

ATMA Quantitative Skills Sample Paper – 7

Duration: 60 Minutes

Maximum Marks: 60

Instructions

- This paper contains **60** Multiple Choice Questions (Single Correct Answer) arranged in **two parts (Part I: Q1–Q30, Part II: Q31–Q60)**, modelled on the Quantitative Skills portion of **ATMA** (AIMS Test for Management Admissions).
- Each correct answer carries **+1 marks**. There is a **penalty of 0.25 mark** for each incorrect answer, while unattempted questions earn **0**.
- Only **one** option is correct. Choose carefully.
- Syllabus level: **Quantitative aptitude (arithmetic, algebra, geometry, modern maths, data interpretation)**
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.

Part I (Q1–Q30)

Q1. The largest power of 3 that exactly divides $30!$ is

- (A) 3^{12}
- (B) 3^{16}
- (C) 3^{14}
- (D) 3^{10}

Q2. A number when divided by 342 leaves a remainder 47. When the same number is divided by 19, the remainder will be

- (A) 9
- (B) 7



- (C) 5
- (D) 11

Q3. In an election between two candidates, the winner secured 58% of the valid votes and won by a margin of 2400 votes. The total number of valid votes polled was

- (A) 12,000
- (B) 16,000
- (C) 20,000
- (D) 15,000

Q4. A's salary is first increased by 20% and then the new salary is reduced by 20%. The net change in A's original salary is

- (A) 4% increase
- (B) 4% decrease
- (C) No change
- (D) 2% decrease

Q5. A and B start a business. A invests Rs. 24,000 for 6 months and B invests Rs. 18,000 for 8 months. The profit of Rs. 9600 is divided between them. A's share (in Rupees) is

- (A) Rs. 4000
- (B) Rs. 5600
- (C) Rs. 4800
- (D) Rs. 5200

Q6. The average of 11 consecutive odd numbers is 33. The largest of these numbers is

- (A) 43



- (B) 41
- (C) 45
- (D) 39

Q7. A trader buys 12 oranges for Rs. 100 and sells 10 oranges for Rs. 100. His profit percentage is

- (A) $16\frac{2}{3}\%$
- (B) 20%
- (C) 25%
- (D) 15%

Q8. The marked price of an article is Rs. 1200. After two successive discounts of 10% and 15%, the selling price (in Rupees) is

- (A) 930
- (B) 900
- (C) 1080
- (D) 918

Q9. The difference between the compound interest and the simple interest on a sum of Rs. 5000 at 10% per annum for 2 years is

- (A) Rs. 50
- (B) Rs. 100
- (C) Rs. 55
- (D) Rs. 40

Q10. A man covers a distance of 60 km in 5 hours, partly on foot at 8 km/h and partly on a bicycle at 16 km/h. The distance (in km) he travelled on foot is

- (A) 16



- (B) 24
- (C) 20
- (D) 32

Q11. A train running at 72 km/h crosses a pole in 12 seconds. The length of the train (in metres) is

- (A) 200
- (B) 240
- (C) 300
- (D) 216

Q12. A is twice as efficient as B and together they finish a piece of work in 16 days. The number of days A alone takes to finish the work is

- (A) 24
- (B) 32
- (C) 48
- (D) 20

Q13. Pipe A can fill a tank in 10 minutes and pipe B in 40 minutes. Both pipes are opened together, but pipe B is closed after 4 minutes. The total time (in minutes) taken to fill the tank is

- (A) 8
- (B) 7.5
- (C) 6
- (D) 9

Q14. The sum of two numbers is 45 and their difference is 9. The product of the two numbers is

- (A) 450



- (B) 504
- (C) 486
- (D) 510

Q15. If one root of the equation $x^2 - 6x + k = 0$ is 4, then the value of k and the other root are

- (A) $k = 6$, other root 3
- (B) $k = 8$, other root 2
- (C) $k = 10$, other root 2
- (D) $k = 8$, other root 3

Q16. The solution set of the inequality $\frac{x - 2}{x + 3} > 0$ is

- (A) $x < -3$ or $x > 2$
- (B) $-3 < x < 2$
- (C) $x > 2$ only
- (D) $x < -3$ only

Q17. The 10th term of the arithmetic progression 7, 11, 15, 19, ... is

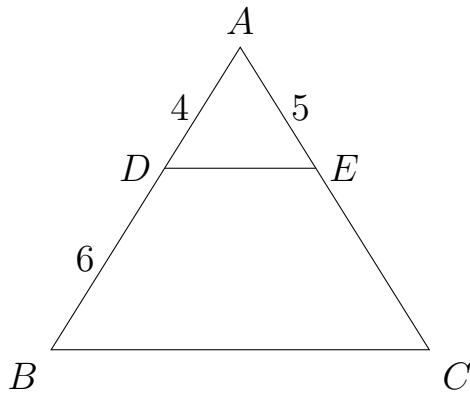
- (A) 39
- (B) 47
- (C) 43
- (D) 51

Q18. The number of different signals that can be made using 5 flags of different colours, taking 3 at a time, is

- (A) 10
- (B) 120
- (C) 15
- (D) 60



- Q19.** In how many ways can a team of 4 players be selected from 7 players?
- (A) 28
(B) 35
(C) 210
(D) 42
- Q20.** A card is drawn at random from a well-shuffled pack of 52 playing cards. The probability that it is a face card (king, queen or jack) is
- (A) $\frac{3}{13}$
(B) $\frac{1}{13}$
(C) $\frac{4}{13}$
(D) $\frac{1}{4}$
- Q21.** In the figure, $DE \parallel BC$ with $AD = 4$ cm, $DB = 6$ cm and $AE = 5$ cm. The length of EC (in cm) is

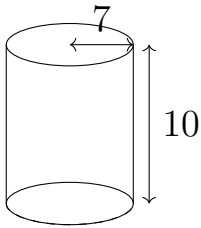


- (A) 6
(B) 8
(C) 7.5
(D) 10
- Q22.** In a triangle ABC , the exterior angle at C is 120° and $\angle A = 70^\circ$. The measure of $\angle B$ is



- (A) 60°
- (B) 40°
- (C) 70°
- (D) 50°

Q23. A solid right circular cylinder has base radius 7 cm and height 10 cm. Its total surface area (take $\pi = \frac{22}{7}$), in cm^2 , is



- (A) 440
- (B) 308
- (C) 660
- (D) 748

Q24. The volume of a right circular cone of base radius 6 cm and height 7 cm (take $\pi = \frac{22}{7}$), in cm^3 , is

- (A) 792
- (B) 264
- (C) 352
- (D) 176

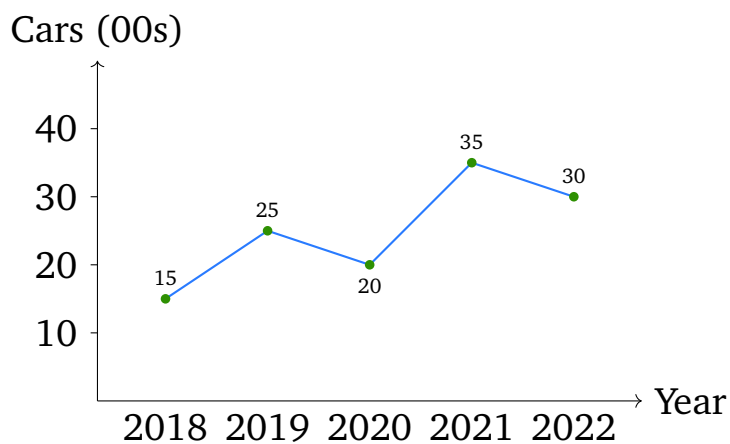
Q25. If $2^x = 8^{y+1}$ and $9^y = 3^{x-9}$, then the value of x is

- (A) 18
- (B) 24
- (C) 21
- (D) 27



- Q26.** In a survey of 120 people, 70 read newspaper P, 50 read newspaper Q, and 30 read both. The number of people who read neither newspaper is
- (A) 20
(B) 40
(C) 50
(D) 30

- Q27. Directions (Q27–Q29):** The line graph shows the number of cars (in hundreds) sold by a dealer over five years.



The total number of cars sold over the five years (in hundreds) is

- (A) 115
(B) 125
(C) 130
(D) 120
- Q28.** (Refer to the line graph in Q27.) The percentage increase in cars sold from 2020 to 2021 is
- (A) 75%
(B) 70%
(C) 60%
(D) 50%



Q29. (Refer to the line graph in Q27.) The average number of cars sold per year over the five years (in hundreds) is

- (A) 24
- (B) 26
- (C) 25
- (D) 23

Q30. Data Sufficiency: What is the value of the positive integer x ?

Statement I: x is a prime number less than 10.

Statement II: x is even.

Choose the correct option:

- (A) Statement I alone is sufficient, but Statement II alone is not.
- (B) Both statements together are sufficient, but neither alone is sufficient.
- (C) Each statement alone is sufficient.
- (D) Statement II alone is sufficient, but Statement I alone is not.



Part II (Q31–Q60)

- Q31.** The number of trailing zeros at the end of the product $25!$ is
- (A) 6
 - (B) 5
 - (C) 4
 - (D) 7
- Q32.** The greatest number that divides 43, 91 and 183 leaving the same remainder in each case is
- (A) 9
 - (B) 8
 - (C) 4
 - (D) 6
- Q33.** If the price of sugar rises by 25%, by what percentage must a family reduce its consumption so that the expenditure on sugar remains unchanged?
- (A) 25%
 - (B) 20%
 - (C) 15%
 - (D) 30%
- Q34.** A student scored 36% marks and failed by 24 marks. Another student scored 43% and got 18 marks more than the passing mark. The maximum marks of the examination are
- (A) 600
 - (B) 500
 - (C) 720



(D) 640

Q35. If $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, then the ratio $(x + y + z) : z$ equals

(A) 3 : 5

(B) 5 : 12

(C) 1 : 5

(D) 12 : 5

Q36. A vessel contains 40 litres of pure milk. 4 litres are drawn out and replaced with water; this operation is performed once more. The quantity of pure milk (in litres) now in the vessel is

(A) 36

(B) 30

(C) 32.4

(D) 34

Q37. A dishonest dealer professes to sell his goods at cost price but uses a weight of 800 grams for a kilogram. His gain percentage is

(A) 25%

(B) 20%

(C) 12.5%

(D) 15%

Q38. A shopkeeper allows a discount of 10% on the marked price and still makes a profit of 20%. If the cost price of an article is Rs. 450, the marked price (in Rupees) is

(A) 640

(B) 600

(C) 540



(D) 660

Q39. A certain sum amounts to Rs. 9680 in 2 years and to Rs. 10,648 in 3 years at compound interest, compounded annually. The rate of interest per annum is

(A) 8%

(B) 12%

(C) 15%

(D) 10%

Q40. Excluding stoppages, the speed of a bus is 54 km/h, and including stoppages it is 45 km/h. For how many minutes does the bus stop per hour?

(A) 10

(B) 9

(C) 12

(D) 15

Q41. A and B start from the same point and walk in the same direction at 6 km/h and 4 km/h respectively. After 3 hours, the distance (in km) between them is

(A) 30

(B) 2

(C) 6

(D) 10

Q42. 15 men can complete a piece of work in 20 days. How many days will 25 men take to complete the same work?

(A) 15

(B) 10



(C) 18

(D) 12

Q43. A cistern has a leak that can empty the full cistern in 10 hours. An inlet pipe fills water at the rate of 4 litres per minute. With the inlet open, the full cistern empties in 15 hours. The capacity of the cistern (in litres) is

(A) 6000

(B) 4800

(C) 3600

(D) 7200

Q44. A two-digit number is such that the sum of its digits is 11. If 45 is added to the number, the digits are reversed. The number is

(A) 47

(B) 38

(C) 56

(D) 29

Q45. If the roots of $x^2 - px + 12 = 0$ differ by 1, then the positive value of p is

(A) 8

(B) 6

(C) 7

(D) 5

Q46. The number of integers x satisfying $|2x - 5| \leq 7$ is

(A) 6

(B) 9

(C) 7

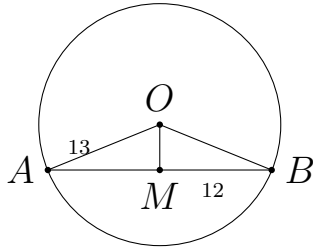
(D) 8



- Q47.** The sum of the first n terms of a series is $n^2 + 2n$. The 8th term of the series is
- (A) 17
(B) 19
(C) 15
(D) 21
- Q48.** The number of diagonals in a regular polygon of 8 sides (an octagon) is
- (A) 16
(B) 20
(C) 28
(D) 24
- Q49.** How many three-digit numbers can be formed using the digits 1, 2, 3, 4, 5 without repetition?
- (A) 125
(B) 10
(C) 60
(D) 120
- Q50.** Two coins are tossed simultaneously. The probability of getting at least one head is
- (A) $\frac{1}{2}$
(B) $\frac{1}{4}$
(C) $\frac{1}{3}$
(D) $\frac{3}{4}$

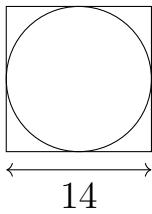


- Q51.** In the figure, O is the centre of the circle of radius 13 cm and AB is a chord of length 24 cm. The distance OM (in cm) of the chord from the centre is



- (A) 5
(B) 7
(C) 6
(D) 12
- Q52.** The angle subtended at the centre of a circle of radius 7 cm by an arc of length 11 cm is (take $\pi = \frac{22}{7}$)
- (A) 60°
(B) 90°
(C) 120°
(D) 45°
- Q53.** A cuboidal water tank has dimensions 2 m \times 1.5 m \times 1 m. The volume of water it holds, in litres, is
- (A) 300
(B) 30,000
(C) 1500
(D) 3000
- Q54.** The area of the largest circle that can be cut from a square sheet of side 14 cm (take $\pi = \frac{22}{7}$), in cm^2 , is





- (A) 154
- (B) 196
- (C) 616
- (D) 77

Q55. If $\log_{10} 2 = 0.3010$, then the number of digits in 2^{64} is

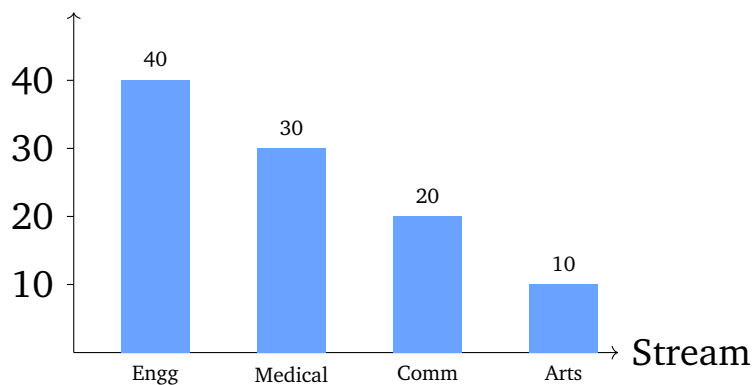
- (A) 18
- (B) 20
- (C) 19
- (D) 21

Q56. If $f(x) = \frac{x+1}{x-1}$ for $x \neq 1$, then $f(f(2))$ equals

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

Q57. Directions (Q57–Q59): The bar graph shows the number of students (in hundreds) enrolled in a coaching institute in four streams.

Students (00s)



The total number of students enrolled across all four streams (in hundreds) is

- (A) 100
- (B) 90
- (C) 110
- (D) 95

Q58. (Refer to the bar graph in Q57.) The percentage of the total enrolment that is in the Engineering stream is

- (A) 30%
- (B) 40%
- (C) 25%
- (D) 35%

Q59. (Refer to the bar graph in Q57.) The ratio of students in the Medical stream to those in the Arts stream is

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

Q60. Data Sufficiency: Is the quadrilateral $PQRS$ a square?

Statement I: All four sides of $PQRS$ are equal.

Statement II: All four angles of $PQRS$ are right angles.

Choose the correct option:

- (A) Both statements together are sufficient, but neither alone is sufficient.
- (B) Statement I alone is sufficient, but Statement II alone is not.
- (C) Each statement alone is sufficient.
- (D) Statement II alone is sufficient, but Statement I alone is not.



Detailed Solutions

Q1.

Solution

Concept — Highest power of a prime in a factorial: The exponent of prime p in $n!$ equals $\left\lfloor \frac{n}{p} \right\rfloor + \left\lfloor \frac{n}{p^2} \right\rfloor + \left\lfloor \frac{n}{p^3} \right\rfloor + \dots$

Step 1 — Divide by 3: $\left\lfloor \frac{30}{3} \right\rfloor = 10$.

Step 2 — Divide by 9: $\left\lfloor \frac{30}{9} \right\rfloor = 3$.

Step 3 — Divide by 27: $\left\lfloor \frac{30}{27} \right\rfloor = 1$.

Step 4 — Add the contributions: $10 + 3 + 1 = 14$, so the highest power is 3^{14} .

Why other options are wrong:

- 3^{10} counts only the first term.
- 3^{12} and 3^{16} mis-add the floor terms.

Final Answer: $3^{14} \Rightarrow$ C

Answer: (C) [Go Back to Q1](#)

Q2.

Solution

Concept — Nested divisors: Since $342 = 19 \times 18$, any number of the form $342k + 47$ can be reduced modulo 19.

Step 1 — Write the number: $N = 342k + 47$ for some integer k .

Step 2 — Reduce $342k$ modulo 19: As $342 = 19 \times 18$, the term $342k$ is divisible by 19, leaving remainder 0.

Step 3 — Reduce 47 modulo 19: $47 = 19 \times 2 + 9$, so the remainder is 9.

Why other options are wrong:

- 7, 5 and 11 do not equal $47 \pmod{19}$.

Final Answer: remainder = 9 \Rightarrow A

Answer: (A) [Go Back to Q2](#)



Q3.

Solution

Concept — Winning margin in a two-candidate election: The margin equals the difference of the two vote shares.

Step 1 — Loser's share: If winner has 58%, the loser has $100\% - 58\% = 42\%$.

Step 2 — Margin as a percentage: Margin = $58\% - 42\% = 16\%$ of the total valid votes.

Step 3 — Solve for the total: 16% of total = 2400 \Rightarrow total = $\frac{2400}{0.16} = 15,000$.

Why other options are wrong:

- 12,000 and 20,000 use the wrong margin percentage.
- 16,000 divides by 0.15 instead of 0.16.

Final Answer: 15,000 valid votes \Rightarrow **D**

Answer: (D) [Go Back to Q3](#)

Q4.

Solution

Concept — Successive equal percentage rise then fall: A rise of $x\%$ followed by a fall of $x\%$ always gives a net fall of $\left(\frac{x}{10}\right)^2\%$.

Step 1 — Apply the increase: Take salary = 100; after 20% rise it becomes 120.

Step 2 — Apply the decrease: 20% of 120 = 24, so new salary = $120 - 24 = 96$.

Step 3 — Net change: $96 - 100 = -4$, i.e. a 4% decrease.

Why other options are wrong:

- “No change” wrongly assumes the rise and fall cancel.
- 4% increase reverses the sign; 2% uses a wrong base.

Final Answer: 4% decrease \Rightarrow **B**

Answer: (B) [Go Back to Q4](#)



Q5.

Solution

Concept — Profit sharing by capital \times time: Each partner's share is proportional to (investment \times duration).

Step 1 — A's capital-months: $24,000 \times 6 = 1,44,000$.

Step 2 — B's capital-months: $18,000 \times 8 = 1,44,000$.

Step 3 — Ratio of shares: $1,44,000 : 1,44,000 = 1 : 1$, so each gets half.

Step 4 — A's share: $\frac{9600}{2} = \text{Rs. } 4800$.

Why other options are wrong:

- Rs. 4000 and Rs. 5600 ignore that the capital-months are equal.
- Rs. 5200 uses an unequal split.

Final Answer: A's share = Rs. 4800 \Rightarrow C

Answer: (C) [Go Back to Q5](#)

Q6.

Solution

Concept — Average of consecutive odd numbers: For an odd count of terms in AP, the average equals the middle term.

Step 1 — Identify the middle term: With 11 terms, the middle (6th) term equals the average = 33.

Step 2 — Step to the largest term: The terms increase by 2. From the 6th to the 11th term there are 5 steps.

Step 3 — Compute the largest: $33 + 5 \times 2 = 33 + 10 = 43$.

Why other options are wrong:

- 41 and 39 take too few steps from the middle.
- 45 takes one step too many.

Final Answer: largest = 43 \Rightarrow A

Answer: (A) [Go Back to Q6](#)



Q7.

Solution

Concept — Profit from buying and selling rates: Bring both rates to a common quantity (cost and revenue per orange).

Step 1 — Cost price per orange: $\frac{100}{12} = \text{Rs. } \frac{25}{3}$.

Step 2 — Selling price per orange: $\frac{100}{10} = \text{Rs. } 10$.

Step 3 — Profit per orange: $10 - \frac{25}{3} = \frac{30-25}{3} = \frac{5}{3}$.

Step 4 — Profit percentage: $\frac{5/3}{25/3} \times 100 = \frac{5}{25} \times 100 = 20\%$.

Why other options are wrong:

- $16\frac{2}{3}\%$ wrongly takes profit over selling price.
- 25% and 15% misread the buy/sell rates.

Final Answer: 20% profit \Rightarrow B

Answer: (B) [Go Back to Q7](#)

Q8.

Solution

Concept — Successive discounts: Apply each discount factor in turn to the marked price.

Step 1 — After 10% discount: $1200 \times 0.90 = 1080$.

Step 2 — After 15% discount on the reduced price: $1080 \times 0.85 = 918$.

Why other options are wrong:

- 1080 stops after only the first discount.
- 930 and 900 add the discounts (25%) instead of applying them successively.

Final Answer: selling price = Rs. 918 \Rightarrow D

Answer: (D) [Go Back to Q8](#)



Q9.

Solution

Concept — CI – SI for two years: The difference equals $P \left(\frac{r}{100} \right)^2$.

Step 1 — Substitute the values: $P = 5000, r = 10$.

Step 2 — Apply the formula: Difference = $5000 \times \left(\frac{10}{100} \right)^2 = 5000 \times \frac{1}{100} = 50$.

Why other options are wrong:

- Rs. 100 doubles the correct difference.
- Rs. 55 and Rs. 40 use a wrong rate factor.

Final Answer: difference = Rs. 50 \Rightarrow

Answer: (A) [Go Back to Q9](#)

Q10.

Solution

Concept — Two-part journey: Let the distance on foot be x ; the rest is on the bicycle, and total time is fixed.

Step 1 — Set up the time equation: $\frac{x}{8} + \frac{60 - x}{16} = 5$.

Step 2 — Clear denominators (multiply by 16): $2x + (60 - x) = 80$.

Step 3 — Solve: $x + 60 = 80 \Rightarrow x = 20$.

Why other options are wrong:

- 16 and 24 do not satisfy the time equation.
- 32 leaves too little time for the bicycle leg.

Final Answer: on foot = 20 km \Rightarrow

Answer: (C) [Go Back to Q10](#)



Q11.

Solution

Concept — Train crossing a pole: The train covers its own length while passing a pole.

Step 1 — Convert speed: $72 \text{ km/h} = 72 \times \frac{5}{18} = 20 \text{ m/s}$.

Step 2 — Length = speed \times time: $20 \times 12 = 240 \text{ m}$.

Why other options are wrong:

- 200 and 216 misconvert the speed.
- 300 uses a wrong time.

Final Answer: length = 240 m \Rightarrow **B**

Answer: (B) [Go Back to Q11](#)

Q12.

Solution

Concept — Efficiency ratio and combined time: If A is twice as efficient as B, A does 2 units while B does 1 unit per day.

Step 1 — Combined daily work: Together they do $2 + 1 = 3$ units per day.

Step 2 — Total work: In 16 days they finish $3 \times 16 = 48$ units, so the job is 48 units.

Step 3 — A alone: A does 2 units per day, so A needs $\frac{48}{2} = 24$ days.

Why other options are wrong:

- 32 is the time B (the slower worker) takes.
- 48 and 20 misuse the efficiency ratio.

Final Answer: A alone = 24 days \Rightarrow **A**

Answer: (A) [Go Back to Q12](#)



Q13.

Solution

Concept — Pipe closed partway: Compute the work done while both are open, then let the remaining pipe finish the rest.

Step 1 — Rates: A fills $\frac{1}{10}$ per minute, B fills $\frac{1}{40}$ per minute.

Step 2 — Work in first 4 minutes (both open): $4 \left(\frac{1}{10} + \frac{1}{40} \right) = 4 \left(\frac{4+1}{40} \right) = 4 \times \frac{5}{40} = 4 \times \frac{1}{8} = \frac{1}{2}$.

Step 3 — Remaining work: $1 - \frac{1}{2} = \frac{1}{2}$.

Step 4 — Time for A alone to finish: $\frac{1/2}{1/10} = \frac{1}{2} \times 10 = 5$ minutes.

Step 5 — Total time: $4 + 5 = 9$ minutes.

Why other options are wrong:

- 8, 7.5 and 6 mis-handle the remaining half of the tank.

Final Answer: total time = 9 minutes \Rightarrow **D**

Answer: (D) [Go Back to Q13](#)

Q14.

Solution

Concept — Sum and difference of two numbers: Solve the linear system, then multiply.

Step 1 — Set up: $a + b = 45$ and $a - b = 9$.

Step 2 — Add the equations: $2a = 54 \Rightarrow a = 27$.

Step 3 — Find b : $b = 45 - 27 = 18$.

Step 4 — Product: $27 \times 18 = 486$.

Why other options are wrong:

- 450, 504 and 510 come from wrong values of a and b .

Final Answer: product = 486 \Rightarrow **C**

Answer: (C) [Go Back to Q14](#)



Q15.

Solution

Concept — Root substitution and sum/product of roots: A known root fixes k ; then use the sum of roots = 6.

Step 1 — Substitute $x = 4$: $16 - 24 + k = 0 \Rightarrow k = 8$.

Step 2 — Use the sum of roots: Roots add to 6, so the other root = $6 - 4 = 2$.

Step 3 — Check with product: Product of roots = $k = 8$, and $4 \times 2 = 8$. Consistent.

Why other options are wrong:

- $k = 6$ or $k = 10$ fail the substitution $16 - 24 + k = 0$.
- Other root 3 would make the sum 7, not 6.

Final Answer: $k = 8$, other root 2 \Rightarrow **B**

Answer: (B) [Go Back to Q15](#)

Q16.

Solution

Concept — Sign of a rational expression: $\frac{x-2}{x+3} > 0$ when numerator and denominator have the same sign.

Step 1 — Find the critical points: Numerator zero at $x = 2$, denominator zero at $x = -3$.

Step 2 — Test the three intervals:

- $x < -3$: both factors negative \Rightarrow ratio positive. ✓
- $-3 < x < 2$: numerator negative, denominator positive \Rightarrow ratio negative.
- $x > 2$: both positive \Rightarrow ratio positive. ✓

Step 3 — Combine: Solution is $x < -3$ or $x > 2$.

Why other options are wrong:

- $-3 < x < 2$ is where the expression is negative.
- The single-interval options miss one valid region.

Final Answer: $x < -3$ or $x > 2 \Rightarrow$ **A**



Answer: (A) [Go Back to Q16](#)

Q17.

Solution

Concept — *n*th term of an AP: $a_n = a + (n - 1)d$.

Step 1 — Identify *a* and *d*: First term $a = 7$, common difference $d = 11 - 7 = 4$.

Step 2 — Apply the formula for $n = 10$: $a_{10} = 7 + 9 \times 4 = 7 + 36 = 43$.

Why other options are wrong:

- 39 uses 8 steps instead of 9.
- 47 and 51 use too many steps.

Final Answer: $a_{10} = 43 \Rightarrow$ C

Answer: (C) [Go Back to Q17](#)

Q18.

Solution

Concept — Ordered selection (permutation): Since signals depend on the order of the flags, use ${}^n P_r$.

Step 1 — Identify *n* and *r*: $n = 5$ flags, $r = 3$ at a time.

Step 2 — Compute ${}^5 P_3$: $5 \times 4 \times 3 = 60$.

Why other options are wrong:

- 10 is ${}^5 C_3$, which ignores order.
- 120 is $5!$; 15 is unrelated.

Final Answer: 60 signals \Rightarrow D

Answer: (D) [Go Back to Q18](#)



Q19.

Solution

Concept — Unordered selection (combination): A team has no internal order, so use ${}^n C_r$.

Step 1 — Identify n and r : $n = 7, r = 4$.

Step 2 — Compute ${}^7 C_4$: ${}^7 C_4 = {}^7 C_3 = \frac{7 \times 6 \times 5}{3 \times 2 \times 1} = 35$.

Why other options are wrong:

- 28 is ${}^8 C_2$; 42 and 210 use ordered counts.

Final Answer: 35 teams \Rightarrow **B**

Answer: (B) [Go Back to Q19](#)

Q20.

Solution

Concept — Classical probability: $P = \frac{\text{favourable outcomes}}{\text{total outcomes}}$.

Step 1 — Count face cards: Each suit has 3 face cards (K, Q, J), so $4 \times 3 = 12$.

Step 2 — Total cards: 52.

Step 3 — Probability: $\frac{12}{52} = \frac{3}{13}$.

Why other options are wrong:

- $\frac{1}{13}$ counts only one rank.
- $\frac{4}{13}$ wrongly adds aces; $\frac{1}{4}$ counts one suit.

Final Answer: $\frac{3}{13} \Rightarrow$ **A**

Answer: (A) [Go Back to Q20](#)



Q21.

Solution

Concept — Basic Proportionality (Thales) Theorem: If $DE \parallel BC$, then $\frac{AD}{DB} = \frac{AE}{EC}$.

Step 1 — Write the proportion: $\frac{4}{6} = \frac{5}{EC}$.

Step 2 — Cross-multiply: $4 \times EC = 6 \times 5 = 30$.

Step 3 — Solve: $EC = \frac{30}{4} = 7.5$ cm.

Why other options are wrong:

- 6 and 8 misplace the ratio terms.
- 10 uses $\frac{AD}{AB}$ instead of $\frac{AD}{DB}$.

Final Answer: $EC = 7.5$ cm \Rightarrow C

Answer: (C) [Go Back to Q21](#)

Q22.

Solution

Concept — Exterior angle of a triangle: An exterior angle equals the sum of the two remote interior angles.

Step 1 — Write the relation: Exterior angle at $C = \angle A + \angle B$.

Step 2 — Substitute: $120^\circ = 70^\circ + \angle B$.

Step 3 — Solve: $\angle B = 120^\circ - 70^\circ = 50^\circ$.

Why other options are wrong:

- 60° and 40° mis-subtract the angles.
- 70° confuses $\angle B$ with $\angle A$.

Final Answer: $\angle B = 50^\circ \Rightarrow$ D

Answer: (D) [Go Back to Q22](#)



Q23.

Solution

Concept — Total surface area of a cylinder: $TSA = 2\pi r(r + h)$.

Step 1 — Substitute values: $r = 7, h = 10, \pi = \frac{22}{7}$.

Step 2 — Compute $r + h$: $7 + 10 = 17$.

Step 3 — Apply the formula: $2 \times \frac{22}{7} \times 7 \times 17 = 2 \times 22 \times 17 = 748 \text{ cm}^2$.

Why other options are wrong:

- 440 is the curved surface area only.
- 308 is twice the base area; 660 uses $h = 8$.

Final Answer: $TSA = 748 \text{ cm}^2 \Rightarrow \boxed{\text{D}}$

Answer: (D) [Go Back to Q23](#)

Q24.

Solution

Concept — Volume of a cone: $V = \frac{1}{3}\pi r^2 h$.

Step 1 — Substitute: $r = 6, h = 7, \pi = \frac{22}{7}$.

Step 2 — Compute $r^2 h$: $36 \times 7 = 252$.

Step 3 — Apply the formula: $\frac{1}{3} \times \frac{22}{7} \times 252 = \frac{1}{3} \times 22 \times 36 = \frac{22 \times 36}{3} = 22 \times 12 = 264 \text{ cm}^3$.

Why other options are wrong:

- 792 omits the $\frac{1}{3}$ factor.
- 352 and 176 use wrong radius or height.

Final Answer: $V = 264 \text{ cm}^3 \Rightarrow \boxed{\text{B}}$

Answer: (B) [Go Back to Q24](#)



Q25.

Solution

Concept — Equating exponents with a common base: Rewrite both equations as powers of the same base and equate exponents.

Step 1 — First equation: $2^x = 8^{y+1} = 2^{3(y+1)}$, so $x = 3y + 3$.

Step 2 — Second equation: $9^y = 3^{2y}$ and 3^{x-9} , so $2y = x - 9$.

Step 3 — Substitute $x = 3y + 3$ into $2y = x - 9$: $2y = (3y + 3) - 9 = 3y - 6$.

Step 4 — Solve for y : $2y - 3y = -6 \Rightarrow -y = -6 \Rightarrow y = 6$.

Step 5 — Find x : $x = 3(6) + 3 = 21$.

Why other options are wrong:

- 18, 24 and 27 correspond to wrong values of y .

Final Answer: $x = 21 \Rightarrow$

[Go Back to Q25](#)

Q26.

Solution

Concept — Inclusion-exclusion with a “neither” region: Readers of at least one = $P + Q - \text{both}$; the rest read neither.

Step 1 — Read at least one: $70 + 50 - 30 = 90$.

Step 2 — Read neither: $120 - 90 = 30$.

Why other options are wrong:

- 20, 40 and 50 drop or double-count the overlap.

Final Answer: 30 read neither \Rightarrow

[Go Back to Q26](#)



Q27.

Solution

Concept — Reading totals off a line graph: Add the plotted values.

Step 1 — List the yearly values (in hundreds): 2018:15, 2019:25, 2020:20, 2021:35, 2022:30.

Step 2 — Add them: $15 + 25 + 20 + 35 + 30 = 125$.

Why other options are wrong:

- 115, 130 and 120 misread one of the points.

Final Answer: total = 125 hundred cars \Rightarrow **B**

Answer: (B) [Go Back to Q27](#)

Q28.

Solution

Concept — Percentage increase: $\frac{\text{new} - \text{old}}{\text{old}} \times 100$.

Step 1 — Values for 2020 and 2021: 20 and 35 (hundreds).

Step 2 — Increase: $35 - 20 = 15$.

Step 3 — Percentage: $\frac{15}{20} \times 100 = 75\%$.

Why other options are wrong:

- 70%, 60% and 50% use wrong base or difference.

Final Answer: 75% increase \Rightarrow **A**

Answer: (A) [Go Back to Q28](#)



Q29.

Solution

Concept — Average: Sum divided by the number of years.

Step 1 — Total (from Q27): 125 hundred.

Step 2 — Divide by 5: $\frac{125}{5} = 25$.

Why other options are wrong:

- 24, 26 and 23 use a wrong total.

Final Answer: average = 25 hundred \Rightarrow

Answer: (C) [Go Back to Q29](#)

Q30.

Solution

Concept — Data sufficiency (unique value): A statement suffices only if it pins x to a single value.

Step 1 — Statement I alone: Primes below 10 are 2, 3, 5, 7 — four possibilities, not unique. Not sufficient.

Step 2 — Statement II alone: “ x is even” gives infinitely many values. Not sufficient.

Step 3 — Combine I and II: The only even prime below 10 is 2, so $x = 2$ uniquely. Sufficient together.

Why other options are wrong:

- Neither statement alone fixes x , ruling out the “alone” options.

Final Answer: both together are needed \Rightarrow

Answer: (B) [Go Back to Q30](#)



Q31.

Solution

Concept — Trailing zeros in a factorial: The count equals the number of factors of 5 in $n!$, i.e. $\lfloor \frac{n}{5} \rfloor + \lfloor \frac{n}{25} \rfloor + \dots$

Step 1 — Divide by 5: $\lfloor \frac{25}{5} \rfloor = 5$.

Step 2 — Divide by 25: $\lfloor \frac{25}{25} \rfloor = 1$.

Step 3 — Add: $5 + 1 = 6$ trailing zeros.

Why other options are wrong:

- 5 forgets the extra 5 from 25.
- 4 and 7 miscount the powers of 5.

Final Answer: 6 zeros \Rightarrow

Answer: (A) [Go Back to Q31](#)

Q32.

Solution

Concept — Same remainder \Rightarrow HCF of differences: The required divisor is the HCF of the pairwise differences.

Step 1 — Compute the differences: $91 - 43 = 48$, $183 - 91 = 92$, $183 - 43 = 140$.

Step 2 — Find HCF of 48, 92, 140: $48 = 2^4 \times 3$, $92 = 2^2 \times 23$, $140 = 2^2 \times 5 \times 7$.
Common factor = $2^2 = 4$.

Step 3 — Conclusion: The greatest such divisor is 4.

Why other options are wrong:

- 9, 8 and 6 do not divide all three differences.

Final Answer: divisor = 4 \Rightarrow

Answer: (C) [Go Back to Q32](#)



Q33.

Solution

Concept — Keeping expenditure constant: Required reduction = $\frac{\text{rise}}{100 + \text{rise}} \times 100$.

Step 1 — Apply the formula with rise = 25: $\frac{25}{100 + 25} \times 100 = \frac{25}{125} \times 100$.

Step 2 — Simplify: $\frac{25}{125} = \frac{1}{5}$, so reduction = 20%.

Why other options are wrong:

- 25% wrongly takes reduction equal to the rise.
- 15% and 30% use a wrong denominator.

Final Answer: reduce consumption by 20% \Rightarrow **B**

Answer: (B) [Go Back to Q33](#)

Q34.

Solution

Concept — Pass mark from two students: Both students' marks correspond to the same pass mark; set up an equation in the maximum marks M .

Step 1 — Express the pass mark two ways: $0.36M + 24 = 0.43M - 18$.

Step 2 — Collect terms: $24 + 18 = 0.43M - 0.36M$, i.e. $42 = 0.07M$.

Step 3 — Solve: $M = \frac{42}{0.07} = 600$.

Why other options are wrong:

- 500, 720 and 640 fail the equation $0.07M = 42$.

Final Answer: maximum marks = 600 \Rightarrow **A**

Answer: (A) [Go Back to Q34](#)



Q35.

Solution

Concept — Common ratio parameter: Let each fraction equal k , express x, y, z in terms of k .

Step 1 — Write the variables: $x = 3k, y = 4k, z = 5k$.

Step 2 — Sum: $x + y + z = 3k + 4k + 5k = 12k$.

Step 3 — Form the ratio: $(x + y + z) : z = 12k : 5k = 12 : 5$.

Why other options are wrong:

- 5 : 12 inverts the ratio.
- 3 : 5 and 1 : 5 ignore the sum.

Final Answer: $12 : 5 \Rightarrow$ D

Answer: (D) [Go Back to Q35](#)

Q36.

Solution

Concept — Repeated replacement: After n replacements of r from V , milk left $= V \left(1 - \frac{r}{V}\right)^n$.

Step 1 — Identify values: $V = 40, r = 4, n = 2$.

Step 2 — Fraction retained each time: $1 - \frac{4}{40} = \frac{9}{10}$.

Step 3 — Apply for two operations: $40 \times \left(\frac{9}{10}\right)^2 = 40 \times \frac{81}{100} = \frac{3240}{100} = 32.4$ litres.

Why other options are wrong:

- 36 is the milk after only one operation.
- 30 and 34 mis-square the retention factor.

Final Answer: pure milk = 32.4 litres \Rightarrow C

Answer: (C) [Go Back to Q36](#)



Q37.

Solution

Concept — False weight gain: $\text{Gain}\% = \frac{\text{true weight} - \text{false weight}}{\text{false weight}} \times 100.$

Step 1 — Identify the weights: True = 1000 g, false = 800 g.

Step 2 — Apply the formula: $\frac{1000 - 800}{800} \times 100 = \frac{200}{800} \times 100.$

Step 3 — Simplify: $\frac{200}{800} = \frac{1}{4}$, so gain = 25%.

Why other options are wrong:

- 20% wrongly divides by 1000.
- 12.5% and 15% use wrong differences.

Final Answer: gain = 25% \Rightarrow

Answer: (A) [Go Back to Q37](#)

Q38.

Solution

Concept — Marked price from cost, profit and discount: $\text{SP} = \text{CP}(1 + \text{profit})$
and $\text{SP} = \text{MP}(1 - \text{discount}).$

Step 1 — Selling price: $\text{SP} = 450 \times 1.20 = 540.$

Step 2 — Relate to marked price: $540 = \text{MP} \times 0.90.$

Step 3 — Solve: $\text{MP} = \frac{540}{0.90} = 600.$

Why other options are wrong:

- 540 is the selling price, not the marked price.
- 640 and 660 use wrong discount or profit factors.

Final Answer: marked price = Rs. 600 \Rightarrow

Answer: (B) [Go Back to Q38](#)



Q39.

Solution

Concept — Successive CI amounts: The ratio of amounts in consecutive years equals $(1 + \frac{r}{100})$.

Step 1 — Take the ratio: $\frac{10648}{9680} = 1 + \frac{r}{100}$.

Step 2 — Simplify the ratio: $\frac{10648}{9680} = 1.1$.

Step 3 — Read off the rate: $1 + \frac{r}{100} = 1.1 \Rightarrow r = 10\%$.

Why other options are wrong:

- 8%, 12% and 15% give ratios other than 1.1.

Final Answer: rate = 10% \Rightarrow **D**

Answer: (D) [Go Back to Q39](#)

Q40.

Solution

Concept — Stoppage time per hour: Stop time = $\frac{\text{speed lost}}{\text{speed without stoppage}} \times 60$ minutes.

Step 1 — Speed lost: $54 - 45 = 9$ km/h.

Step 2 — Apply the formula: $\frac{9}{54} \times 60 = \frac{1}{6} \times 60 = 10$ minutes.

Why other options are wrong:

- 9 confuses the speed lost with minutes.
- 12 and 15 use a wrong reference speed.

Final Answer: stops 10 minutes per hour \Rightarrow **A**

Answer: (A) [Go Back to Q40](#)



Q41.

Solution

Concept — Relative separation, same direction: Gap grows at the difference of the speeds.

Step 1 — Relative speed: $6 - 4 = 2$ km/h.

Step 2 — Distance in 3 hours: $2 \times 3 = 6$ km.

Why other options are wrong:

- 30 adds the speeds (opposite-direction case).
- 2 forgets the time; 10 uses a wrong relative speed.

Final Answer: separation = 6 km \Rightarrow **C**

Answer: (C) [Go Back to Q41](#)

Q42.

Solution

Concept — Men and days are inversely proportional: $M_1 D_1 = M_2 D_2$.

Step 1 — Total work in man-days: $15 \times 20 = 300$ man-days.

Step 2 — Days for 25 men: $\frac{300}{25} = 12$ days.

Why other options are wrong:

- 15 and 18 scale the wrong way.
- 10 uses 30 men instead of 25.

Final Answer: 12 days \Rightarrow **D**

Answer: (D) [Go Back to Q42](#)



Q43.

Solution

Concept — Leak with an inlet: The net empty rate equals the leak rate minus the inlet rate; this net rate empties the tank in 15 hours.

Step 1 — Let capacity be C litres; express rates per hour: Leak empties $\frac{C}{10}$ per hour; inlet adds $4 \times 60 = 240$ litres per hour.

Step 2 — Net empty rate: With both active, the tank empties in 15 hours, so net rate = $\frac{C}{15}$ per hour, draining downward.

Step 3 — Set up the balance: $\frac{C}{10} - 240 = \frac{C}{15}$.

Step 4 — Solve: $\frac{C}{10} - \frac{C}{15} = 240 \Rightarrow \frac{3C-2C}{30} = 240 \Rightarrow \frac{C}{30} = 240 \Rightarrow C = 7200$.

Why other options are wrong:

- 6000, 4800 and 3600 fail the balance equation.

Final Answer: capacity = 7200 litres \Rightarrow **D**

Answer: (D) [Go Back to Q43](#)

Q44.

Solution

Concept — Digit reversal: Let the number be $10a + b$; reversing gives $10b + a$.

Step 1 — Use the digit-sum condition: $a + b = 11$.

Step 2 — Use the reversal condition: $(10a + b) + 45 = 10b + a$, i.e. $9b - 9a = 45 \Rightarrow b - a = 5$.

Step 3 — Solve the system: Adding $a + b = 11$ and $b - a = 5$ gives $2b = 16 \Rightarrow b = 8$, $a = 3$.

Step 4 — Form the number: $10a + b = 38$ (check: $38 + 45 = 83$, reversed). ✓

Why other options are wrong:

- 47 and 29 fail the +45 reversal test.
- 56 has digit sum 11 but $56 + 45 = 101$, not two-digit.

Final Answer: the number is 38 \Rightarrow **B**

Answer: (B) [Go Back to Q44](#)



Q45.

Solution

Concept — Difference of roots: If roots are α, β with $\alpha + \beta = p$ and $\alpha\beta = 12$, then $(\alpha - \beta)^2 = p^2 - 4 \times 12$.

Step 1 — Use the difference condition: $\alpha - \beta = 1$, so $(\alpha - \beta)^2 = 1$.

Step 2 — Apply the identity: $1 = p^2 - 48$.

Step 3 — Solve: $p^2 = 49 \Rightarrow p = 7$ (positive value).

Step 4 — Check: Roots of $x^2 - 7x + 12$ are 3 and 4, differing by 1. ✓

Why other options are wrong:

- 8 gives roots $\frac{8 \pm 4}{2} = 6, 2$ differing by 4.
- 6 and 5 give non-real or wrong-difference roots.

Final Answer: $p = 7 \Rightarrow$ C

Answer: (C) [Go Back to Q45](#)

Q46.

Solution

Concept — Absolute-value inequality: $|2x - 5| \leq 7$ means $-7 \leq 2x - 5 \leq 7$.

Step 1 — Add 5 throughout: $-2 \leq 2x \leq 12$.

Step 2 — Divide by 2: $-1 \leq x \leq 6$.

Step 3 — Count integers: $x = -1, 0, 1, 2, 3, 4, 5, 6$, which is 8 integers.

Why other options are wrong:

- 6, 7 and 9 miscount the endpoints of $[-1, 6]$.

Final Answer: 8 integers \Rightarrow D

Answer: (D) [Go Back to Q46](#)



Q47.

Solution

Concept — Term from partial sums: $a_n = S_n - S_{n-1}$.

Step 1 — Compute S_8 : $8^2 + 2(8) = 64 + 16 = 80$.

Step 2 — Compute S_7 : $7^2 + 2(7) = 49 + 14 = 63$.

Step 3 — Subtract: $a_8 = 80 - 63 = 17$.

Why other options are wrong:

- 19 and 21 use the wrong S_{n-1} .
- 15 subtracts in the wrong order.

Final Answer: $a_8 = 17 \Rightarrow$ A

Answer: (A) [Go Back to Q47](#)

Q48.

Solution

Concept — Diagonals of a polygon: A polygon with n sides has $\frac{n(n-3)}{2}$ diagonals.

Step 1 — Substitute $n = 8$: $\frac{8 \times 5}{2}$.

Step 2 — Evaluate: $\frac{40}{2} = 20$.

Why other options are wrong:

- 16 uses $n(n-3)/2$ with a wrong n .
- 28 is 8C_2 (all segments); 24 is unrelated.

Final Answer: 20 diagonals \Rightarrow B

Answer: (B) [Go Back to Q48](#)



Q49.

Solution

Concept — Counting numbers without repetition: Fill the hundreds, tens and units places in turn.

Step 1 — Hundreds place: 5 choices.

Step 2 — Tens place: 4 remaining choices.

Step 3 — Units place: 3 remaining choices.

Step 4 — Multiply: $5 \times 4 \times 3 = 60$.

Why other options are wrong:

- $125 = 5^3$ allows repetition.
- 10 is 5C_3 ; 120 is $5!$.

Final Answer: 60 numbers \Rightarrow **C**

Answer: (C) [Go Back to Q49](#)

Q50.

Solution

Concept — Complement rule: $P(\text{at least one head}) = 1 - P(\text{no head})$.

Step 1 — Sample space: Tossing two coins gives 4 equally likely outcomes: HH, HT, TH, TT.

Step 2 — No head: Only TT, with probability $\frac{1}{4}$.

Step 3 — At least one head: $1 - \frac{1}{4} = \frac{3}{4}$.

Why other options are wrong:

- $\frac{1}{2}$ counts exactly one head only.
- $\frac{1}{4}$ is the no-head probability; $\frac{1}{3}$ uses a wrong sample space.

Final Answer: $\frac{3}{4} \Rightarrow$ **D**

Answer: (D) [Go Back to Q50](#)



Q51.

Solution

Concept — Perpendicular from centre bisects the chord: $OM \perp AB$ and $AM = \frac{1}{2}AB$; then use the right triangle OMA .

Step 1 — Half-chord: $AM = \frac{24}{2} = 12$ cm.

Step 2 — Apply Pythagoras in $\triangle OMA$: $OM^2 = OA^2 - AM^2 = 13^2 - 12^2$.

Step 3 — Evaluate: $169 - 144 = 25 \Rightarrow OM = 5$ cm.

Why other options are wrong:

- 12 is the half-chord, not the distance.
- 7 and 6 misuse the Pythagorean relation.

Final Answer: $OM = 5$ cm \Rightarrow **A**

Answer: (A) [Go Back to Q51](#)

Q52.

Solution

Concept — Arc length and central angle: $\text{Arc} = \frac{\theta}{360^\circ} \times 2\pi r$.

Step 1 — Substitute known values: $11 = \frac{\theta}{360} \times 2 \times \frac{22}{7} \times 7$.

Step 2 — Simplify the circumference: $2 \times \frac{22}{7} \times 7 = 44$, so $11 = \frac{\theta}{360} \times 44$.

Step 3 — Solve for θ : $\frac{\theta}{360} = \frac{11}{44} = \frac{1}{4} \Rightarrow \theta = 90^\circ$.

Why other options are wrong:

- 60° and 120° use a wrong arc-to-circumference fraction.
- 45° halves the correct angle.

Final Answer: $\theta = 90^\circ \Rightarrow$ **B**

Answer: (B) [Go Back to Q52](#)



Q53.

Solution

Concept — Volume of a cuboid and litre conversion: $V = l \times b \times h$ in m^3 ; $1 \text{ m}^3 = 1000$ litres.

Step 1 — Volume in cubic metres: $2 \times 1.5 \times 1 = 3 \text{ m}^3$.

Step 2 — Convert to litres: $3 \times 1000 = 3000$ litres.

Why other options are wrong:

- 300 and 1500 use a wrong conversion factor.
- 30,000 over-converts by a factor of 10.

Final Answer: 3000 litres \Rightarrow D

Answer: (D) [Go Back to Q53](#)

Q54.

Solution

Concept — Largest inscribed circle in a square: Its diameter equals the side of the square.

Step 1 — Radius: Diameter = 14 cm, so radius = 7 cm.

Step 2 — Area: $\pi r^2 = \frac{22}{7} \times 7^2 = \frac{22}{7} \times 49 = 22 \times 7 = 154 \text{ cm}^2$.

Why other options are wrong:

- 196 is the square's area.
- 616 uses radius 14; 77 halves the correct area.

Final Answer: area = $154 \text{ cm}^2 \Rightarrow$ A

Answer: (A) [Go Back to Q54](#)



Q55.

Solution

Concept — Number of digits via logarithms: The number of digits in N is $\lfloor \log_{10} N \rfloor + 1$.

Step 1 — Take the log: $\log_{10} 2^{64} = 64 \times \log_{10} 2 = 64 \times 0.3010$.

Step 2 — Multiply: $64 \times 0.3010 = 19.264$.

Step 3 — Apply the digit rule: $\lfloor 19.264 \rfloor + 1 = 19 + 1 = 20$ digits.

Why other options are wrong:

- 19 forgets the “+1”.
- 18 and 21 mis-multiply or mis-floor.

Final Answer: 20 digits \Rightarrow **B**

Answer: (B) [Go Back to Q55](#)

Q56.

Solution

Concept — Composition of a function: Evaluate the inner value first, then feed it back in.

Step 1 — Compute $f(2)$: $f(2) = \frac{2+1}{2-1} = \frac{3}{1} = 3$.

Step 2 — Compute $f(3)$: $f(3) = \frac{3+1}{3-1} = \frac{4}{2} = 2$.

Step 3 — Conclusion: $f(f(2)) = f(3) = 2$.

Why other options are wrong:

- 3 stops after the inner $f(2)$.
- 1 and $\frac{1}{2}$ mis-evaluate $f(3)$.

Final Answer: $f(f(2)) = 2 \Rightarrow$ **C**

Answer: (C) [Go Back to Q56](#)



Q57.

Solution

Concept — Total from a bar graph: Add the bar heights.

Step 1 — Read the bars (in hundreds): Engg 40, Medical 30, Commerce 20, Arts 10.

Step 2 — Add: $40 + 30 + 20 + 10 = 100$.

Why other options are wrong:

- 90, 110 and 95 misread one of the bars.

Final Answer: total = 100 hundred \Rightarrow **A**

Answer: (A) [Go Back to Q57](#)

Q58.

Solution

Concept — Percentage share: $\frac{\text{part}}{\text{whole}} \times 100$.

Step 1 — Engineering and total: Engg = 40, total = 100 (hundreds).

Step 2 — Percentage: $\frac{40}{100} \times 100 = 40\%$.

Why other options are wrong:

- 30%, 25% and 35% use a wrong part or total.

Final Answer: 40% \Rightarrow **B**

Answer: (B) [Go Back to Q58](#)

Q59.

Solution

Concept — Ratio from a bar graph: Compare the two relevant bar heights and simplify.

Step 1 — Read the values: Medical = 30, Arts = 10 (hundreds).

Step 2 — Form the ratio: 30 : 10.

Step 3 — Simplify: Divide both by 10 to get 3 : 1.



Why other options are wrong:

- 2 : 1 and 3 : 2 misread one bar.
- 1 : 3 inverts the ratio.

Final Answer: 3 : 1 \Rightarrow

Answer: (C) [Go Back to Q59](#)

Q60.

Solution

Concept — Data sufficiency (defining a square): A square needs both equal sides and right angles; check whether each statement alone forces a square.

Step 1 — Statement I alone: Four equal sides give a rhombus, which need not be a square (angles unknown). Not sufficient.

Step 2 — Statement II alone: Four right angles give a rectangle, which need not be a square (sides may differ). Not sufficient.

Step 3 — Combine I and II: Equal sides plus right angles is exactly the definition of a square. Sufficient together.

Why other options are wrong:

- Neither a rhombus (I) nor a rectangle (II) alone is necessarily a square.

Final Answer: both statements together are needed \Rightarrow

Answer: (A) [Go Back to Q60](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	2	A	3	D	4	B	5	C
6	A	7	B	8	D	9	A	10	C
11	B	12	A	13	D	14	C	15	B
16	A	17	C	18	D	19	B	20	A
21	C	22	D	23	D	24	B	25	C
26	D	27	B	28	A	29	C	30	B
31	A	32	C	33	B	34	A	35	D
36	C	37	A	38	B	39	D	40	A
41	C	42	D	43	D	44	B	45	C
46	D	47	A	48	B	49	C	50	D
51	A	52	B	53	D	54	A	55	B
56	C	57	A	58	B	59	C	60	A

