# XAT Quantitative Ability & DI

## Sample Paper – 6

**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) 15%

(B) 20%

(C) 30%

(D) 25%

**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) a loss of 4%

(C) no profit and no loss

(D) a loss of 8%

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

(A) 60 km/h

(B) 66 km/h

(C) 72 km/h

(D) 80 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) 12.5 days

(B) 5 days

(C) 25 days

(D) 6 days

**Q5.** The average of 11 numbers is 40. The average of the first six is 38 and that of the last six is 44. The sixth number is:

(A) 44

(B) 52

(C) 40

(D) 48

**Q6.** A 60-litre mixture contains milk and water in the ratio $2:1$. How much water must be added so that the ratio becomes $1:1$?

(A) 20 litres

(B) 15 litres

(C) 30 litres

(D) 10 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 16000

(D) Rs 6400

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

(A) 9

(B) 11

(C) 7

(D) 13

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

(A) 495

(B) 480

(C) 510

(D) 500

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

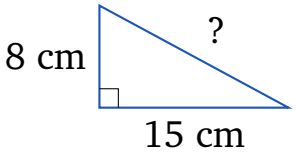
(A) 2 and 6

(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:



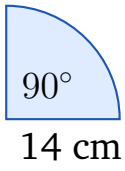

(A) 23 cm

(B) 17 cm

(C) 20 cm

(D) 16 cm

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




(A) 308 $cm^2$

(B) 196 $cm^2$

(C) 154 $cm^2$

(D) 77 $cm^2$

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

(A) 196 $cm^2$

(B) 343 $cm^2$

(C) 294 $cm^2$

(D) 252 $cm^2$

**Q14.** The remainder when $2^{50}$ is divided by 7 is:

(A) 2

(B) 4

(C) 1

(D) 6

**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 **COFFEE** is:

(A) 360

(B) 180

(C) 720

(D) 90

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

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

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

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

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

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

(A) 12

(B) 27

(C) 81

(D) 64

**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) 40%

(C) 30%

(D) 37.5%

**Q20.** If $5x - 9 > 2x + 6$, then:

(A) $x > 5$

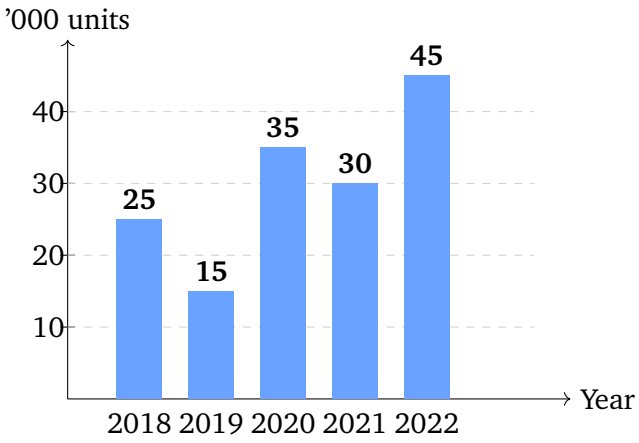
(B) $x < 5$

(C) $x > 15$

(D) $x < 15$

## Section B: Data Interpretation – Set I

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




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

(A) 150

(B) 140

(C) 160

(D) 145

**Q22.** The number of laptops sold in 2022 is what percent more than the number sold in 2021?

(A) 40%

(B) 33.3%

(C) 60%

(D) 50%

**Q23.** What is the average number of laptops sold per year over the five years (in thousands)?

(A) 25

(B) 35

(C) 28

(D) 30

**Q24.** In which year was the number of laptops sold exactly equal to the five-year average?

(A) 2021

(B) 2019

(C) 2020

(D) 2018

## Section B: Data Interpretation – Set II

*Directions (Q25–Q28): The table shows the number of tickets sold by four counters in Week 1 and Week 2. Study it and answer the questions.*

| Counter | Week 1 | Week 2 | Total |
|---|---|---|---|
| W | 45 | 55 | 100 |
| X | 60 | 70 | 130 |
| Y | 80 | 65 | 145 |
| Z | 50 | 60 | 110 |

**Q25.** What is the total number of tickets sold by all four counters over the two weeks?

(A) 485

(B) 475

(C) 495

(D) 470

**Q26.** Which counter sold the highest number of tickets over the two weeks taken together?

(A) W

(B) X

(C) Y

(D) Z

**Q27.** By how many tickets did the total Week 2 sales exceed the total Week 1 sales?

(A) 5

(B) 10

(C) 20

(D) 15

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

(A) $13 : 10$

(B) $1 : 1$

(C) $10 : 13$

(D) $5 : 6$

# 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/C/D come from forgetting the discount or subtracting 20% from 50%; the correct chained value is 20%.

**Final Answer:** B

**Answer: (B)** Go Back to Q1

## Q2.

**Solution**

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

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

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

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

**Why the others are wrong:** There is always a net loss here, so A and C fail; the loss is 4%, not 8%.

**Final Answer:** B

**Answer: (B)** 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 $= \dfrac{500}{25} = 20$ m/s.

**Step 3:** $20 \times \dfrac{18}{5} = 72$ km/h.

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

factor.

**Final Answer:** C

**Answer: (C)** 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 $=6$ days.

**Why the others are wrong:** 12.5 and 25 ignore the correct LCM combination; 5 over-counts the combined rate.

**Final Answer:** D

**Answer: (D)** Go Back to Q4

## Q5.

### Solution

**Concept – overlap in averages.**

**Step 1:** Sum of all $11=11\times 40=440$.

**Step 2:** Sum of first six $=6\times 38=228$; sum of last six $=6\times 44=264$; their sum $=492$.

**Step 3:** The sixth number is counted in both, so it $=492-440=52$.

**Why the others are wrong:** 44/40/48 ignore the double-counted sixth term.

**Final Answer:** B

**Answer: (B)** Go Back to Q5

## Q6.

### Solution

**Concept – only water changes; milk stays fixed.**

**Step 1:** Milk $=\frac{2}{3}\times 60=40$, water $=20$.

**Step 2:** For $1:1$ with milk $=40$: water needed $=40$.

**Step 3:** Water to add $=40-20=20$ litres.

**Why the others are wrong:** 15/30/10 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:** $P \times (0.05)^2 = 0.0025P = 20$.

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

**Why the others are wrong:** 4000/16000/6400 do not satisfy $0.0025P = 20$.

**Final Answer:** A

**Answer: (A)** Go Back to Q7

## Q8.

### Solution

**Concept – square the given expression.**

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

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

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

**Final Answer:** B

**Answer: (B)** 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:** A

**Answer: (A)** 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 sum; B has the wrong product; C has wrong signs.

**Final Answer:** D

**Answer: (D)** 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:** $\dfrac{90}{360} = \dfrac{1}{4}$; $\pi r^2 = \dfrac{22}{7} \times 196 = 616$.

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

**Why the others are wrong:** 616 is the full circle, so 308 is a semicircle; 196 is $r^2$; 77 halves the sector again.

**Final Answer:** C

**Answer: (C)** 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** $2^n \bmod 7$**.**

**Step 1:** $2^3 = 8 \equiv 1 \pmod 7$.

**Step 2:** $2^{50} = 2^{48} \cdot 2^2 = (2^3)^{16} \cdot 4 \equiv 1^{16} \cdot 4 = 4 \pmod 7$.

**Why the others are wrong:** 2/1/6 correspond to other exponents in the cycle $2, 4, 1, \ldots$

**Final Answer:** B

**Answer: (B)** 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 repeated letters.**

**Step 1:** COFFEE has 6 letters with F repeated twice and E repeated twice.

**Step 2:** Arrangements $= \dfrac{6!}{2!\,2!} = \dfrac{720}{4} = 180.$

**Why the others are wrong:** 720 ignores both repeats; 360 divides by only one $2!$; 90 over-divides.

**Final Answer:** B

**Answer: (B)** 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 $= \dfrac{3}{36} = \dfrac{1}{12}.$

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

**Final Answer:** D

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

**Final Answer:** C

**Answer: (C)** 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:** D

**Answer: (D)** Go Back to Q19

## Q20.

**Solution**

**Concept – solve the linear inequality.**

**Step 1:** $5x - 9 > 2x + 6 \Rightarrow 5x - 2x > 6 + 9$.

**Step 2:** $3x > 15 \Rightarrow x > 5$.

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

**Final Answer:** A

**Answer: (A)** Go Back to Q20

## Q21.

**Solution**

**Concept – add the bar heights.**

**Step 1:** $25 + 15 + 35 + 30 + 45$.

**Step 2:** $= 150$ thousand units.

**Why the others are wrong:** 140/160/145 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 $= 45$, 2021 $= 30$; increase $= 15$.

**Step 2:** $\frac{15}{30} \times 100 = 50\%$.

**Why the others are wrong:** 33.3% divides by 45; 40/60 use wrong figures.

**Final Answer:** D

**Answer: (D)** Go Back to Q22

## Q23.

**Solution**

**Concept – average = total ÷ count.**

**Step 1:** Total $= 150$ (from Q21), count $= 5$.

**Step 2:** Average $= \frac{150}{5} = 30$ thousand units.

**Why the others are wrong:** 25/35/28 do not equal $150 \div 5$.

**Final Answer:** D

**Answer: (D)** Go Back to Q23

## Q24.

**Solution**

**Concept – match a year to the average of 30.**

**Step 1:** The five values are $25, 15, 35, 30, 45$; the average is $30$.

**Step 2:** The year with sales exactly $30$ is **2021**.

**Why the others are wrong:** 2019/2020/2018 read $15$, $35$, $25$, none equal to 30.

**Final Answer:** A

**Answer: (A)** Go Back to Q24

## Q25.

**Solution**

**Concept – add the "Total" column.**

**Step 1:** $100 + 130 + 145 + 110$.

**Step 2:** $= 485$ tickets.

**Why the others are wrong:** 475/495/470 drop or mis-add part of a counter's total.

**Final Answer:** A

**Answer: (A)** Go Back to Q25

## Q26.

**Solution**

**Concept – compare the totals.**

**Step 1:** Totals: W $= 100$, X $= 130$, Y $= 145$, Z $= 110$.

**Step 2:** The largest is $145$, which is **Y**.

**Why the others are wrong:** W, X and Z all total less than Y's 145.

**Final Answer:** C

**Answer: (C)** Go Back to Q26

## Q27.

**Solution**

**Concept – column sums for each week.**

**Step 1:** Week 1 $= 45 + 60 + 80 + 50 = 235$; Week 2 $= 55 + 70 + 65 + 60 = 250$.

**Step 2:** Difference $= 250 - 235 = 15$ tickets.

**Why the others are wrong:** 5/10/20 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 $= 100$, X's total $= 130$.

**Step 2:** $100 : 130 = 10 : 13$.

**Why the others are wrong:** $13 : 10$ reverses it; $1 : 1$ and $5 : 6$ do not match $100 : 130$.

**Final Answer:** C

**Answer: (C)** Go Back to Q28

# Answer Key

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