XAT Quantitative Ability & DI

Sample Paper – 7

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 50% above cost price and then allows a discount of 20% on the marked price. His profit percent is:

(A) 10%

(B) 25%

(C) 20%

(D) 30%

Q2. A man sells two articles at Rs 1200 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 loss of 2%

(D) a loss of 4%

Q3. A train 150 m long crosses a platform 350 m long in 25 seconds. The speed of the train is:

(A) 72 km/h

(B) 60 km/h

(C) 54 km/h

(D) 66 km/h

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

(A) 5 days

(B) 6 days

(C) 12.5 days

(D) 8 days

Q5. The average of 9 numbers is 40. The average of the first five is 42 and that of the last five is 39. The fifth number is:

(A) 40

(B) 39

(C) 42

(D) 45

Q6. A 50-litre mixture contains milk and water in the ratio $4:1$. How much water must be added so that the ratio becomes $4:3$?

(A) 10 litres

(B) 15 litres

(C) 20 litres

(D) 25 litres

Q7. The difference between the compound interest and the simple interest on a sum for 2 years at 5% per annum is Rs 20. The sum is:

(A) Rs 8000

(B) Rs 4000

(C) Rs 10000

(D) Rs 6000

Q8. If $x + \frac{1}{x} = 5$, then $x^2 + \frac{1}{x^2}$ equals:

(A) 25

(B) 27

(C) 23

(D) 21

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

(A) 465

(B) 480

(C) 495

(D) 510

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

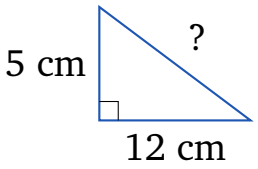
(A) 2 and 6

(B) 3 and 4

(C) -3 and -4

(D) 3 and -4

Q11. In the right-angled triangle shown, the two legs measure 5 cm and 12 cm. The length of the hypotenuse is:



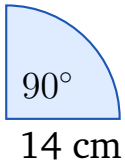
(A) 17 cm

(B) 15 cm

(C) 16 cm

(D) 13 cm

Q12. A sector of a circle of radius 14 cm subtends an angle of 90° at the centre. Its area is (take $\pi = \frac{22}{7}$):



(A) 308 cm^2

(B) 154 cm^2

(C) 196 cm^2

(D) 77 cm^2

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

(A) 196 cm^2

(B) 294 cm^2

(C) 343 cm^2

(D) 252 cm^2

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

(A) 3

(B) 4

(C) 2

(D) 1

Q15. The number of positive factors of 720 is:

(A) 24

(B) 28

(C) 30

(D) 36

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

(A) 2520

(B) 5040

(C) 1260

(D) 1680

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

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

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

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

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

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

(A) 12

(B) 64

(C) 27

(D) 81

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

(A) 37.5%

(B) 60%

(C) 40%

(D) 30%

Q20. If $4x - 9 < 3x + 6$, then:

(A) $x > 15$

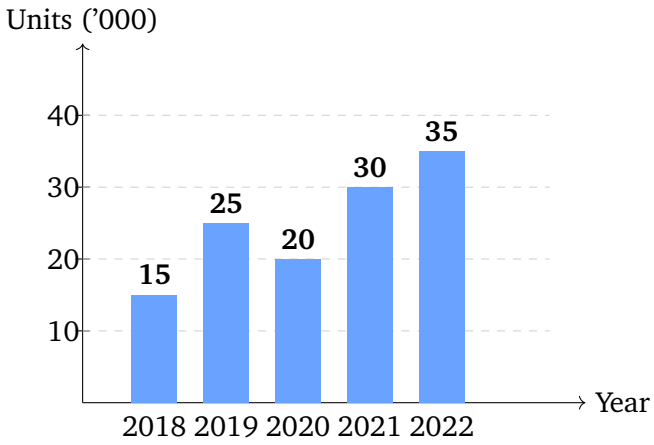
(B) $x < 6$

(C) $x < 15$

(D) $x > 6$

Section B: Data Interpretation – Set I

Directions (Q21–Q24): The bar chart shows the number of smartphones sold (in thousands) by a retail store from 2018 to 2022. Study it and answer the questions.



Q21. What is the total number of smartphones sold by the store over the five years (in thousands)?

(A) 115

(B) 130

(C) 120

(D) 125

Q22. The sales in 2021 is what percent more than the sales in 2020?

(A) 50%

(B) 33.3%

(C) 60%

(D) 40%

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

(A) 20

(B) 30

(C) 28

(D) 25

Q24. In which year were the sales exactly equal to the five-year average?

(A) 2018

(B) 2019

(C) 2020

(D) 2022

Section B: Data Interpretation – Set II

Directions (Q25–Q28): The table shows the runs scored by four batsmen in two matches. Study it and answer the questions.

Batsman	Match 1	Match 2	Total
W	45	35	80
X	30	60	90
Y	55	50	105
Z	40	30	70

Q25. What is the total number of runs scored by all four batsmen over the two matches?

(A) 345

(B) 350

(C) 335

(D) 360

Q26. Which batsman scored the highest number of runs over the two matches taken together?

(A) W

(B) X

(C) Y

(D) Z

Q27. By how many runs did the total Match 2 score exceed the total Match 1 score?

(A) 10

(B) 5

(C) 15

(D) 20

Q28. What is the ratio of W's two-match total to Z's two-match total?

(A) $7 : 8$

(B) $8 : 7$

(C) $1 : 1$

(D) $9 : 7$

Detailed Solutions

Q1.

Solution

Concept – successive markup and discount.

Step 1: Let CP $= 100$. Marked price $= 100 + 50\% = 150$.

Step 2: Selling price $= 150 \times (1 - 0.20) = 150 \times 0.80 = 120$.

Step 3: Profit $= 120 - 100 = 20$, so profit percent $= 20\%$.

Why the others are wrong: A/B/D come from forgetting the discount or subtracting 20% from 50%; the correct chained value is 20%.

Final Answer: C

Answer: (C) Go Back to Q1

Q2.

Solution

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

Step 1: CP of the gaining article $= \frac{1200}{1.2} = 1000$; CP of the losing one $= \frac{1200}{0.8} = 1500$.

Step 2: Total CP $= 2500$, total SP $= 2400$, loss $= 100$.

Step 3: Loss percent $= \frac{100}{2500} \times 100 = 4\%$ (matches the shortcut $\frac{20^2}{100}\% = 4\%$ loss).

Why the others are wrong: There is always a net loss here, so A and B fail; the loss is 4%, not 2%.

Final Answer: D

Answer: (D) Go Back to Q2

Q3.

Solution

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

Step 1: Distance $= 150 + 350 = 500$ m in 25 s.

Step 2: Speed $= \frac{500}{25} = 20$ m/s.

Step 3: $20 \times \frac{18}{5} = 72$ 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: $\frac{1}{10}+\frac{1}{15}=\frac{3+2}{30}=\frac{5}{30}=\frac{1}{6}$ per day.

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

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

Final Answer: B

Answer: (B) Go Back to Q4

Q5.

Solution

Concept – overlap in averages.

Step 1: Sum of all $9 = 9 \times 40 = 360$.

Step 2: Sum of first five $= 5 \times 42 = 210$; sum of last five $= 5 \times 39 = 195$; their sum $= 405$.

Step 3: The fifth number is counted in both, so it $= 405 - 360 = 45$.

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

Final Answer: D

Answer: (D) Go Back to Q5

Q6.

Solution

Concept – only water changes; milk stays fixed.

Step 1: Milk $=\frac{4}{5}\times 50=40$, water $=10$.

Step 2: For $4:3$ with milk $=40$: water $=40\times\frac{3}{4}=30$.

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

Why the others are wrong: 10/15/25 come from changing milk or mis-setting the target ratio.

Final Answer: C

Answer: (C) Go Back to Q6

Q7.

Solution

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

Step 1: $P \times (0.05)^2 = 0.0025P = 20$.

Step 2: $P = \frac{20}{0.0025} = 8000$.

Why the others are wrong: 4000/10000/6000 do not satisfy $0.0025P = 20$.

Final Answer: A

Answer: (A) Go Back to Q7

Q8.

Solution

Concept – square the given expression.

Step 1: $\left(x + \frac{1}{x}\right)^2 = x^2 + \frac{1}{x^2} + 2 = 25$.

Step 2: $x^2 + \frac{1}{x^2} = 25 - 2 = 23$.

Why the others are wrong: 25 forgets the -2; 27 adds instead of subtracting; 21 mis-squares.

Final Answer: C

Answer: (C) 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: 465/480/510 use a wrong $n - 1$ or d.

Final Answer: C

Answer: (C) 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; C/D have wrong signs.

Final Answer: B

Answer: (B) Go Back to Q10

Q11.

Solution

Concept – Pythagoras theorem.

Step 1: Hypotenuse $= \sqrt{5^2 + 12^2} = \sqrt{25 + 144}$.

Step 2: $= \sqrt{169} = 13$ cm (a 5-12-13 triple).

Why the others are wrong: 17 adds the legs; 15 and 16 do not satisfy Pythagoras.

Final Answer: D

Answer: (D) Go Back to Q11

Q12.

Solution

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

Step 1: $\dfrac{90}{360} = \dfrac{1}{4}$; $\pi r^2 = \dfrac{22}{7} \times 196 = 616$.

Step 2: Area $= \dfrac{1}{4} \times 616 = 154$ cm^2.

Why the others are wrong: 616 is the full circle; 308 is a semicircle; 196 is r^2.

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: B

Answer: (B) Go Back to Q13

Q14.

Solution

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

Step 1: The powers of 3 mod 5 cycle as $3, 4, 2, 1$ with length 4, since $3^4 = 81 \equiv 1 \pmod 5$.

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

Why the others are wrong: 3/4/2 correspond to exponents $\equiv 1, 2, 3 \pmod 4$, not a multiple of 4.

Final Answer: D

Answer: (D) 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: 24/28/36 drop a prime power or mis-add an exponent.

Final Answer: C

Answer: (C) Go Back to Q15

Q16.

Solution

Concept – arrangements with a repeated letter.

Step 1: TEACHER has 7 letters with E repeated twice.

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

Why the others are wrong: 5040 ignores the repeat; 1260/1680 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: A

Answer: (A) 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: 12/64/27 come from wrong bases or exponents.

Final Answer: D

Answer: (D) 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: A

Answer: (A) Go Back to Q19

Q20.

Solution

Concept – solve the linear inequality.

Step 1: $4x - 9 < 3x + 6 \Rightarrow 4x - 3x < 6 + 9$.

Step 2: $x < 15$.

Why the others are wrong: the inequality direction and constant give $x < 15$, not the others.

Final Answer: C

Answer: (C) 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: 115/130/120 drop or mis-add a year's bar.

Final Answer: D

Answer: (D) Go Back to Q21

Q22.

Solution

Concept – percent increase over the earlier year.

Step 1: 2021 $= 30$, 2020 $= 20$; increase $= 10$.

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

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

Final Answer: A

Answer: (A) 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: 20/30/28 do not equal $125 \div 5$.

Final Answer: D

Answer: (D) 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 sales exactly 25 is **2019**.

Why the others are wrong: 2018/2020/2022 read 15, 20, 35, none equal to 25.

Final Answer: B

Answer: (B) Go Back to Q24

Q25.

Solution

Concept – add the "Total" column.

Step 1: $80 + 90 + 105 + 70$.

Step 2: $= 345$ runs.

Why the others are wrong: 350/335/360 drop part of a batsman's total.

Final Answer: A

Answer: (A) Go Back to Q25

Q26.

Solution

Concept – compare the totals.

Step 1: Totals: W $= 80$, X $= 90$, Y $= 105$, Z $= 70$.

Step 2: The largest is 105, which is **Y**.

Why the others are wrong: W, X and Z all total less than Y's 105.

Final Answer: C

Answer: (C) Go Back to Q26

Q27.

Solution

Concept – column sums for each match.

Step 1: Match 1 $= 45 + 30 + 55 + 40 = 170$; Match 2 $= 35 + 60 + 50 + 30 = 175$.

Step 2: Difference $= 175 - 170 = 5$ runs.

Why the others are wrong: 10/15/20 come from a mis-added column.

Final Answer: B

Answer: (B) Go Back to Q27

Q28.

Solution

Concept – form and reduce the ratio.

Step 1: W's total $= 80$, Z's total $= 70$.

Step 2: $80 : 70 = 8 : 7$.

Why the others are wrong: $7 : 8$ reverses it; $1 : 1$ and $9 : 7$ do not match $80 : 70$.

Final Answer: B

Answer: (B) Go Back to Q28

Answer Key

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