XAT Quantitative Ability & DI

Sample Paper – 8

Duration: 64 Minutes **Maximum Marks: 28**

Instructions

- This paper contains **28** Multiple Choice Questions (Single Correct Answer), modelled on the Quantitative Ability & Data Interpretation section of **XAT** (Xavier Aptitude Test), conducted by XLRI.
- Each correct answer carries **+1 mark**, with **0.25 marks deducted** for every incorrect answer. (In the actual XAT you may leave up to **8** questions across Part 1 unattempted without penalty; thereafter each blank costs **0.10** marks.)
- **Section A** has **20** standalone Quantitative Ability questions; **Section B** has **two Data Interpretation sets** of four questions each.
- **No calculator is allowed** in XAT; do all working by hand. Attempt this practice paper in one timed sitting of about **64 minutes**.
- Use of mobile phones and electronic gadgets is strictly prohibited.

Section A: Quantitative Ability

Q1. A trader marks his goods 60% above cost price and then allows a discount of 30% on the marked price. His profit percent is:

(A) 15%

(B) 10%

(C) 8%

(D) 12%

Q2. A man sells two articles at Rs 1980 each. On one he gains 20% and on the other he loses 20%. Overall he makes:

(A) a gain of 4%

(B) no profit and no loss

(C) a gain of 2%

(D) a loss of 4%

Q3. A train 200 m long crosses a platform 400 m long in 24 seconds. The speed of the train is:

(A) 90 km/h

(B) 75 km/h

(C) 80 km/h

(D) 72 km/h

Q4. A can finish a piece of work in 15 days and B in 10 days. Working together, they will finish it in:

(A) 6 days

(B) 12.5 days

(C) 5 days

(D) 8 days

Q5. The average of 13 numbers is 40. The average of the first seven is 42 and that of the last seven is 39. The seventh number is:

(A) 40

(B) 42

(C) 39

(D) 47

Q6. A 60-litre mixture contains milk and water in the ratio $5 : 1$. How much water must be added so that the ratio becomes $5 : 3$?

(A) 20 litres

(B) 10 litres

(C) 15 litres

(D) 12 litres

Q7. The difference between the compound interest and the simple interest on a sum for 2 years at 20% per annum is Rs 200. The sum is:

(A) Rs 2000

(B) Rs 2500

(C) Rs 4000

(D) Rs 5000

Q8. If $x - \frac{1}{x} = 3$, then $x^2 + \frac{1}{x^2}$ equals:

(A) 7

(B) 9

(C) 13

(D) 11

Q9. The sum of the first 15 terms of the arithmetic progression $5, 9, 13, \ldots$ is:

(A) 480

(B) 495

(C) 510

(D) 500

Q10. The roots of the equation $x^2 - 7x + 12 = 0$ are:

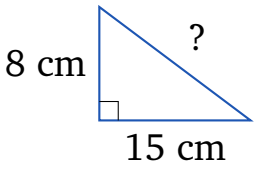
(A) 2 and 6

(B) 1 and 12

(C) 3 and 4

(D) -3 and -4

Q11. In the right-angled triangle shown, the two legs measure 8 cm and 15 cm. The length of the hypotenuse is:



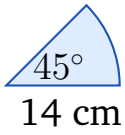
(A) 23 cm

(B) 17 cm

(C) 20 cm

(D) 16 cm

Q12. A sector of a circle of radius 14 cm subtends an angle of 45° at the centre. Its area is (take $\pi = \frac{22}{7}$):



(A) 154 cm^2

(B) 77 cm^2

(C) 38.5 cm^2

(D) 616 cm^2

Q13. The volume of a cube is 343 cm^3. Its total surface area is:

(A) 196 cm^2

(B) 343 cm^2

(C) 294 cm^2

(D) 252 cm^2

Q14. The remainder when 3^{100} is divided by 5 is:

(A) 3

(B) 4

(C) 1

(D) 2

Q15. The number of positive factors of 720 is:

(A) 15

(B) 20

(C) 24

(D) 30

Q16. The number of distinct arrangements of all the letters of the word **PATTERN** is:

(A) 2520

(B) 5040

(C) 1260

(D) 840

Q17. Two fair dice are thrown together. The probability that the sum of the numbers shown is 10 is:

(A) $\frac{1}{9}$

(B) $\frac{1}{12}$

(C) $\frac{1}{6}$

(D) $\frac{1}{18}$

Q18. If $\log_3 x = 4$, then x equals:

(A) 81

(B) 64

(C) 12

(D) 27

Q19. A's salary is 60% more than B's salary. By what percent is B's salary less than A's?

(A) 60%

(B) 37.5%

(C) 40%

(D) 30%

Q20. If $5x - 3 > 3x + 7$, then:

(A) $x < 5$

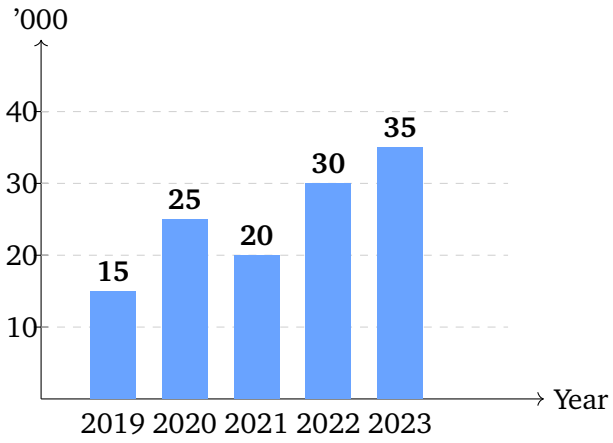
(B) $x > 5$

(C) $x > 10$

(D) $x < 10$

Section B: Data Interpretation – Set I

Directions (Q21–Q24): The bar chart shows the annual footfall (in thousands) at a science museum from 2019 to 2023. Study it and answer the questions.



Q21. What is the total footfall at the museum over the five years (in thousands)?

(A) 125

(B) 120

(C) 130

(D) 115

Q22. The footfall in 2022 is what percent more than the footfall in 2021?

(A) 40%

(B) 60%

(C) 50%

(D) 33.3%

Q23. What is the average annual footfall over the five years (in thousands)?

(A) 25

(B) 30

(C) 20

(D) 28

Q24. In which year was the footfall exactly equal to the five-year average?

(A) 2018

(B) 2020

(C) 2019

(D) 2022

Section B: Data Interpretation – Set II

Directions (Q25–Q28): The table shows the number of parcels delivered by four couriers on Saturday and Sunday. Study it and answer the questions.

Courier	Saturday	Sunday	Total
W	45	65	110
X	70	50	120
Y	55	80	135
Z	60	45	105

Q25. What is the total number of parcels delivered by all four couriers over the two days?

(A) 450

(B) 460

(C) 470

(D) 480

Q26. Which courier delivered the highest number of parcels over the two days taken together?

(A) W

(B) Y

(C) X

(D) Z

Q27. By how many parcels did the total Sunday deliveries exceed the total Saturday deliveries?

(A) 25

(B) 20

(C) 15

(D) 10

Q28. What is the ratio of W's two-day total to X's two-day total?

(A) $12 : 11$

(B) $1 : 1$

(C) $11 : 12$

(D) $6 : 5$

Detailed Solutions

Q1.

Solution

Concept – successive markup and discount.

Step 1: Let CP $= 100$. Marked price $= 100 + 60\% = 160$.

Step 2: Selling price $= 160 \times (1 - 0.30) = 160 \times 0.70 = 112$.

Step 3: Profit $= 112 - 100 = 12$, so profit percent $= 12\%$.

Why the others are wrong: A/B/C come from forgetting the discount or subtracting 30% from 60%; the correct chained value is 12%.

Final Answer: D

Answer: (D) Go Back to Q1

Q2.

Solution

Concept – equal SP, equal opposite %: always a loss.

Step 1: CP of the gaining article $= \dfrac{1980}{1.2} = 1650$; CP of the losing one $= \dfrac{1980}{0.8} = 2475$.

Step 2: Total CP $= 4125$, total SP $= 3960$, loss $= 165$.

Step 3: Loss percent $= \dfrac{165}{4125} \times 100 = 4\%$ (matches the shortcut $\dfrac{20^2}{100}\% = 4\%$ loss).

Why the others are wrong: There is always a net loss here, so A/B/C fail; the loss is exactly 4%.

Final Answer: D

Answer: (D) Go Back to Q2

Q3.

Solution

Concept – crossing a platform covers (train + platform) length.

Step 1: Distance $= 200 + 400 = 600$ m in 24 s.

Step 2: Speed $= \dfrac{600}{24} = 25$ m/s.

Step 3: $25 \times \dfrac{18}{5} = 90$ km/h.

Why the others are wrong: B/C/D use a wrong distance or a wrong m/s-to-km/h

factor.

Final Answer: A

Answer: (A) Go Back to Q3

Q4.

Solution

Concept – combined one-day work.

Step 1: $\frac{1}{15}+\frac{1}{10}=\frac{2+3}{30}=\frac{5}{30}=\frac{1}{6}$ per day.

Step 2: Time $=\frac{6}{1}=6$ days.

Why the others are wrong: 12.5 and 5 ignore the correct LCM combination; 8 adds the wrong fractions.

Final Answer: A

Answer: (A) Go Back to Q4

Q5.

Solution

Concept – overlap in averages.

Step 1: Sum of all $13 = 13 \times 40 = 520$.

Step 2: Sum of first seven $= 7 \times 42 = 294$; sum of last seven $= 7 \times 39 = 273$; their sum $= 567$.

Step 3: The seventh number is counted in both, so it $= 567 - 520 = 47$.

Why the others are wrong: 40/42/39 ignore the double-counted seventh term.

Final Answer: D

Answer: (D) Go Back to Q5

Q6.

Solution

Concept – only water changes; milk stays fixed.

Step 1: Milk $=\frac{5}{6}\times 60=50$, water $=10$.

Step 2: For $5:3$ with milk $=50$: water $=50\times\frac{3}{5}=30$.

Step 3: Water to add $=30-10=20$ litres.

Why the others are wrong: 10/15/12 come from changing milk or mis-setting the target ratio.

Final Answer: A

Answer: (A) Go Back to Q6

Q7.

Solution

Concept – for 2 years, CI − SI $= P\left(\frac{r}{100}\right)^2$.

Step 1: $P \times (0.2)^2 = 0.04P = 200$.

Step 2: $P = \frac{200}{0.04} = 5000$.

Why the others are wrong: 2000/2500/4000 do not satisfy $0.04P = 200$.

Final Answer: D

Answer: (D) Go Back to Q7

Q8.

Solution

Concept – square the given difference.

Step 1: $\left(x - \frac{1}{x}\right)^2 = x^2 + \frac{1}{x^2} - 2 = 9$.

Step 2: $x^2 + \frac{1}{x^2} = 9 + 2 = 11$.

Why the others are wrong: 7 subtracts instead of adding the 2; 9 forgets the $+2$; 13 mis-squares.

Final Answer: D

Answer: (D) Go Back to Q8

Q9.

Solution

Concept – AP sum $S_n = \frac{n}{2}[2a + (n-1)d]$.

Step 1: $a = 5$, $d = 4$, $n = 15$.

Step 2: $S_{15} = \frac{15}{2}[10 + 14 \times 4] = \frac{15}{2}[10 + 56] = \frac{15}{2} \times 66 = 15 \times 33 = 495$.

Why the others are wrong: 480/510/500 use a wrong $n - 1$ or d.

Final Answer: B

Answer: (B) Go Back to Q9

Q10.

Solution

Concept – factor the quadratic.

Step 1: $x^2 - 7x + 12 = (x - 3)(x - 4)$.

Step 2: Roots are $x = 3$ and $x = 4$ (both positive, product 12, sum 7).

Why the others are wrong: A has the wrong product; B has the wrong sum; D has wrong signs.

Final Answer: C

Answer: (C) Go Back to Q10

Q11.

Solution

Concept – Pythagoras theorem.

Step 1: Hypotenuse $= \sqrt{8^2 + 15^2} = \sqrt{64 + 225}$.

Step 2: $= \sqrt{289} = 17$ cm (an 8-15-17 Pythagorean triple).

Why the others are wrong: 23 adds the legs; 20 and 16 do not satisfy Pythagoras.

Final Answer: B

Answer: (B) Go Back to Q11

Q12.

Solution

Concept – sector area $= \dfrac{\theta}{360}\pi r^2$.

Step 1: $\dfrac{45}{360} = \dfrac{1}{8}$; $\pi r^2 = \dfrac{22}{7} \times 196 = 616$.

Step 2: Area $= \dfrac{1}{8} \times 616 = 77$ cm^2.

Why the others are wrong: 616 is the full circle; 154 is a quarter; 38.5 halves the correct value.

Final Answer: B

Answer: (B) Go Back to Q12

Q13.

Solution

Concept – cube: volume $= a^3$**, TSA** $= 6a^2$**.**

Step 1: $a^3 = 343 \Rightarrow a = 7$ cm.

Step 2: TSA $= 6 \times 7^2 = 6 \times 49 = 294$ cm^2.

Why the others are wrong: 196/343/252 use a wrong side or wrong face count.

Final Answer: C

Answer: (C) Go Back to Q13

Q14.

Solution

Concept – cyclicity of $3^n \bmod 5$**.**

Step 1: $3^4 = 81 \equiv 1 \pmod 5$.

Step 2: $3^{100} = (3^4)^{25} \equiv 1^{25} = 1 \pmod 5$.

Why the others are wrong: 3/4/2 correspond to other exponents in the cycle $3, 4, 2, 1, \ldots$

Final Answer: C

Answer: (C) Go Back to Q14

Q15.

Solution

Concept – number of factors from prime factorisation.

Step 1: $720 = 2^4 \times 3^2 \times 5^1$.

Step 2: Number of factors $= (4+1)(2+1)(1+1) = 5 \times 3 \times 2 = 30$.

Why the others are wrong: 15/20/24 drop a prime power or mis-add an exponent.

Final Answer: D

Answer: (D) Go Back to Q15

Q16.

Solution

Concept – arrangements with a repeated letter.

Step 1: PATTERN has 7 letters with T repeated twice.

Step 2: Arrangements $= \frac{7!}{2!} = \frac{5040}{2} = 2520$.

Why the others are wrong: 5040 ignores the repeat; 1260/840 over-divide.

Final Answer: A

Answer: (A) Go Back to Q16

Q17.

Solution

Concept – favourable outcomes over 36.

Step 1: Sum 10: $(4,6),(5,5),(6,4) = 3$ ways.

Step 2: Probability $= \frac{3}{36} = \frac{1}{12}$.

Why the others are wrong: $\frac{1}{9}, \frac{1}{6}, \frac{1}{18}$ miscount the favourable pairs.

Final Answer: B

Answer: (B) Go Back to Q17

Q18.

Solution

Concept – definition of a logarithm.

Step 1: $\log_3 x = 4 \Rightarrow x = 3^4$.

Step 2: $x = 81$.

Why the others are wrong: 64/12/27 come from wrong bases or exponents.

Final Answer: A

Answer: (A) Go Back to Q18

Q19.

Solution

Concept – the base changes when comparing the other way.

Step 1: Let $B = 100$, so $A = 160$.

Step 2: B is less than A by $\frac{160 - 100}{160} \times 100 = \frac{60}{160} \times 100 = 37.5\%$.

Why the others are wrong: 60% keeps the wrong base; 40/30 mis-divide.

Final Answer: B

Answer: (B) Go Back to Q19

Q20.

Solution

Concept – solve the linear inequality.

Step 1: $5x - 3 > 3x + 7 \Rightarrow 5x - 3x > 7 + 3$.

Step 2: $2x > 10 \Rightarrow x > 5$.

Why the others are wrong: the inequality direction and constant give $x > 5$, not the others.

Final Answer: B

Answer: (B) Go Back to Q20

Q21.

Solution

Concept – add the bar heights.

Step 1: $15 + 25 + 20 + 30 + 35$.

Step 2: $= 125$ thousand.

Why the others are wrong: 120/130/115 drop or mis-add a year's bar.

Final Answer: A

Answer: (A) Go Back to Q21

Q22.

Solution

Concept – percent increase over the earlier year.

Step 1: 2022 $= 30$, 2021 $= 20$; increase $= 30 - 20 = 10$.

Step 2: $\frac{10}{20} \times 100 = 50\%$.

Why the others are wrong: 33.3% divides by 30 (the later year); 40/60 use wrong figures.

Final Answer: C

Answer: (C) Go Back to Q22

Q23.

Solution

Concept – average = total ÷ count.

Step 1: Total $= 125$ (from Q21), count $= 5$.

Step 2: Average $= \frac{125}{5} = 25$ thousand.

Why the others are wrong: 30/20/28 do not equal $125 \div 5$.

Final Answer: A

Answer: (A) Go Back to Q23

Q24.

Solution

Concept – match a year to the average of 25.

Step 1: The five values are $15, 25, 20, 30, 35$; the average is 25.

Step 2: The year with footfall exactly 25 is **2020**.

Why the others are wrong: 2018 has no bar; 2019 reads 15 and 2022 reads 30, neither equal to 25.

Final Answer: C

Answer: (C) Go Back to Q24

Q25.

Solution

Concept – add the "Total" column.

Step 1: $110 + 120 + 135 + 105$.

Step 2: $= 470$ parcels.

Why the others are wrong: 450/460/480 drop or mis-add part of a courier's total.

Final Answer: C

Answer: (C) Go Back to Q25

Q26.

Solution

Concept – compare the totals.

Step 1: Totals: W $= 110$, X $= 120$, Y $= 135$, Z $= 105$.

Step 2: The largest is 135, which is **Y**.

Why the others are wrong: W, X and Z all total less than Y's 135.

Final Answer: B

Answer: (B) Go Back to Q26

Q27.

Solution

Concept – column sums for each day.

Step 1: Saturday $= 45 + 70 + 55 + 60 = 230$; Sunday $= 65 + 50 + 80 + 45 = 240$.

Step 2: Difference $= 240 - 230 = 10$ parcels.

Why the others are wrong: 25/20/15 come from a mis-added column.

Final Answer: D

Answer: (D) Go Back to Q27

Q28.

Solution

Concept – form and reduce the ratio.

Step 1: W's total $= 110$, X's total $= 120$.

Step 2: $110 : 120 = 11 : 12$.

Why the others are wrong: $12 : 11$ reverses it; $1 : 1$ and $6 : 5$ do not match $110 : 120$.

Final Answer: C

Answer: (C) Go Back to Q28

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	D	2	D	3	A	4	A	5	D
6	A	7	D	8	D	9	B	10	C
11	B	12	B	13	C	14	C	15	D
16	A	17	B	18	A	19	B	20	B
21	A	22	C	23	A	24	C	25	C
26	B	27	D	28	C				