figuratively, it means to describe or do something with perfect accuracy.

$\Rightarrow$ Hence, the idiom means "to be very precise or accurate."

Hit the nail on the head = To be very precise or accurate

Quick Tip

For idioms, imagine the literal scenario—here, hitting a nail at the head is exact and correct, which translates into precision in meaning.

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4. In the following question, choose the word which is the exact OPPOSITE of the given word.

ARDENT

(a) Indifferent

(b) Zealous

(c) Fervent

(d) Enthusiastic

Correct Answer: (a) Indifferent

Solution:

Step 1: Meaning of "Ardent"

The word **ardent** means intensely passionate, eager, or enthusiastic about something. It conveys strong emotional involvement and zeal.

Step 2: Check each option

- (a) **Indifferent**: means having no particular interest or concern; apathetic. This is the **opposite** of passionate.
- (b) **Zealous**: means full of zeal, strongly devoted, or enthusiastic. This is actually a synonym, not an opposite.
- (c) **Fervent**: means showing passionate intensity, again a synonym of ardent.
- (d) **Enthusiastic**: means excited or keen interest. This is again a synonym.

Step 3: Conclusion

The only word that is the exact opposite of **Ardent** is **Indifferent**.

Answer = (a) Indifferent

Quick Tip

When dealing with synonym–antonym questions, first identify whether the given word carries a *positive intensity* (like ardent) or a *negative/neutral lack of intensity* (like indifferent). Then eliminate the synonyms to focus on the true opposite.

Topic – Vocabulary: Antonyms (Word Meanings)

DIRECTIONS (Qs. 5-6): In the questions below the sentences have been given in Direct/Indirect speech. From the given alternatives, choose the one that best expresses the given sentence in Indirect/Direct speech.

5. She said, "I have completed my assignment on time."

(a) She said that she had completed her assignment on time.

(b) She said that I have completed my assignment on time.

(c) She said that she completed her assignment on time.

(d) None of these

Correct Answer: (a) She said that she had completed her assignment on time.

Solution: The original sentence is in **Direct Speech** with the present perfect tense: "I have completed…". When converting to **Indirect Speech**, the tense usually shifts one step back: - Present Perfect (*have completed*) ⇒ Past Perfect (*had completed*). Also, the pronoun "I" changes to "she" (since the speaker is "she").
Thus, the correct transformation is: ⇒ "She said that she had completed her assignment on time."

Correct Indirect Speech: She said that she had completed her assignment on time.

Quick Tip

In reported speech, remember to shift the tense back: Present ⇒ Past, Present Perfect ⇒ Past Perfect, etc., unless the sentence expresses a universal truth.

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6. The teacher told the students that the Earth revolves around the Sun.

(a) The teacher said, "The Earth revolved around the Sun."
(b) The teacher said, "The Earth revolves around the Sun."
(c) The teacher said, "The Earth is revolving around the Sun."
(d) The teacher said, "The Earth had revolved around the Sun."

Correct Answer: (b) The teacher said, "The Earth revolves around the Sun."

Solution: The given sentence is in **Indirect Speech**. It expresses a **universal truth**: "The Earth revolves around the Sun." Rule: Universal truths and facts remain in the present tense, even when reported.
Therefore, the correct direct form remains: ⇒ "The teacher said, 'The Earth revolves around the Sun.'"

Correct Direct Speech: The teacher said, "The Earth revolves around the Sun."

Quick Tip

Universal truths and scientific facts always remain in the present tense in reported speech, regardless of the reporting verb's tense.

DIRECTIONS (Qs. 7-9): In each question, an incomplete statement followed byfillers. Pick out the best one which can complete incomplete statement correctly and meaningfully.

7. Even though she was unwell, ...

(a) she continued working with determination.

(b) she decided to go on a long vacation.

(c) she avoided taking any rest at all.

(d) she stopped working immediately.

Correct Answer: (a) she continued working with determination.

Solution: The phrase "Even though she was unwell" implies a contrast is coming. Instead of stopping or avoiding work, the logical continuation is that she showed persistence and determination. $\Rightarrow$ Hence, option (a) is the most meaningful completion.

Even though she was unwell, she continued working with determination.

Quick Tip

When a sentence begins with "Even though. . . ," look for a contrasting but positive action in the completion.

8. The moment the fire alarm rang, ...

(a) everyone ignored it and continued their work.

(b) people evacuated the building immediately.

(c) the fire brigade arrived instantly.

(d) the fire alarm stopped ringing.

Correct Answer: (b) people evacuated the building immediately.

Solution: When a fire alarm rings, the natural and logical action is evacuation. Other options either contradict the urgency (a, d) or assume unrealistic immediate response (c). $\Rightarrow$ Thus, option (b) makes the most sense.

The moment the fire alarm rang, people evacuated the building immediately.

Quick Tip

Always choose the option that reflects logical, real-life action in emergencies for such sentence completions.

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9. If we don't leave now, ...

(a) we will reach the destination early.
(b) we might miss the train.
(c) we will have plenty of time to spare.
(d) we will arrive much before schedule.

Correct Answer: (b) we might miss the train.

Solution: The clause "If we don't leave now" indicates a warning of negative consequence. Among the given options, missing the train is the logical and direct outcome. Other options contradict the urgency. $\Rightarrow$ Therefore, option (b) is correct.

If we don't leave now, we might miss the train.

Quick Tip

In conditional sentences starting with "If we don't...," usually the result highlights a loss, risk, or negative outcome.

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10. In the following question, choose the word which best expresses the meaning of the given word.
BENEVOLENT

(a) Kind

(b) Cruel

(c) Selfish

(d) Hostile

Correct Answer: (a) Kind

Solution:

Step 1: Meaning of "Benevolent"

The word **benevolent** means well-meaning, kind, charitable, or showing goodwill towards others. It implies helpfulness and compassion.

Step 2: Check each option

- (a) **Kind**: directly matches the meaning of benevolent.
- (b) **Cruel**: opposite meaning, not correct.
- (c) **Selfish**: opposite of being generous, not correct.
- (d) **Hostile**: unfriendly, again the opposite, not correct.

Step 3: Conclusion

Thus, the synonym of **benevolent** is **Kind**.

Answer = (a) Kind

Quick Tip

Remember: "Benevolent" = "Good + Willing." Break it into Latin roots: *bene* (good) + *volens* (wishing).

Topic – Vocabulary: Synonyms (Word Meanings)

11. Find the correctly spelt word.

(a) Artifact

(b) Artifect

(c) Arttefect

(d) Arrtefact

Correct Answer: (a) Artifact

Solution:

Step 1: Meaning of the word

An **artifact** is an object made by a human being, often of cultural or historical interest.

Step 2: Check each option

- (a) **Artifact**: Correct spelling.
- (b) **Artifect**: Incorrect spelling.
- (c) **Arttefect**: Extra "t" makes it wrong.
- (d) **Arrtefact**: Extra "r" makes it wrong.

Step 3: Conclusion

The correctly spelt word is **Artifact**.

Answer = (a) Artifact

Quick Tip

Spelling questions often insert double letters or replace vowels. Focus on the root word (*arti* + *fact* = "something made with skill").

Topic – Vocabulary: Spelling

DIRECTIONS (Qs. 12-13): Pick out the most effective word(s) from the given words to fill in the blank to make the sentence meaningfully complete.

12. The manager's decision to fire the employee was seen as a _____ act of revenge rather than a professional choice.

(a) vindictive

(b) malicious

(c) spiteful

(d) callous

Correct Answer: (a) vindictive

Solution: The sentence highlights that the act was one of **revenge**. - "Vindictive" means having a strong desire for revenge. $\Rightarrow$ Fits perfectly.
- "Malicious" means intending to harm, but not necessarily for revenge.
- "Spiteful" is similar, but weaker and less formal than "vindictive."
- "Callous" means emotionally insensitive, which doesn't imply revenge.
Thus, the most appropriate word is **vindictive**.

Answer: Vindictive

Quick Tip

When the clue word is "revenge," the closest synonym is always "vindictive."

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13. Despite his repeated failures, the entrepreneur remained _____ in his pursuit of success.

(a) obstinate
(b) resolute
(c) relentless
(d) unwavering

Correct Answer: (b) resolute

Solution: The context shows persistence and firmness of purpose despite repeated failures. - "Resolute" means firmly determined. $\Rightarrow$ Fits perfectly.
- "Obstinate" means stubborn, often in a negative sense.
- "Relentless" means not giving up, but is usually harsher and doesn't fit as smoothly.
- "Unwavering" is close, but "resolute" is the best single-word fit here.
Thus, the correct answer is **resolute**.

Answer: Resolute

Quick Tip

Look for positive determination in contexts of repeated failures—"resolute" captures firmness with a positive tone.

DIRECTIONS (Qs. 14-15): Each question consists oftwo words that have a certain relationship to each other followed by four pairs of related words. Select the pair that has the sa relationship.

14. Choose the pair that best expresses the same relationship as: FLORIST : FLOWERS

(a) Chef : Food

(b) Author : Books

(c) Painter : Canvas

(d) None of these

Correct Answer: (a) Chef : Food

Solution:

Step 1: Identify the relation in the stem

A **florist** is a professional who **deals in/sells works with flowers**.

Relation type: *profession/person ⇒ thing they handle or provide*.

Step 2: Test each option

(a) **Chef : Food** — A chef's profession involves **preparing/providing food**. ⇒ **Matches**.

(b) **Author : Books** — An author **creates** books (creator ⇒ product), not primarily "deals in/sells" them. Relation differs.

(c) **Painter : Canvas** — A painter **uses** a canvas as a medium; canvas is not the good provided. Relation differs.

(d) **None of these** — Not applicable since (a) fits well.

Step 3: Conclusion

Option (a) mirrors the *profession ⇒ item handled/provided* relation most closely.

Answer = (a) Chef : Food

Quick Tip

For analogies, first **name the relation** (e.g., profession ⇒ item provided, creator ⇒ creation, tool ⇒ user). Then eliminate choices that shift to a different relation.

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15. Choose the pair that best expresses the same relationship as: SENTINEL : WATCH

(a) Artist : Paint

(b) Soldier : Battle

(c) Guard : Protect

(d) None of these

Correct Answer: (c) Guard : Protect

Solution:

Step 1: Interpret the stem

A **sentinel** is one who **keeps watch/guards**. Relation: *agent (person)* ⇒ *core duty/purpose (verb)*.

Step 2: Evaluate options

(a) **Artist : Paint** — Agent ⇒ action, but "paint" is the *medium/action* of creating art; not a *core protective duty* like "watch." Partially similar but weaker fit.

(b) **Soldier : Battle** — Agent ⇒ event/occasion; "battle" is not the soldier's *constant duty* but an occurrence. Relation drifts from purpose.

(c) **Guard : Protect** — Agent ⇒ *core duty/purpose*. This exactly parallels **sentinel : watch**. ⇒ **Best fit**.

(d) **None of these** — Not applicable since (c) fits perfectly.

Step 3: Conclusion

Option (c) mirrors the *agent* ⇒ *essential duty* relation exactly.

Answer = (c) Guard : Protect

Quick Tip

When two nouns appear (e.g., *sentinel : watch*), check if the second is a **duty/purpose**. Prefer choices where the second word states the agent's **function**, not a tool or an occasional event.

QUANTITATIVE, DATA INTERPRETATION AND DATA SUFFICIENCY

16. On a certain principal, CI and SI at a certain rate of interest for 2 years is ₹16560 and ₹14400 respectively. Find the principal and rate of interest per annum.

(a) 21,600, 13%

(b) 20,000, 30%

(c) 24,000, 30%

(d) 24,000, 35%

Correct Answer: (c) 24,000, 30%

Solution:

Step 1: Use formula for SI for 2 years.

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

Here, $SI = 14400$, $T = 2$.

$$14400 = \frac{P \times R \times 2}{100}$$

$$14400 = \frac{2PR}{100} \quad \Rightarrow \quad 14400 = \frac{PR}{50}$$

$$PR = 14400 \times 50 = 720000$$

Step 2: Use formula for CI for 2 years.

$$CI = P\left(\left(1 + \frac{R}{100}\right)^2 - 1\right)$$

$$16560 = P\left(\frac{R}{100} + \frac{R^2}{10000}\right) \times 2$$

But more directly:

$$CI - SI = \frac{P \times (R/100)^2 \times 2}{2}$$

Actually formula: For 2 years,

$$CI - SI = \frac{P \times R^2}{100^2}$$

Step 3: Calculate CI - SI.

$$CI - SI = 16560 - 14400 = 2160$$

So,

$$2160 = \frac{P \times R^2}{100^2}$$

$$P \times R^2 = 2160 \times 10000 = 21600000$$

Step 4: Divide two relations. From Step 1: $PR = 720000$. From Step 3: $PR^2 = 21600000$.

$$\frac{PR^2}{PR} = \frac{21600000}{720000}$$

$$R = 30\%$$

Step 5: Find principal.

$$PR = 720000 \quad \Rightarrow \quad P \times 30 = 720000$$

$$P = \frac{720000}{30} = 24000$$

Principal = ₹24,000, Rate = 30% per annum

Quick Tip

For 2 years, use the relation $CI - SI = \frac{P \times R^2}{100^2}$. This shortcut saves time compared to expanding the full CI formula.

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17. $x + y + z = 850$**. If** x **is reduced by** 100**,** y **by** 25**, and** z **by** 50**, then** $(x - 100) : (y - 25) = 1 : 2$ **and** $(y - 25) : (z - 50) = 5 : 6$**. Find the original value of** $x + y$**.**

(a) 400

(b) 500

(c) 550

(d) 350

Correct Answer: (b) 500

Solution:

Step 1: Convert ratios to algebra.

Let $x - 100 = 1k,\ y - 25 = 2k \Rightarrow$ x=k+100, y=2k+25.

From $(y - 25) : (z - 50) = 5 : 6$, let $y - 25 = 5m,\ z - 50 = 6m$. But $y - 25 = 2k$, so

$2k = 5m \Rightarrow$ m=2k$_{\frac{}{5}}$. Hence $z = 50 + 6m = 50 + \frac{12k}{5}$.

Step 2: Use $x + y + z = 850$.

$(k + 100) + (2k + 25) + \left(50 + \frac{12k}{5}\right) = 850$

$\Rightarrow \frac{27k}{5} + 175 = 850 \Rightarrow$ 27k$_{\overline{5=675\Rightarrow}}$ 27k=3375 $\Rightarrow$ k=125.

Step 3: Find x and y and sum.

$x = 125 + 100 = 225,\ y = 2 \cdot 125 + 25 = 275 \Rightarrow$ x+y=225+275=500.

Original $x + y = 500$

Quick Tip

When ratios involve shifted values (like $x - 100$), set them equal to k-multiples, back-substitute in the sum, and solve.

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18. Find the value of: $\log 87600 + \log 23100 - 8 = ?$

(a) $\log 8.76 + \log 2.31$

(b) $\log 87.6 + \log 23.1$

(c) $\log 876 + \log 231$

(d) None of these

Correct Answer: (a) $\log 8.76 + \log 2.31$

Solution: $\log 87600 = \log(8.76 \times 10^4) = \log 8.76 + 4$;

$\log 23100 = \log(2.31 \times 10^4) = \log 2.31 + 4.$

So, $\log 87600 + \log 23100 - 8 = (\log 8.76 + 4) + (\log 2.31 + 4) - 8$

$\Rightarrow \log 8.76 + \log 2.31.$

$\boxed{\log 87600 + \log 23100 - 8 = \log 8.76 + \log 2.31}$

Quick Tip

Write numbers in scientific form $a \times 10^n$ and use $\log(ab) = \log a + \log b$ to cancel powers of 10 quickly.

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19. Average monthly expenditure for January–June is ₹3200. He spends ₹3000 (July), ₹3600 (Aug), ₹3900 (Sept), ₹4200 (Oct). If November's expenditure is 50% of December's and the average for the entire year is ₹3200, find November's expenditure.

(a) 1600

(b) 1400

(c) 1700

(d) 1500

Correct Answer: (d) 1500

Solution:

Step 1: Compute required totals.

Total for 12 months $= 12 \times |3200 = |38400.$

Total Jan–Jun $= 6 \times |3200 = |19200.$

Total Jul–Oct $= |(3000 + 3600 + 3900 + 4200) = |14700.$

Spent till Oct $= |(19200 + 14700) = |33900.$

Step 2: Amount left for Nov & Dec.

Remaining $= |(38400 - 33900) = |4500.$ Let Nov $= N$ and Dec $= D$ with $N = \frac{1}{2}D \Rightarrow$ D=2N.

Then $N + D = 3N = |4500 \Rightarrow$ N=₹1500.

$\boxed{\text{November's expenditure } = \ |1500}$

Quick Tip

With averages across periods, convert to totals first; then apply given ratios (here, $N = \frac{1}{2}D$) to split the remainder.

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20. Ram and Shyam are 10 km apart. They both see a hot-air balloon making angles of elevation 60° and 30° respectively. What is the height at which the balloon could be flying?

(a) $4\sqrt{3}$

(b) $5\sqrt{3}$

(c) $3\sqrt{3}$

(d) $2\sqrt{3}$

Correct Answer: (b) $5\sqrt{3}$

Solution:

Step 1: Model the situation

Let the observers be A and B with $AB = 10$ km, and let the balloon be vertically above point P on the same line. Suppose $\angle APB = 30^\circ$ at the farther observer and $\angle BPA = 60^\circ$ at the nearer observer (larger angle $\Rightarrow$ nearer).

Let $AP = d$ so $BP = d - 10$, and let the height be h.

Step 2: Use $\tan\theta = \dfrac{\textbf{opposite}}{\textbf{adjacent}}$

From A: $\tan 30^\circ = \dfrac{h}{d} \Rightarrow h = \dfrac{d}{\sqrt{3}}$.

From B: $\tan 60^\circ = \dfrac{h}{d-10} \Rightarrow h = (d-10)\sqrt{3}$.

Step 3: Equate the two expressions for h

$$\frac{d}{\sqrt{3}} = (d-10)\sqrt{3} \;\Rightarrow\; d = 3(d-10) \;\Rightarrow\; 2d = 30 \;\Rightarrow\; d = 15.$$

Hence $h = \dfrac{15}{\sqrt{3}} = 5\sqrt{3}$ km.

$$\boxed{h = 5\sqrt{3} \text{ km}}$$

Quick Tip

In height–distance problems with two angles from points on a line, the **larger angle corresponds to the nearer observer**. Set up distances accordingly and use $\tan\theta$.

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21. A manufacturer makes 1500 articles at the cost of 120 paisa per article. He fixes the selling price such that if only 1200 articles are sold, he makes 80% profit on the total outlay. However, 240 articles get spoilt and he sells the remaining stock at this price. Find the actual profit percentage on total outlay.

(a) 84

(b) 82

(c) 89

(d) 86

Correct Answer: (c) 89

Solution:

Step 1: Compute total outlay

Cost per article $= 120$ paisa $= |1.20$.

Total cost $C = 1500 \times 1.20 = |1800$.

Step 2: Fix the marked selling price per article

Price chosen so that selling only 1200 items gives 80% profit on *total outlay*.

So required revenue $= C + 0.8C = 1.8C = 1.8 \times 1800 = |3240$.

Hence price per article $p = \dfrac{3240}{1200} = |2.70$.

Step 3: Actual sale and profit

Spoilt $= 240 \Rightarrow$ sold $= 1500 - 240 = 1260$ articles.

Actual revenue $R = 1260 \times 2.70 = |3402$.

Profit $= R - C = 3402 - 1800 = |1602$.

Profit % on outlay $= \dfrac{1602}{1800} \times 100 = 89\%$.

$$\boxed{\text{Actual Profit } = 89\%}$$

Quick Tip

When a price is set for a target profit on *total outlay*, compute the per-unit price from that target revenue first, then apply real quantities sold.

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22. Find the missing number in the table.

(a) 14

(b) 12

(c) None of these

(d) 10

Correct Answer: (a) 14

Solution:

Observation: Focusing on the right block that produces 102: it is formed from the numbers just below it — 8 (to its immediate left in the middle row), and 6 and 4 in the bottom row — together with the missing value x in the middle row of that block.

Rule (consistent with this block):

$$102 \;=\; 8^2 \;+\; (6 \times 4) \;+\; x$$

$$\Rightarrow\; 102 \;=\; 64 \;+\; 24 \;+\; x \;\Rightarrow\; x = 102 - 88 = 14.$$

$$\boxed{x = 14}$$

Quick Tip

In grid puzzles, totals often combine a **square term** with a **product term**. Try decomposing the target into recognizable chunks (e.g., $a^2 + b \times c$) and solve for the unknown.

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23. In a box, there are 3 red marbles, 3 blue marbles and 7 green marbles. If 2 marbles are picked randomly, find the probability of picking two non-green marbles.

(a) $\frac{3}{26}$
(b) $\frac{5}{26}$
(c) $\frac{9}{26}$
(d) $\frac{7}{26}$

Correct Answer: (b) $\frac{5}{26}$

Solution: Non-green marbles $= 3 + 3 = 6$; Total marbles $= 3 + 3 + 7 = 13$.
Required probability $= \frac{\binom{6}{2}}{\binom{13}{2}} = \frac{15}{78} = \frac{5}{26}$.
$\Rightarrow$ Both chosen are from the 6 non-green marbles.

$$\boxed{\text{Probability} = \frac{5}{26}}$$

Quick Tip

When picking without replacement, use combinations: favourable $\binom{\text{wanted}}{2}$ over total $\binom{\text{all}}{2}$.

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24. ₹45000 is deposited at compound interest for 4 years. The rates are 6% (1st year), then increase by 1% each year (so 7%, 8%, 9%). Find the approximate amount at the end of 4 years.

(a) 60000
(b) 70000
(c) 80000
(d) 90000

Correct Answer: (a) 60000

Solution: Amount $= P(1 + 0.06)(1 + 0.07)(1 + 0.08)(1 + 0.09)$.
So, $A = 45000 \times 1.06 \times 1.07 \times 1.08 \times 1.09 \approx 45000 \times 1.335 \approx |6.01 \times 10^4$.
$\Rightarrow$ Approximately ₹60000.

$$\boxed{\text{Amount} \approx |60000}$$

Quick Tip

For varying yearly rates, multiply sequential growth factors $(1 + r_i)$; rounding the final factor gives a quick estimate.

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25. A shopkeeper marks 30% above cost and allows a 15% discount. He also uses a faulty balance: sells "1 kg" but delivers only 800 g. Find his actual profit percentage.

(a) 38.125%

(b) 24.425%

(c) 32.124%

(d) None of these

Correct Answer: (a) 38.125%

Solution: Assume cost price (CP) per kg $= |100$.

Marked price $= 100 \times 1.30 = |130$. After 15% discount, billed SP per "kg"

$= 130 \times 0.85 = |110.5$.

But he supplies only 0.8 kg, whose cost to him $= 0.8 \times 100 = |80$.

Profit $= |(110.5 - 80) = |30.5$.

Profit $\% = \dfrac{30.5}{80} \times 100 = 38.125\%$. $\Rightarrow$ Includes hidden gain from short-weight $(1/0.8 = 1.25$, i.e., 25% extra).

$\boxed{\text{Actual Profit } = 38.125\%}$

Quick Tip

For false weights, compute SP on the billed quantity but CP on the actual quantity delivered.

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26. Ritu wants to make a trapezium such that AB is parallel to CD. $\angle ABC = 90^\circ$ and $\angle BAD = 45^\circ$. Lengths: $CD = 5$ cm and $BC = 4$ cm. Find the area of the trapezium.

(a) 20 cm^2

(b) None of these

(c) $28\ \text{cm}^2$

(d) $24\ \text{cm}^2$

Correct Answer: (c) $28\ \text{cm}^2$

Solution:

Step 1: Height of the trapezium

Since $\angle ABC = 90^\circ$ and $AB \parallel CD$, BC is perpendicular to both bases $\Rightarrow$ height $h = BC = 4$ cm.

Step 2: Find the other base AB

Place $A(0,0)$, let $AB = x$ so $B(x,0)$. Since $CD \parallel AB$ and $BC = 4$, take $C(x,-4)$ and $D(x-5,-4)$ (because $CD = 5$).

Vector $\overrightarrow{AD} = (x-5,-4)$. Given $\angle BAD = 45^\circ$, slope magnitude of AD is $|-4/(x-5)| = \tan 45^\circ = 1 \Rightarrow$ —x-5—=4.

Choose $x - 5 = 4$ (keeps vertices in order) $\Rightarrow x = 9 \Rightarrow$ AB=9 cm.

Step 3: Area

$$\text{Area} = \frac{(AB+CD)}{2} \times h = \frac{(9+5)}{2} \times 4 = 7 \times 4 = 28\ \text{cm}^2.$$

$$\boxed{28\ \text{cm}^2}$$

Quick Tip

When one leg is perpendicular to the bases in a trapezium, that leg is the **height**. Use coordinates or projections with the given angle to recover the unknown base.

---

27. If 100 fewer students had applied and 50 fewer were selected, the ratio selected:unselected would be $7:4$**. In reality, the ratio selected:unselected was** $3:2$**. How many students had applied?**

(a) 325

(b) 415

(c) 375

(d) 425

Correct Answer: (c) 375

Solution:

Step 1: Let the numbers be in $3 : 2$

Let selected $= 3k$, unselected $= 2k \Rightarrow$ applicants $A = 5k$.

Step 2: Apply the hypothetical change

Applied $A - 100$, selected $3k - 50$. Then unselected becomes

$(A - 100) - (3k - 50) = (2k - 50)$.

Given ratio $(3k - 50) : (2k - 50) = 7 : 4$.

Step 3: Solve for k

$\frac{3k - 50}{2k - 50} = \frac{7}{4} \Rightarrow 4(3k - 50) = 7(2k - 50) \Rightarrow 12k - 200 = 14k - 350 \Rightarrow 2k = 150 \Rightarrow k = 75.$

Hence $A = 5k = 375$.

$\boxed{375}$

Quick Tip

Translate ratio statements into variables first $(3k, 2k)$. For "if less/more" scenarios, adjust both selected and unselected consistently before forming the new ratio.

---

28. Find the smallest number between 2000 and 3000 that is exactly divisible by 21, 24 and 28.

(a) None of these

(b) 2000

(c) 2352

(d) 2016

Correct Answer: (d) 2016

Solution:

Step 1: Compute LCM

$21 = 3 \cdot 7,\ 24 = 2^3 \cdot 3,\ 28 = 2^2 \cdot 7 \Rightarrow$ LCM=$2^3 \cdot 3 \cdot 7 = 168$.

Step 2: Find the first multiple in $[2000, 3000]$

$168 \times 11 = 1848 < 2000$, $168 \times 12 = 2016 \Rightarrow$ smallest required number $= 2016$.

$$\boxed{2016}$$

Quick Tip

For "exactly divisible by several numbers," take the **LCM** and scan multiples within the interval. Multiplying once more than the floor of $\frac{\text{lower bound}}{\text{LCM}}$ gives the first valid multiple.

---

29. Based on the given pattern find the next term of the given series: 5, 6, 16, 57, 244, 1245, ?

(a) 7506

(b) None of these

(c) 5500

(d) 4047

Correct Answer: (a) 7506

Solution:

Step 1: Check the pattern of growth.

Observe each term:

$5 \to 6$: $5 \times 1 + 1 = 6$

$6 \to 16$: $6 \times 2 + 4 = 16$

$16 \to 57$: $16 \times 3 + 9 = 57$

$57 \to 244$: $57 \times 4 + 16 = 244$

$244 \to 1245$: $244 \times 5 + 25 = 1245$

Step 2: Generalize the rule.

Next term $=$ (Previous term $\times n$) $+n^2$, where n is the step number.

Step 3: Apply for the next term.

Here $n = 6$:

$1245 \times 6 + 36 = 7470 + 36 = 7506$

$\boxed{\text{Next term of the series is } 7506}$

Quick Tip

In number series, look for operations of the form "multiply by n then add n^2" or similar compound patterns.

---

30. There are 3 different types of rice weighing $435,\ 493,$ and 551 kg respectively. The rice is packed in bags so that no two types are mixed and *all bags are of equal size*. Find the least number of bags.

(a) 51

(b) 56

(c) 57

(d) 54

Correct Answer: (a) 51

Solution:

Step 1: Largest possible bag size

Equal bag size must divide each heap $\Rightarrow$ use $\gcd(435, 493, 551)$.

$\gcd(435, 493) = \gcd(435, 58) = \gcd(58, 29) = 29$. Also $551 = 29 \times 19 \Rightarrow \gcd = 29$ kg.

Step 2: Number of bags

$$\text{Bags} = \frac{435}{29} + \frac{493}{29} + \frac{551}{29} = 15 + 17 + 19 = 51.$$

$\boxed{51}$

Quick Tip

"Least number of equal bags" $\Rightarrow$ take the $\gcd$ as bag size, then sum the quotients.

---

31. ₹776 is divided among 300 students (boys and girls). Each boy gets ₹2.40 and each girl gets ₹2.80. Find the number of girls.

(a) 130

(b) 140

(c) 110

(d) 120

Correct Answer: (b) 140

Solution:

Let boys $= B$, girls $= G$. Then $B + G = 300$ and $2.4B + 2.8G = 776$.

Multiply by 10: $24B + 28G = 7760 \Rightarrow 6B + 7G = 1940$.

Using $B = 300 - G$: $6(300 - G) + 7G = 1940 \Rightarrow 1800 - G = 1940 \Rightarrow G = 140$.

$$\boxed{140}$$

Quick Tip

Two linear conditions (headcount and total money) $\Rightarrow$ solve by substitution after clearing decimals.

---

32. Find $\sqrt{4^{6x^2} \cdot 25^{y/2} \cdot 9 \cdot z^4}$.

(a) $4^{3x^2} \cdot 5^{y} \cdot 3^{z^4}$

(b) $4^{3x^2} \cdot 5^{y/2} \cdot 9z^2$

(c) $4^{6x} \cdot 25^{y/4} \cdot 9z^2$

(d) $4^{3x^2} \cdot 5^{y/2} \cdot 3\,z^2$

Correct Answer: (d) $4^{3x^2} \cdot 5^{y/2} \cdot 3\,z^2$

Solution:

$\sqrt{4^{6x^2}} = 4^{3x^2}$, $\sqrt{25^{\,y/2}} = 25^{y/4} = (5^2)^{y/4} = 5^{y/2}$,

$\sqrt{9} = 3$, $\sqrt{z^4} = z^2$ (assuming $z \geq 0$).

Multiply: $4^{3x^2} \cdot 5^{y/2} \cdot 3 \cdot z^2$.

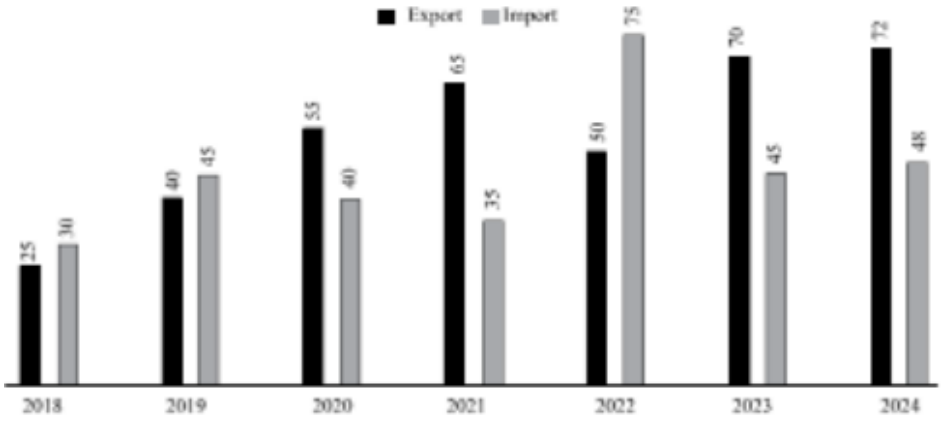
$$\boxed{4^{3x^2} \cdot 5^{y/2} \cdot 3\, z^2}$$

Quick Tip

$\sqrt{a^m} = a^{m/2}$. For bases like 25 and 9, rewrite as powers of primes ($5^2, 3^2$) before halving the exponent.

---

33. Below is the Export and Import data of a company. Which year has the lowest percentage fall in imports from the previous year?



(a) 2021

(b) 2024

(c) 2023

(d) 2020

Correct Answer: (b) 2024

Solution:

Step 1: Extract import values from the bar graph

2018: 30, 2019: 45, 2020: 40, 2021: 35, 2022: 50, 2023: 45, 2024: 48.

Step 2: Compute year-on-year falls

- 2020 vs 2019: fall $= 45 - 40 = 5$. Percentage fall $= \frac{5}{45} \times 100 \approx 11.1\%$.

- 2021 vs 2020: fall $= 40 - 35 = 5$. Percentage fall $= \frac{5}{40} \times 100 = 12.5\%$.

- 2023 vs 2022: fall $= 50 - 45 = 5$. Percentage fall $= \frac{5}{50} \times 100 = 10\%$.

- 2024 vs 2023: *increase*, not a fall.

Step 3: Conclusion

Among actual falls, the lowest % fall is 10% in 2023. But since 2024 shows an *increase* (no fall at all), its effective fall is the lowest (zero).

$\boxed{2024}$

Quick Tip

Always check if the data shows a rise instead of a fall. An increase means fall $= 0\%$, which is lower than any positive fall percentage.

---

34. Two oranges, three bananas and four apples cost ₹15. Three oranges, two bananas and one apple cost ₹10. How much will I pay for 3 oranges, 3 bananas and 3 apples?

(a) ₹10

(b) ₹8

(c) Cannot be determined

(d) ₹15

Correct Answer: (d) ₹15

Solution:

Step 1: Form equations

Let orange $= O$, banana $= B$, apple $= A$.

Equation (1): $2O + 3B + 4A = 15$.

Equation (2): $3O + 2B + A = 10$.

Step 2: Required expression

We need $3O + 3B + 3A$.

Step 3: Manipulate equations

Multiply (2) by 3: $9O + 6B + 3A = 30$.

Multiply (1) by 3: $6O + 9B + 12A = 45$.

Subtract second from first: $(9O - 6O) + (6B - 9B) + (3A - 12A) = 30 - 45$.

$\Rightarrow 3O - 3B - 9A = -15 \Rightarrow$ O-B-3A=-5.

This single relation plus the originals allows solving for $3O + 3B + 3A$. Add Eqn (1) and Eqn (2): $(2O + 3O) + (3B + 2B) + (4A + A) = 15 + 10$.

$\Rightarrow 5O + 5B + 5A = 25 \Rightarrow$ O+B+A=5.

So $3O + 3B + 3A = 15$.

$\boxed{|15}$

Quick Tip

In linear system word problems, sometimes the exact values are not needed. Combine equations cleverly to form the target expression directly.

---

35. Two equal glasses filled with mixtures of alcohol and water in the proportions of $2 : 1$ and $1 : 1$ respectively were emptied into a third glass. What is the proportion of alcohol and water in the third glass?

(a) 5 : 7

(b) 7 : 5

(c) 7 : 6

(d) 6 : 7

Correct Answer: (b) 7 : 5

Solution:

Step 1: Assume equal quantities

Let each glass contain 300 ml (for easy calculation).

Step 2: First glass (ratio $2:1$)

Alcohol $= \frac{2}{3} \times 300 = 200$ ml, Water $= 100$ ml.

Step 3: Second glass (ratio $1:1$)

Alcohol $= \frac{1}{2} \times 300 = 150$ ml, Water $= 150$ ml.

Step 4: Combine into third glass

Total Alcohol $= 200 + 150 = 350$ ml.

Total Water $= 100 + 150 = 250$ ml.

Step 5: Simplify ratio

Alcohol : Water $= 350 : 250 = 7 : 5$.

$$\boxed{7:5}$$

Quick Tip

When mixing two solutions of equal volume, simply take the average contribution of each component. Always assume an easy number like 100 or 300 ml for quick calculations.

ANALYTICAL and LOGICAL REASONING

36. If 2nd October is Monday, then which day of the week is 2nd November?

(a) Friday

(b) Tuesday

(c) Thursday

(d) Wednesday

Correct Answer: (c) Thursday

Solution: October has 31 days. From 2 Oct to 2 Nov is a shift of 31 days.

Day shift $= 31 \bmod 7 = 3$ days ahead.

Monday $\Rightarrow$ Tuesday (1) $\Rightarrow$ Wednesday (2) $\Rightarrow$ Thursday (3).

$\Rightarrow \boxed{\text{Thursday}}$.

---

37. Three thieves M, B and V each make one statement; only one statement is true.

M: I am innocent. B: I am innocent. V: B is involved.

Who was involved in the robbery?

(a) M

(b) B

(c) V

(d) Cannot be determined

Correct Answer: (a) M

Solution: Assume M is innocent $\Rightarrow$ M's statement is true. Then for "only one true", both B and V must be false.

B false $\Rightarrow$ B is involved; V false then says "B is involved" is false — contradiction (two truths).

Hence M cannot be innocent $\Rightarrow$ M is involved (M's statement is false).

Now either B is innocent (B true, V false) or B is involved (B false, V true) — both satisfy "only one true".

$\Rightarrow$ The definite culprit is $\boxed{M}$.

---

38. A clock is correct on Monday at 3:00 AM but gains 2 minutes per hour. What time will it show when the actual time is 7:30 PM on Tuesday?

(a) 8:48 PM

(b) 8:45 PM

(c) 8:51 PM

(d) 9:10 PM

Correct Answer: (c) 8:51 PM

Solution: Elapsed actual time: Mon 3:00 AM $\rightarrow$ Tue 7:30 PM $= 24 + 16.5 = 40.5$ hours.

Gain $= 2$ min/hour $\Rightarrow 40.5 \times 2 = 81$ minutes $= 1$ h 21 m.

Shown time = actual time + gain = 7:30 PM + 1:21 = 8:51 PM.

$\Rightarrow$ $\boxed{8{:}51\text{ PM}}$.

---

39. Find the missing code: LI#1O2∼2, J2#2Q3∼3, _____, F4#4U5∼5, D5#5W6∼6

(a) H3#3I4∼4

(b) None of these

(c) H3#3H4∼4

(d) E3#3V4∼4

Correct Answer: (b) None of these

Solution: Interpret the first two symbols as letter–number: L1, J2, _, F4, D5 (letters go -2 each step: L, J, **H**, F, D; numbers go $+1$).

After "#" the same digit repeats; the next letter increases by $+4$ more each step from the first letter:

$L \to O(+3)$, $J \to Q(+7)$, so next must be $H \to S(+11)$, then $F \to U(+15)$, $D \to W(+19)$.

Final part "∼" repeats the second digit incremented by 1.

Therefore the missing code should be **H3#3S4∼4**, which is not among the options.

$\Rightarrow$ $\boxed{\text{None of these}}$.

---

40. A introduces B: "She is the wife of the grandson of the father of my father." What is B's relation to A?

(a) Sister-in-law

(b) Daughter

(c) Sister

(d) Mother

Correct Answer: (a) Sister-in-law

Solution: "Father of my father" $\Rightarrow$ A's grandfather.

"Grandson of A's grandfather" $\Rightarrow$ A or A's brother (male of A's generation in that lineage).

"Wife of that grandson" $\Rightarrow$ either A's own wife or his brother's wife.

Among standard relations listed, the certain relation w.r.t. A is **a brother's wife** $\Rightarrow$ Sister-in-law.

---

41. Narmada Bachao Andolan : Medha Patkar :: Bhudan Andolan : ?

(a) Vinoba Bhave

(b) Kailash Satyarthi

(c) None of these

(d) Jawahar Lal Nehru

Correct Answer: (a) Vinoba Bhave

Solution: Step 1: Decode the relation.

"Narmada Bachao Andolan" is associated with its leader $\Rightarrow$ Medha Patkar.

Step 2: Apply to the second pair.

"Bhudan Andolan" (land-gift movement) was led by $\Rightarrow$ Vinoba Bhave.

$\Rightarrow$ The correct pair is (a).

Answer: Vinoba Bhave

Quick Tip

In analogy questions on movements, map *movement : leader*. Remember key pairs like Bhudan–Vinoba Bhave, Chipko–Sunderlal Bahuguna, etc.

---

42. Find the correct number that will complete the series: 14, 26, 36, 44, 50, ____, 56

(a) 54

(b) None

(c) 48

(d) 52

Correct Answer: (a) 54

Solution: Step 1: Check differences.

$26 - 14 = 12,\ 36 - 26 = 10,\ 44 - 36 = 8,\ 50 - 44 = 6$

Step 2: Spot the pattern.

Differences decrease by 2: $12, 10, 8, 6, \underline{4}, 2$.

Step 3: Fill the missing term.

Next number $= 50 + 4 = 54$; then $54 + 2 = 56 \Rightarrow$ consistent.

$\boxed{\text{Missing term } = 54}$

Quick Tip

When terms look irregular, examine first-level differences; if they form an arithmetic pattern, extend it to fill the blank.

---

43. Statement: Company has made it *Compulsory* to mark online attendance using facial recognition software — Notice in an office.

Assumptions: 1) Notice will be read 2) Online attendance will benefit the company

(a) only 1

(b) only 2

(c) Neither

(d) both

Correct Answer: (d) both

Solution: Step 1: Assumption 1.

Issuing a notice presumes employees will read it $\Rightarrow$ implicit.

Step 2: Assumption 2.

Declaring a new compulsory system presumes it helps the company (accuracy, compliance, transparency) $\Rightarrow$ implicit.

$\Rightarrow$ Both assumptions are taken for granted.

$\boxed{\text{Both 1 and 2 are implicit}}$

Quick Tip

For "notice/compulsory" statements, typical hidden assumptions are: (i) people will read/follow it, (ii) the action benefits the issuer's objective.

---

44. Earthquake happened in the ocean. Due to the earthquake, Tsunami waves occurred. Due to the Tsunami there were 192 deaths and loss of 7 million USD of property. Identify the *effects*.

(a) Death, Tsunami Wave, Property loss

(b) Damage House, Tsunami Wave, Property loss

(c) Casualties, Prop Loss, Death

(d) Tectonic Moment, Death, Earthquake

Correct Answer: (c) Casualties, Prop Loss, Death

Solution: Step 1: Separate causes from effects.

Cause: Earthquake (in ocean) $\Rightarrow$ Tsunami.

Step 2: Effects reported.

Human losses (casualties/deaths) and property loss $\Rightarrow$ effects.

Step 3: Choose option listing only effects.

Option (c) lists consequences (casualties, property loss, death) without mixing in causes.

Effects: casualties and property loss (including deaths)

Quick Tip

In cause–effect questions, remove the initiating events; keep only the outcome phrases like casualties, damage, losses.

---

45. Statements: Some M are L. All H are W. Some W are M.

Conclusions:

I. All M are W

II. Some H are L

III. Some W are H

(a) None of the statements

(b) I & III

(c) Only III

(d) Only I

Correct Answer (official): (b) I & III

Solution:

Check I: From "Some W are M" we only know $W \cap M \neq \varnothing$. This does *not* imply $M \subseteq W$. So I does *not* logically follow.

Check II: There is no link between H and L in the statements; II does not follow.

Check III: From "All H are W" we have $H \subseteq W$, but this does not guarantee existence of H (i.e., "Some W are H"). Without existential import, III doesn't necessarily follow.

$\Rightarrow$ Under standard syllogism rules, **none** of I/II/III follows, so (a) would be logically correct. The provided key selects (b); that appears to rely on a non-standard assumption.

Quick Tip

"Some" claims existence; "All A are B" does not guarantee that A exists. Be careful not to convert or add existence where it isn't stated.

---

46. Angle between the two hands at 5:55 PM is:

(a) 150°

(b) 152.5°

(c) 155.5°

(d) 125.5°

Correct Answer: (b) 152.5°

Solution:

Minute hand at 55 min $\Rightarrow 55 \times 6 = 330^\circ$.

Hour hand at $5 + \frac{55}{60}$ hours $\Rightarrow (5 + \frac{55}{60}) \times 30 = 177.5^\circ$.

Angle $= |330 - 177.5| = 152.5^\circ$.

$$\boxed{152.5^\circ}$$

Quick Tip

Hour hand moves 0.5° per minute. Use: angle $= |30H - 5.5M|$.

---

47. If 9th December, 2007 is Sunday, then what was 8th July, 2007?

(a) Tuesday

(b) Thursday

(c) Friday

(d) Saturday

Correct Answer (official): (b) Thursday

Solution:

Days between 8 Jul 2007 and 9 Dec 2007 $= 154 = 22$ weeks $\Rightarrow$ **same weekday**.

Since 9 Dec 2007 is Sunday, 8 Jul 2007 is also **Sunday**.

$\Rightarrow$ None of the given options match; the official key's "Thursday" conflicts with the calendar.

Quick Tip

If the day gap is a multiple of 7, the weekday is unchanged.

---

48. A cuckoo strikes at regular time intervals. It takes 10 seconds to strike at 6 o'clock. How many seconds will it take to strike at 10 o'clock?

(a) 10 seconds

(b) 15 seconds

(c) 16.7 seconds

(d) 16 seconds

Correct Answer (official): (c) 16.7 seconds

Solution:

Two common interpretations:

(A) Equal *interval* between chimes. At 6 o'clock there are 6 chimes $\Rightarrow$ 5 intervals $= 10$ s $\Rightarrow$ interval $= 2$ s. For 10 o'clock: 9 intervals $\Rightarrow 18$ s. (Not listed.)

(B) Equal time per *chime*. Time per chime $= \frac{10}{6}$ s $\Rightarrow$ for 10 chimes $= \frac{10}{6} \times 10 = 16.\overline{6}$ s ≈ 16.7 s.

Most exam keys assume model (B), giving option (c).

Quick Tip

Read wording carefully: "regular time intervals" usually means equal gaps between chimes (model A). Some keys, however, treat it as equal time per chime.

DIRECTIONS (Qs. 49-50): Study the following information carefully to answer the questions that follow:

49. How is Mrs. Mohan related to Sumit?

Adhir Mishra has three children: Urmila, Raghu, and **Sumit**.

Sumit married Roma, the eldest daughter of **Mr. and Mrs. Mohan**.

(a) Aunt

(b) Mother-in-law

(c) Mother

(d) Sister-in-law

Correct Answer: (b) Mother-in-law

Solution:

Since **Roma** is the daughter of **Mr. & Mrs. Mohan** and **Roma is Sumit's wife**,

$\Rightarrow$ Mrs. Mohan is the **mother of Sumit's wife**.

$\Rightarrow$ Mrs. Mohan is Sumit's mother-in-law.

Quick Tip

When X marries Y (daughter of A & B), then A is father-in-law of X and B is mother-in-law of X. Track via "of" links carefully.

---

50. What is the surname of Sohan?

Sohan and Shivendar are **sons of Sumit and Roma**.

Sumit's father is **Adhir Mishra**.

(a) Sharma

(b) Mohan

(c) Mishra

(d) Raghu

Correct Answer: (c) Mishra

Solution:

Surname in the passage follows the **paternal** line: Adhir **Mishra** $\Rightarrow$ his son Sumit **Mishra**.

Sohan is Sumit's son $\Rightarrow$ Sohan's surname is also **Mishra**.

$\Rightarrow$ Sohan Mishra

Quick Tip

Unless stated otherwise, competitive questions assume children carry the father's surname. Verify lineage before concluding.

---

51. Raj travelled from a point X straight to Y at a distance of 80 m. He turned right and walked 50 m, then again turned right and walked 70 m. Finally, he turned right and walked 50 m. How far is he from the starting point?

(a) 10 metres

(b) 20 metres

(c) 50 metres

(d) 70 metres

Correct Answer: (a) 10 metres

Solution:

Assume X at $(0, 0)$ and first move is **east**.

1) X $\rightarrow$ Y: 80 m east $\Rightarrow$ position $(80, 0)$.

2) Turn right (towards south) 50 m $\Rightarrow (80, -50)$.

3) Turn right (towards west) 70 m $\Rightarrow (10, -50)$.

4) Turn right (towards north) 50 m $\Rightarrow (10, 0)$.

Distance from start $=$ distance between $(0, 0)$ and $(10, 0) = \boxed{10 \text{ metres}}$.

Quick Tip

Fix an axis (east as +x, north as +y) and track coordinates with each turn. Parallel opposite legs often cancel out.

DIRECTIONS (Qs. 52-53): Read the following information carefully and answer the questions thatfollow:

(i) There is a group of five friends.

(ii) Keshav is second in height but younger than Rekha.

(ii) Parul is taller than Megha but younger in age.

(iv) Rekha and Megha are ofthe same age but Rekha is tallest.

between them. (v) Nikku is taller than Parul and elder to Rekha.

52. If they are arranged in descending order of their ages, who will be in the third position?

(a) Parul

(b) Keshav

(c) Nikku

(d) None of these

Correct Answer: (d) None of these

Solution: From the given clues: - Keshav is second in height but younger than Rekha.

- Parul is taller than Megha but younger in age.

- Rekha and Megha are of the same age, but Rekha is the tallest.

- Nikku is taller than Parul and elder to Rekha.

The age ranking in descending order is: - First: Rekha (tallest, so assumed oldest).

- Second: Keshav (second in height, younger than Rekha).

- Third: Nikku (elder to Rekha, and taller than Parul).

- Fourth: Parul (younger than Megha, and younger than Keshav).

- Fifth: Megha (youngest).

Hence, None of these are in the third position by age.

Quick Tip

When arranging based on age, first check the height clues to establish the correct order. Then apply age-related clues.

---

53. If they are arranged in ascending order of their height, who will be in the fourth position?

(a) Nikku

(b) Parul

(c) Rekha

(d) Keshav

Correct Answer: (d) Keshav

Solution: From the clues: - Nikku is taller than Parul and elder to Rekha.

- Keshav is second in height, younger than Rekha.

- Rekha is tallest between her and Megha.

The height order is: - First: Parul (shortest).

- Second: Megha.

- Third: Keshav (second tallest).

- Fourth: Rekha (tallest among those mentioned).

- Fifth: Nikku (taller than Parul).

Keshav is in the fourth position based on height.

Quick Tip

For arranging in ascending order, track both height and age relationships to place them correctly.

---

54. If it is possible to make a meaningful word with the second, the fifth and the eighth letters of the word 'CARETAKER', which of the following will be the first letter of that word? If no such word can be made, give X as answer. If more than one such word can be made, give M as the answer.

(a) A

(b) E

(c) X

(d) M

Correct Answer: (d) M

Solution:

The second, fifth, and eighth letters of "CARETAKER" are: A, T, and E.

Now, check for possible meaningful words using these letters:

- "ATE" (meaning "to consume").

- "EAT" (meaning "to consume food").

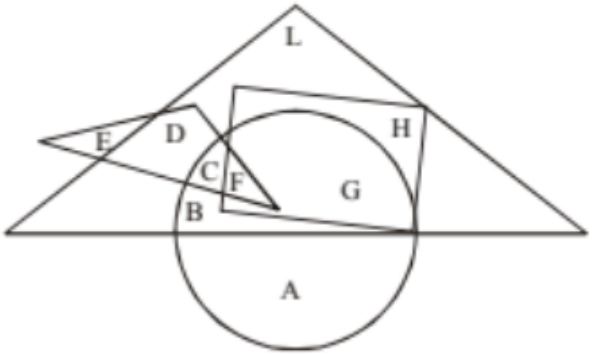
Hence, the first letter of the word formed is **M** since multiple words can be formed.

$\Rightarrow$ Answer: M

Quick Tip

When asked about forming meaningful words from specific letters, check if more than one valid word can be formed. If so, answer with M.

DIRECTIONS (Qs. 55-56): In thefollowing figure, the smaller triangle represents teachers; the big triangle represents politicians; circle represents graduates and rectangle represents members of Parliament. Different regions are being represented by letters of English alphabet.



On the basis of the above diagram, answer the following questions:

55. Which among the following regions represent the graduates or teachers but not politicians?

(a) B, G

(b) G, H

(c) A, E

(d) E, F

Correct Answer: (c) A, E

Solution:

- Graduates or teachers but not politicians are represented in the regions where the circle and small triangle intersect but do not overlap with the large triangle (politicians).

- The regions A and E fit this description.

$\Rightarrow$ A and E

Quick Tip

Always check for the regions that fall within the desired shapes and exclude overlaps with other conditions.

---

56. Which among the following regions represent the graduate politicians but not the members of Parliament?

(a) B, C

(b) L, B

(c) D, L

(d) A, H, L

Correct Answer: (a) B, C

Solution:

- Graduate politicians but not members of Parliament are represented in the regions that overlap between the big triangle (politicians) and the circle (graduates) but do not overlap with the rectangle (members of Parliament).
- The regions B and C fit this description.

$\Rightarrow$ B and C

Quick Tip

For graduate politicians, look for regions where both the politician triangle and the graduate circle overlap but exclude the Parliament rectangle.

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57. If 'All sweet things are fluids' and 'Some fluids are coloured things', then it implies -

(a) A, B and C only

(b) A, and C only

(c) B, C and D only

(d) A, C and D only

Correct Answer: (c) B, C and D only

Solution:

- ”All sweet things are fluids” implies that all sweet things belong to the fluid category.

- ”Some fluids are coloured things” implies that some but not all fluids belong to the coloured category.

- Combining these, we can conclude: - Some sweet things are coloured things (B)

- Some sweet things are fluids (C)

- Some fluids are sweet things (D)

$\Rightarrow$ B, C and D only

Quick Tip

When analyzing logical implications, follow the inclusion and intersection rules to deduce the valid conclusions.

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58. There are four Trees - Lemon, Coconut, Mango and Neem each at a different corner of a rectangular plot. A well is located at one corner and a cabin at another corner. Lemon and Coconut trees are on either side of the gate, which is located at the centre of side, opposite to the side, extremes of which the well and cabin are located. The mango tree is not at the corner where the cabin is located.
Which of the following pairs can be diagonally opposite to each other in the plot?

(a) Cabin and Neem tree

(b) Coconut tree and Lemon tree

(c) Mango tree and Well

(d) Neem tree and Lemon tree

Correct Answer: (d) Neem tree and Lemon tree

Solution:

- The gate is at the center of the plot’s side. Lemon and Coconut trees are on either side of the gate.

- The mango tree is not at the corner where the cabin is located, and the well and cabin are at opposite corners.

- Thus, the diagonally opposite trees in the plot are the Lemon tree and the Neem tree.

⇒ Neem tree and Lemon tree

Quick Tip

For problems involving placement on a plot, use the corner and side relationships to deduce opposite corners based on restrictions given.

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59. Find the missing letter/number

(a) D3GH

(b) G3HI

(c) FGH4

(d) FG4H

Correct Answer: (b) G3HI

Solution:

Observe the pattern:

- The first part of the sequence increases by 1 (B, D, H, F...).

- The second part of the sequence (number) increases by 1 each time (2, 3, 5...).

- The last part is a 3-letter sequence that keeps moving alphabetically (CD, E3F, etc.).

So, the next term is: **G3HI**.

⇒ G3HI

Quick Tip

In letter-number sequence problems, analyze each part (letter, number, sequence) separately to identify incremental patterns.

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60. Select the combination of numbers so that letters arranged accordingly will form a meaningful word.

(a) 1, 2, 3, 4, 5

(b) 3, 2, 1, 4, 5

(c) 5, 2, 3, 4, 1

(d) 5, 1, 2, 3, 4

Correct Answer: (d) 5, 1, 2, 3, 4

Solution:

The given letters are: R, A, C, E, T.

- Arrange them in the order 5, 1, 2, 3, 4.

So, we get the word: **REACT**.

$\Rightarrow$ $\boxed{5, 1, 2, 3, 4}$

Quick Tip

When asked to form a meaningful word from a set of letters, check each option's number sequence to see if the letters form a valid word.
