

FDDI AIST Quantitative & Analytical Ability

Sample Paper – 4

Duration: 25 Minutes

Maximum Marks: 25

Instructions

- This paper contains **25** Multiple Choice Questions (Single Correct Answer), modelled on the Quantitative & Analytical Ability section of **FDDI AIST**.
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct per question.
- Syllabus level: **Class 10–12 Mathematics and basic analytical reasoning**.
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.

Q1. Find the value of $112^2 - 88^2$.

- (A) 4400
- (B) 4600
- (C) 4800
- (D) 5000

Q2. What is the smallest number divisible by 4, 6, 8, 10 and 12?

- (A) 120
- (B) 180
- (C) 240
- (D) 360

Q3. A number is first increased by 25% and then decreased by 25%. What is the net percentage change?



- (A) 0%
- (B) -6.25%
- (C) $+6.25\%$
- (D) -5%

Q4. Alloy X has gold and silver in the ratio 9 : 1. Alloy Y has gold and silver in the ratio 7 : 3. In what ratio should X and Y be mixed to obtain a mixture with gold : silver = 4 : 1?

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

Q5. The speed of sound is 340 m/s. Lightning is observed, and the thunder is heard 15 seconds later. How far away (in km) did the lightning strike?

- (A) 3.2 km
- (B) 4.0 km
- (C) 4.5 km
- (D) 5.1 km

Q6. The value of a property was Rs. 5,00,000. It increased by 10% in the first year and by another 10% in the second year. What is its value after 2 years?

- (A) Rs. 6,05,000
- (B) Rs. 6,00,000
- (C) Rs. 6,10,000
- (D) Rs. 6,15,000

Q7. A retailer earns a profit of 10% on the selling price. What is the profit percentage on the cost price?



- (A) 10%
- (B) $11.\bar{1}\%$
- (C) 12%
- (D) 15%

Q8. Two successive discounts of 20% each are given on an article. What is the equivalent single discount?

- (A) 34%
- (B) 38%
- (C) 36%
- (D) 40%

Q9. 8 workers can complete road construction in 25 days. After 10 days, 4 more workers join. In how many *additional* days will the work be completed?

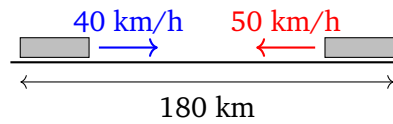
- (A) 8 days
- (B) 12 days
- (C) 15 days
- (D) 10 days

Q10. Pipe A fills a tank in 3 hours, Pipe B fills it in 6 hours, and Pipe C (outlet) empties it in 12 hours. How long will it take to fill the tank when all three are open simultaneously?

- (A) $\frac{12}{5}$ hours
- (B) 3 hours
- (C) $\frac{8}{3}$ hours
- (D) 4 hours

Q11. Two trains start from cities 180 km apart and travel towards each other at speeds of 40 km/h and 50 km/h respectively. After how many hours will they meet?





- (A) 1.5 h
- (B) 2 h
- (C) 2.5 h
- (D) 3 h

Q12. Car A travels at 60 km/h. Car B starts 30 minutes later from the same point at 80 km/h in the same direction. How many hours after Car B starts will it catch up with Car A?

- (A) 1 h
- (B) 1.25 h
- (C) 1.5 h
- (D) 2 h

Q13. A sum of money doubles itself in 5 years at simple interest. What is the annual rate of interest?

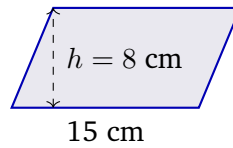
- (A) 15%
- (B) 16%
- (C) 18%
- (D) 20%

Q14. Find the difference between the compound interest and simple interest on Rs. 4,000 at 5% per annum for 2 years.

- (A) Rs. 10
- (B) Rs. 12
- (C) Rs. 15
- (D) Rs. 20

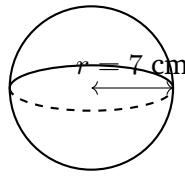


- Q15.** A parallelogram has a base of 15 cm and a height of 8 cm. What is its area?



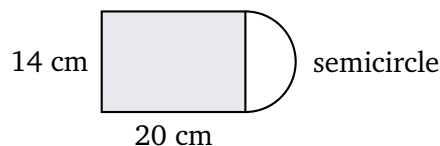
- (A) 100 cm^2
- (B) 120 cm^2
- (C) 130 cm^2
- (D) 140 cm^2

- Q16.** A sphere has a radius of 7 cm. What is its total surface area? (Use $\pi = \frac{22}{7}$)



- (A) 512 cm^2
- (B) 576 cm^2
- (C) 616 cm^2
- (D) 654 cm^2

- Q17.** A rectangle of dimensions $20 \text{ cm} \times 14 \text{ cm}$ has a semicircle attached on one of the 14 cm sides. What is the total area of the figure? (Use $\pi = \frac{22}{7}$)



- (A) 330 cm^2
- (B) 340 cm^2
- (C) 350 cm^2



(D) 357 cm^2

Q18. Three fair coins are tossed simultaneously. What is the probability of getting exactly 2 heads?

(A) $\frac{3}{8}$

(B) $\frac{1}{2}$

(C) $\frac{1}{4}$

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

Q19. In how many ways can 3 books be chosen from 6 different books?

(A) 18

(B) 20

(C) 24

(D) 30

Q20. The average age of 5 family members is 28 years. When the grandfather joins, the new average becomes 35 years. What is the grandfather's age?

(A) 60 years

(B) 65 years

(C) 70 years

(D) 75 years

Q21. A batsman's average runs over 40 innings is 30. In the 41st innings he scores 180 runs. What is his new average?

(A) 31

(B) 32

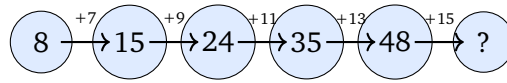
(C) 33

(D) 33.66 (approx.)



Q22. What is the missing number in the series?

8, 15, 24, 35, 48, _____



- (A) 63
- (B) 60
- (C) 65
- (D) 70

Q23. If the word KINGDOM is coded by reversing the entire word to get MOD-GNIK, what is the code for FLOWER?

- (A) REWOLG
- (B) REWOLF
- (C) RELFOW
- (D) REWOLP

Q24. P is the son of Q. Q is the brother of R. R is the father of S. How is P related to S?

- (A) Brother
- (B) Uncle
- (C) Cousin
- (D) Nephew

Q25. 6 men are to be seated in a row. In how many ways can they be seated if 2 specific men must always sit together?

- (A) 120
- (B) 180
- (C) 200
- (D) 240



Detailed Solutions**Q1.****Solution**

Quick Solution: Concept: Difference of Squares. **Chapter:** Number System.
 $a^2 - b^2 = (a + b)(a - b)$. **Answer:** D.

Concept — Difference of Squares: $a^2 - b^2 = (a + b)(a - b)$.

Step 1 — Identify a and b : $a = 112$, $b = 88$.

Step 2 — Apply the formula:

$$112^2 - 88^2 = (112 + 88)(112 - 88) = 200 \times 25 = 5000.$$

Why other options are wrong:

- Option A (4400): Corresponds to 200×22 — incorrect factor.
- Option B (4600): Corresponds to 200×23 — incorrect.
- Option C (4800): Corresponds to 200×24 — off by one step.

Final Answer: $112^2 - 88^2 = 5000 \Rightarrow \boxed{5000}$

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

Q2.**Solution**

Quick Solution: Concept: LCM (Least Common Multiple). **Chapter:** Number System. The smallest number divisible by all given numbers equals their LCM.
Answer: A.

Concept — LCM (Least Common Multiple): The smallest number divisible by all given numbers equals their LCM.

Step 1 — Prime factorisation:

$$4 = 2^2, \quad 6 = 2 \times 3, \quad 8 = 2^3, \quad 10 = 2 \times 5, \quad 12 = 2^2 \times 3.$$

Step 2 — Take highest powers:

$$\text{LCM} = 2^3 \times 3 \times 5 = 8 \times 15 = 120.$$



Why other options are wrong:

- Option B (180): $180 \div 8 = 22.5$ — not divisible by 8.
- Option C (240): Divisible by all, but not the *smallest*.
- Option D (360): Also divisible by all, but larger than 120.

Final Answer: $\text{LCM} = 120 \Rightarrow \boxed{120}$

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

Q3.

Solution

Quick Solution: Concept: Successive Percentage Changes. **Chapter:** Number System. Net multiplier = $(1 + r_1)(1 + r_2)$. **Answer:** B.

Concept — Successive Percentage Changes: Net multiplier = $(1 + r_1)(1 + r_2)$.

Step 1 — Compute net multiplier:

$$\text{Net multiplier} = 1.25 \times 0.75 = 0.9375.$$

Step 2 — Convert to percentage change:

$$\text{Net change} = (0.9375 - 1) \times 100 = -6.25\%.$$

Why other options are wrong:

- Option A (0%): Would require +25% then -20% (different figures).
- Option C (+6.25%): Sign error; the overall change is a decrease.
- Option D (-5%): Incorrect arithmetic.

Final Answer: Net change = $-6.25\% \Rightarrow \boxed{-6.25\%}$

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



Q4.

Solution

Quick Solution: Concept: Alligation Rule. **Chapter:** Ratio & Proportion. To find the mixing ratio, use. **Answer:** C.

Concept — Alligation Rule: To find the mixing ratio, use

$$\text{Ratio} = \frac{(\text{gold\% of Y}) - \text{target}}{\text{target} - (\text{gold\% of X})}.$$

Step 1 — Gold percentages: Alloy X: $\frac{9}{10} \times 100 = 90\%$; Alloy Y: $\frac{7}{10} \times 100 = 70\%$; Target: $\frac{4}{5} \times 100 = 80\%$.

Step 2 — Apply alligation:

$$\frac{X}{Y} = \frac{80 - 70}{90 - 80} = \frac{10}{10} = 1 : 1.$$

Why other options are wrong:

- Option A (1:2): Gives gold $\approx 76.7\%$ — below target.
- Option B (2:3): Gives gold = 78% — below target.
- Option D (3:2): Gives gold = 82% — above target.

Final Answer: Mix X and Y in ratio 1 : 1 $\Rightarrow$ 1 : 1

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

Q5.

Solution

Quick Solution: Concept: Distance = Speed $\times$ Time. **Chapter:** Ratio & Proportion. Sound travels at a constant speed; the delay gives the distance. **Answer:** D.

Concept — Distance = Speed $\times$ Time: Sound travels at a constant speed; the delay gives the distance.

Step 1 — Calculate distance:

$$d = 340 \text{ m/s} \times 15 \text{ s} = 5100 \text{ m}.$$



Step 2 — Convert to km:

$$5100 \text{ m} = 5.1 \text{ km}.$$

Why other options are wrong:

- Option A (3.2 km): Corresponds to ≈ 9.4 seconds delay.
- Option B (4.0 km): Corresponds to ≈ 11.8 seconds delay.
- Option C (4.5 km): Corresponds to ≈ 13.2 seconds delay.

Final Answer: Distance = 5.1 km $\Rightarrow$ 5.1 km

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

Q6.

Solution

Quick Solution: Concept: Successive Compound Growth. **Chapter:** Percentage.

$$A = P(1 + r)^n. \text{ Answer: A.}$$

Concept — Successive Compound Growth: $A = P(1 + r)^n$.

Step 1 — Apply formula for 2 years at 10%:

$$A = 5,00,000 \times (1.1)^2 = 5,00,000 \times 1.21 = 6,05,000.$$

Why other options are wrong:

- Option B (6,00,000): Corresponds to simple interest (10%+10%), not compound.
- Option C (6,10,000): Overestimates by adding 22% simple.
- Option D (6,15,000): Incorrect computation.

Final Answer: Value after 2 years = Rs. 6,05,000 $\Rightarrow$ Rs. 6,05,000

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



Q7.

Solution

Quick Solution: Concept: Profit on Cost vs. Profit on Selling Price. **Chapter:** Profit & Loss. When profit is given on SP, convert to CP base. **Answer:** B.

Concept — Profit on Cost vs. Profit on Selling Price: When profit is given on SP, convert to CP base.

Step 1 — Let SP = 100:

$$\text{Profit} = 10\% \text{ of SP} = 10. \quad \text{CP} = 100 - 10 = 90.$$

Step 2 — Profit % on CP:

$$\text{Profit \%} = \frac{10}{90} \times 100 = 11.\bar{1}\%.$$

Why other options are wrong:

- Option A (10%): That is the profit on SP, not on CP.
- Option C (12%): Slight overestimate.
- Option D (15%): Significantly overestimates.

Final Answer: Profit on CP = $11.\bar{1}\% \Rightarrow 11.\bar{1}\%$

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

Q8.

Solution

Quick Solution: Concept: Equivalent Single Discount. **Chapter:** Discount. For two successive discounts d_1 and d_2 : **Answer:** C.

Concept — Equivalent Single Discount: For two successive discounts d_1 and d_2 :

$$\text{Equivalent discount} = [1 - (1 - d_1)(1 - d_2)] \times 100\%.$$

Step 1 — Substitute $d_1 = d_2 = 0.20$:

$$(1 - 0.20)(1 - 0.20) = 0.80 \times 0.80 = 0.64.$$



Step 2 — Equivalent single discount:

$$(1 - 0.64) \times 100 = 36\%.$$

Why other options are wrong:

- Option A (34%): Underestimates the compounding effect.
- Option B (38%): Overestimates.
- Option D (40%): Equal to 20% + 20% simple addition, which ignores the overlap.

Final Answer: Equivalent discount = 36% $\Rightarrow$ 36%

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

Q9.

Solution

Quick Solution: Concept: Work Done = Workers $\times$ Days. **Chapter:** Time & Work. Total units of work is fixed. **Answer:** D.

Concept — Work Done = Workers $\times$ Days: Total units of work is fixed.

Step 1 — Total work:

$$\text{Total work} = 8 \times 25 = 200 \text{ units.}$$

Step 2 — Work done in first 10 days (8 workers):

$$8 \times 10 = 80 \text{ units.}$$

Step 3 — Remaining work and new team:

$$\text{Remaining} = 200 - 80 = 120 \text{ units.} \quad \text{New team} = 8 + 4 = 12 \text{ workers.}$$

$$\text{Additional days} = \frac{120}{12} = 10 \text{ days.}$$

Why other options are wrong:

- Option A (8 days): $12 \times 8 = 96 \neq 120$.
- Option B (12 days): $12 \times 12 = 144 \neq 120$.
- Option C (15 days): Would require only 8 workers for remaining work.



Final Answer: Additional days = 10 $\Rightarrow$ 10 days

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

Q10.

Solution

Quick Solution: Concept: Pipes and Cisterns. **Chapter:** Pipes & Cisterns. Net filling rate = sum of inlet rates – outlet rate. **Answer:** A.

Concept — Pipes and Cisterns: Net filling rate = sum of inlet rates – outlet rate.

Step 1 — Individual rates (tank/hour):

$$A = \frac{1}{3}, \quad B = \frac{1}{6}, \quad C = -\frac{1}{12}.$$

Step 2 — Net rate:

$$\frac{1}{3} + \frac{1}{6} - \frac{1}{12} = \frac{4 + 2 - 1}{12} = \frac{5}{12} \text{ tank/hour.}$$

Step 3 — Time to fill:

$$t = \frac{1}{5/12} = \frac{12}{5} \text{ hours.}$$

Why other options are wrong:

- Option B (3 h): Ignores pipe B and C.
- Option C (8/3 h): Net rate would need to be 3/8 — incorrect.
- Option D (4 h): Net rate would be 1/4 — incorrect.

Final Answer: Time = $\frac{12}{5}$ hours $\Rightarrow$ $\frac{12}{5}$ h

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



Q11.

Solution

Quick Solution: Concept: Relative Speed (Opposite Directions). **Chapter:** Time & Distance. When two objects move towards each other, their speeds add. **Answer:** B.

Concept — Relative Speed (Opposite Directions): When two objects move towards each other, their speeds add.

Step 1 — Relative speed:

$$v_{\text{rel}} = 40 + 50 = 90 \text{ km/h.}$$

Step 2 — Time to meet:

$$t = \frac{180}{90} = 2 \text{ hours.}$$

Why other options are wrong:

- Option A (1.5 h): $90 \times 1.5 = 135 \neq 180 \text{ km.}$
- Option C (2.5 h): $90 \times 2.5 = 225 \neq 180 \text{ km.}$
- Option D (3 h): $90 \times 3 = 270 \neq 180 \text{ km.}$

Final Answer: They meet after 2 hours $\Rightarrow$ 2 h

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

Q12.

Solution

Quick Solution: Concept: Catch-Up Problem. **Chapter:** Time & Distance. When both move in the same direction, the faster one closes the gap at the relative speed. **Answer:** C.

Concept — Catch-Up Problem: When both move in the same direction, the faster one closes the gap at the relative speed.

Step 1 — Head start of Car A (in 30 min):

$$d_{\text{head start}} = 60 \times 0.5 = 30 \text{ km.}$$



Step 2 — Relative speed of B over A:

$$v_{\text{rel}} = 80 - 60 = 20 \text{ km/h.}$$

Step 3 — Time for B to catch up:

$$t = \frac{30}{20} = 1.5 \text{ hours.}$$

Why other options are wrong:

- Option A (1 h): $20 \times 1 = 20 \neq 30$ km gap.
- Option B (1.25 h): $20 \times 1.25 = 25 \neq 30$ km.
- Option D (2 h): $20 \times 2 = 40 \neq 30$ km.

Final Answer: B catches A after 1.5 hours $\Rightarrow$ 1.5 h

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

Q13.

Solution

Quick Solution: Concept: Simple Interest Doubling. **Chapter:** Simple Interest. If principal doubles, $SI = P$. **Answer:** D.

Concept — Simple Interest Doubling: If principal doubles, $SI = P$. Formula:
 $SI = \frac{P \times r \times t}{100}$.

Step 1 — Set up equation:

$$P = \frac{P \times r \times 5}{100}.$$

Step 2 — Solve for r :

$$1 = \frac{5r}{100} \implies r = \frac{100}{5} = 20\%.$$

Why other options are wrong:

- Option A (15%): Money would double in ≈ 6.67 years.
- Option B (16%): Would take 6.25 years to double.
- Option C (18%): Would take ≈ 5.56 years.

Final Answer: Rate = 20% p.a. $\Rightarrow$ 20%



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

Q14.

Solution

Quick Solution: Concept: CI vs. SI Difference. **Chapter:** Compound Interest. For 2 years, $CI - SI = P \left(\frac{r}{100} \right)^2$. **Answer:** A.

Concept — CI vs. SI Difference: For 2 years, $CI - SI = P \left(\frac{r}{100} \right)^2$.

Step 1 — Using the formula directly:

$$\text{Diff} = 4000 \times \left(\frac{5}{100} \right)^2 = 4000 \times 0.0025 = \text{Rs. } 10.$$

Verification — Step 2:

$$SI = \frac{4000 \times 5 \times 2}{100} = \text{Rs. } 400.$$

$$CI = 4000[(1.05)^2 - 1] = 4000 \times 0.1025 = \text{Rs. } 410.$$

$$\text{Diff} = 410 - 400 = \text{Rs. } 10. \checkmark$$

Why other options are wrong:

- Option B (Rs. 12): Incorrect computation.
- Option C (Rs. 15): Arises from using wrong rate or principal.
- Option D (Rs. 20): Double the correct answer.

Final Answer: Difference = Rs. 10 $\Rightarrow$ Rs. 10

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

Q15.

Solution

Quick Solution: Concept: Area of Parallelogram. **Chapter:** Mensuration 2D. Area = base $\times$ perpendicular height. **Answer:** B.

Concept — Area of Parallelogram: Area = base $\times$ perpendicular height.



Step 1 — Substitute values:

$$\text{Area} = 15 \times 8 = 120 \text{ cm}^2.$$

Why other options are wrong:

- Option A (100 cm^2): Could arise from 12.5×8 or similar error.
- Option C (130 cm^2): No valid combination of given dimensions.
- Option D (140 cm^2): Overestimates; perhaps using slant side instead of height.

Final Answer: $\text{Area} = 120 \text{ cm}^2 \Rightarrow \boxed{120 \text{ cm}^2}$

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

Q16.

Solution

Quick Solution: Concept: Total Surface Area of Sphere. **Chapter:** Mensuration 3D. $\text{TSA} = 4\pi r^2$. **Answer:** C.

Concept — Total Surface Area of Sphere: $\text{TSA} = 4\pi r^2$.

Step 1 — Substitute $r = 7 \text{ cm}$ and $\pi = \frac{22}{7}$:

$$\text{TSA} = 4 \times \frac{22}{7} \times 7^2 = 4 \times \frac{22}{7} \times 49 = 4 \times 22 \times 7 = 616 \text{ cm}^2.$$

Why other options are wrong:

- Option A (512 cm^2): Incorrect; approximately $4 \times 3.14 \times 6^2 \approx 452$ for $r = 6$.
- Option B (576 cm^2): Does not match the formula with given values.
- Option D (654 cm^2): Slight overestimate from using $\pi \approx 3.14$.

Final Answer: $\text{TSA} = 616 \text{ cm}^2 \Rightarrow \boxed{616 \text{ cm}^2}$

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



Q17.

Solution

Quick Solution: Concept: Composite Area. **Chapter:** Mensuration Combined. Total area = area of rectangle + area of semicircle. **Answer:** D.

Concept — Composite Area: Total area = area of rectangle + area of semicircle.

Step 1 — Area of rectangle:

$$A_{\text{rect}} = 20 \times 14 = 280 \text{ cm}^2.$$

Step 2 — Area of semicircle (diameter = 14 cm, so radius = 7 cm):

$$A_{\text{semi}} = \frac{1}{2}\pi r^2 = \frac{1}{2} \times \frac{22}{7} \times 49 = \frac{1}{2} \times 154 = 77 \text{ cm}^2.$$

Step 3 — Total area:

$$A = 280 + 77 = 357 \text{ cm}^2.$$

Why other options are wrong:

- Option A (330 cm²): Omits most of the semicircle area.
- Option B (340 cm²): Uses an incorrect semicircle value.
- Option C (350 cm²): Off by 7 — likely semicircle computed as ≈ 70 .

Final Answer: Total area = 357 cm² $\Rightarrow$ 357 cm²

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

Q18.

Solution

Quick Solution: Concept: Binomial Probability. **Chapter:** Probability. $P(X = k) = \binom{n}{k}p^k(1-p)^{n-k}$ with $p = 0.5$, $n = 3$, $k = 2$. **Answer:** A.

Concept — Binomial Probability: $P(X = k) = \binom{n}{k}p^k(1-p)^{n-k}$ with $p = 0.5$, $n = 3$, $k = 2$.

Step 1 — Count favourable outcomes: Sample space = $\{HHH, HHT, HTH, THH, HTT, THT, TTH, TTT\}$ (8 outcomes).

Exactly 2 heads: $\{HHT, HTH, THH\}$ — 3 outcomes.



Step 2 — Probability:

$$P = \frac{3}{8}.$$

Why other options are wrong:

- Option B (1/2): That is $P(\text{at least 1 head and at least 1 tail})$ — different event.
- Option C (1/4): Equals $P(\text{exactly 2 tails})$ counted from 4 outcomes — not 8.
- Option D (5/8): Equals $P(\text{at least 2 heads}) = P(2H) + P(3H) = 3/8 + 1/8 = 4/8$.

Final Answer: $P = \frac{3}{8} \Rightarrow \boxed{\frac{3}{8}}$

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

Q19.

Solution

Quick Solution: Concept: Combinations. **Chapter:** Combinations. $\binom{n}{r} = \frac{n!}{r!(n-r)!}$ counts selections where order does not matter. **Answer:** B.

Concept — Combinations: $\binom{n}{r} = \frac{n!}{r!(n-r)!}$ counts selections where order does not matter.

Step 1 — Apply formula with $n = 6, r = 3$:

$$\binom{6}{3} = \frac{6!}{3!3!} = \frac{6 \times 5 \times 4}{3 \times 2 \times 1} = \frac{120}{6} = 20.$$

Why other options are wrong:

- Option A (18): $\binom{6}{2} + \binom{5}{3} = 15 + 10 = 25$ — neither matches 18.
- Option C (24): This equals $\binom{6}{3} \times \frac{6}{5}$ — not a valid combination count.
- Option D (30): Equals $P(6, 3)/4$ or $\binom{6}{2} \times 2$ — incorrect.

Final Answer: $\binom{6}{3} = 20 \Rightarrow \boxed{20}$

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



Q20.

Solution

Quick Solution: Concept: Weighted Average / Sum. **Chapter:** Averages. If average of n values is $\bar{x}$, their sum is $n\bar{x}$. **Answer:** C.

Concept — Weighted Average / Sum: If average of n values is $\bar{x}$, their sum is $n\bar{x}$.

Step 1 — Sum of original 5 members' ages:

$$S_5 = 5 \times 28 = 140 \text{ years.}$$

Step 2 — Sum after grandfather joins (6 members, avg 35):

$$S_6 = 6 \times 35 = 210 \text{ years.}$$

Step 3 — Grandfather's age:

$$\text{Age} = 210 - 140 = 70 \text{ years.}$$

Why other options are wrong:

- Option A (60): $140 + 60 = 200$; $200/6 \approx 33.3 \neq 35$.
- Option B (65): $140 + 65 = 205$; $205/6 \approx 34.2 \neq 35$.
- Option D (75): $140 + 75 = 215$; $215/6 \approx 35.8 \neq 35$.

Final Answer: Grandfather's age = 70 years $\Rightarrow$ 70 years

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

Q21.

Solution

Quick Solution: Concept: Running Average. **Chapter:** Averages. New average = $\frac{\text{old sum} + \text{new score}}{\text{new count}}$. **Answer:** D.

Concept — Running Average: New average = $\frac{\text{old sum} + \text{new score}}{\text{new count}}$.

Step 1 — Total runs after 40 innings:

$$S_{40} = 40 \times 30 = 1200.$$



Step 2 — Total after 41st innings:

$$S_{41} = 1200 + 180 = 1380.$$

Step 3 — New average:

$$\bar{x}_{41} = \frac{1380}{41} \approx 33.66.$$

Why other options are wrong:

- Option A (31): $41 \times 31 = 1271 \neq 1380$.
- Option B (32): $41 \times 32 = 1312 \neq 1380$.
- Option C (33): $41 \times 33 = 1353 \neq 1380$.

Final Answer: New average = $\frac{1380}{41} \approx 33.66 \Rightarrow \boxed{33.66}$

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

Q22.

Solution

Quick Solution: Concept: Difference Pattern Series. **Chapter:** Analytical — Series. Examine consecutive differences to find the rule. **Answer:** A.

Concept — Difference Pattern Series: Examine consecutive differences to find the rule.

Step 1 — Compute differences:

$$15 - 8 = 7, \quad 24 - 15 = 9, \quad 35 - 24 = 11, \quad 48 - 35 = 13.$$

Step 2 — Identify pattern: Differences are 7, 9, 11, 13, ... (odd numbers increasing by 2 each time). Next difference = 15.

Step 3 — Find missing term:

$$48 + 15 = 63.$$

Why other options are wrong:

- Option B (60): Implies difference of +12 — breaks the odd-number AP.
- Option C (65): Implies difference of +17 — skips one step.



- Option D (70): Implies difference of +22 — too large.

Final Answer: Missing number = 63 $\Rightarrow$ 63

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

Q23.

Solution

Quick Solution: Concept: Coding by Reversal. **Chapter:** Coding-Decoding. Each word is encoded by reversing all its letters in order. **Answer:** B.

Concept — Coding by Reversal: Each word is encoded by reversing all its letters in order.

Step 1 — Verify with KINGDOM:

$$K-I-N-G-D-O-M \xrightarrow{\text{reverse}} M-O-D-G-N-I-K = \text{MODGNIK}. \checkmark$$

Step 2 — Apply to FLOWER:

$$F-L-O-W-E-R \xrightarrow{\text{reverse}} R-E-W-O-L-F = \text{REWOLF}.$$

Why other options are wrong:

- Option A (REWOLG): Last letter G is wrong; should be F.
- Option C (RELFOW): Letters are not in correct reversed order.
- Option D (REWOLP): Last letter P does not appear in FLOWER.

Final Answer: Code for FLOWER = REWOLF $\Rightarrow$ REWOLF

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

Q24.

Solution

Quick Solution: Concept: Blood Relations. **Chapter:** Blood Relations. Trace family connections step by step. **Answer:** C.

Concept — Blood Relations: Trace family connections step by step.

Step 1 — Given facts:



- P is the son of Q.
- Q is the brother of R.
- R is the father of S.

Step 2 — Derive relationship: Since Q is R's brother, Q is the uncle of S (R's child).

Since P is Q's son, P and S share the same generation — P is the cousin of S.

Why other options are wrong:

- Option A (Brother): P and S have different fathers (Q and R respectively).
- Option B (Uncle): P would need to be of R's generation, not one generation below.
- Option D (Nephew): S would be nephew of P, not the other way around.

Final Answer: P is S's **Cousin** $\Rightarrow$ Cousin

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

Q25.

Solution

Quick Solution: Concept: Permutations with Constraint. **Chapter:** Direction Sense. Treat the pair who must sit together as a single unit. **Answer:** D.

Concept — Permutations with Constraint: Treat the pair who must sit together as a single unit.

Step 1 — Treat 2 specific men as one unit: Number of units to arrange = 5 (4 others + 1 combined unit).

Arrangements = $5! = 120$.

Step 2 — Internal arrangements of the pair: The 2 specific men can swap positions within the unit: $2! = 2$ ways.

Step 3 — Total arrangements:

$$120 \times 2 = 240.$$

Why other options are wrong:

- Option A (120): Counts only the 5-unit arrangements, forgetting internal swaps.



- Option B (180): $3! \times 5!/4 = 720/4 = 180$ — incorrect logic.
- Option C (200): No standard combinatorial formula yields this.

Final Answer: Total arrangements = 240 $\Rightarrow$ 240

Answer: (D) [Go Back to Q25](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	D	2	A	3	B	4	C	5	D
6	A	7	B	8	C	9	D	10	A
11	B	12	C	13	D	14	A	15	B
16	C	17	D	18	A	19	B	20	C
21	D	22	A	23	B	24	C	25	D

