SNAP Quantitative, Data Interpretation and Data Sufficiency

Sample Paper – 4

Duration: 20 Minutes **Maximum Marks: 20**

Instructions

- This paper contains **20** Multiple Choice Questions (Single Correct Answer), modelled on the Quantitative, Data Interpretation and Data Sufficiency section of **SNAP** (Symbiosis National Aptitude Test).
- Each correct answer carries **+1 mark**. **0.25 marks** are deducted for every wrong answer. Unattempted questions carry no penalty.
- Only **one** option is correct. Choose the most appropriate answer.
- SNAP is a computer-based test with no sectional time limit; attempt this practice paper in one timed sitting of about **20 minutes**.
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.

Part A: Arithmetic

Q1. A shopkeeper sells an article at a loss of 10%. Had he sold it for Rs. 90 more, he would have made a profit of 8%. What is the cost price of the article?

(A) Rs. 450

(B) Rs. 550

(C) Rs. 500

(D) Rs. 600

Q2. A mixture of 36 litres contains milk and water in the ratio 5 : 1. When 6 litres of water is added, the ratio becomes 5 : 2. How many litres of milk are in the mixture?

(A) 24

(B) 36

(C) 30

(D) 25

Q3. A can complete a piece of work in 12 days and B can complete the same work in 18 days. Working together, in how many days will they finish the work?

(A) 6

(B) 9

(C) 7.5

(D) 7.2

Q4. Find the compound interest on Rs. 8000 at 10% per annum for 2 years, compounded annually.

(A) Rs. 1680

(B) Rs. 1600

(C) Rs. 1700

(D) Rs. 1720

Q5. The average weight of 6 boys is 50 kg. When one boy weighing 60 kg is replaced by a new boy, the average weight becomes 51 kg. What is the weight of the new boy?

(A) 66 kg

(B) 70 kg

(C) 64 kg

(D) 72 kg

Q6. A and B start a business by investing Rs. 6000 and Rs. 9000 respectively. If the total annual profit is Rs. 2500, what is B's share of the profit?

(A) Rs. 1000

(B) Rs. 1200

(C) Rs. 900

(D) Rs. 1500

Part B: Algebra and Number System

Q7. If $a + b = 7$ and $ab = 12$, what is the value of $a^2 + b^2$?

(A) 37

(B) 25

(C) 13

(D) 49

Q8. What is the greatest number that divides both 60 and 84 exactly?

(A) 6

(B) 24

(C) 18

(D) 12

Q9. Solve for x: $\dfrac{2x + 3}{5} = 3$.

(A) 5

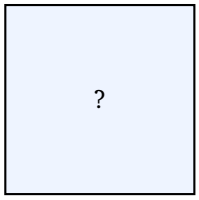
(B) 6

(C) 9

(D) 4

Part C: Geometry and Mensuration

Q10. The perimeter of the square shown below is 36 cm. Find its area.



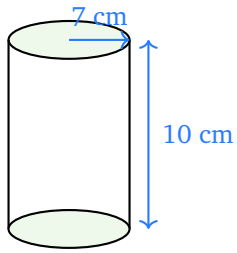
(A) 144 sq. cm

(B) 72 sq. cm

(C) 81 sq. cm

(D) 36 sq. cm

Q11. Find the volume of the cylinder shown below, with radius 7 cm and height 10 cm. (Take $\pi = \frac{22}{7}$.)



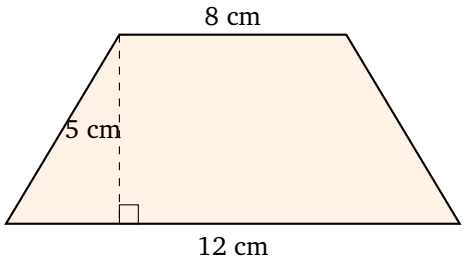
(A) 1450 cu. cm

(B) 1540 cu. cm

(C) 1500 cu. cm

(D) 1600 cu. cm

Q12. Find the area of the trapezium shown below, whose parallel sides are 12 cm and 8 cm and the distance between them is 5 cm.



(A) 40 sq. cm

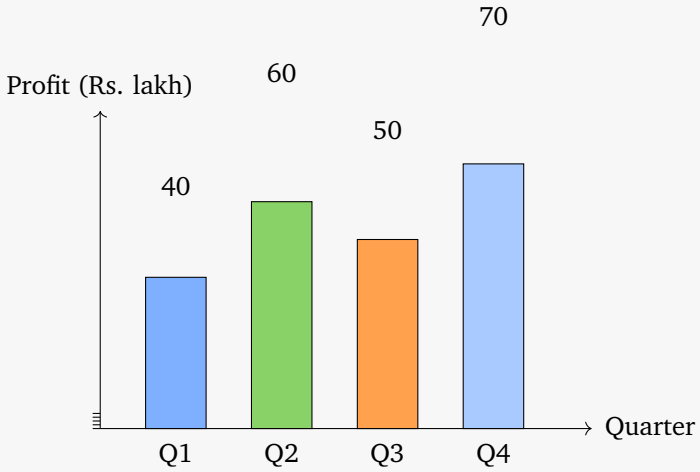
(B) 60 sq. cm

(C) 50 sq. cm

(D) 45 sq. cm

Part D: Data Interpretation

Directions (Q13–Q16): The bar chart below shows the quarterly profit (in Rs. lakh) earned by a company over four consecutive quarters of a financial year. Study it and answer the questions that follow.



Q13. In which quarter did the company earn the lowest profit?

(A) Q2

(B) Q1

(C) Q3

(D) Q4

Q14. What is the total profit (in Rs. lakh) earned over the four quarters?

(A) 220

(B) 210

(C) 230

(D) 200

Q15. What is the percentage increase in profit from Q1 to Q2?

(A) 20%

(B) 33.3%

(C) 25%

(D) 50%

Q16. What is the average quarterly profit (in Rs. lakh) over the four quarters?

(A) 50

(B) 55

(C) 60

(D) 52.5

Part E: Data Sufficiency

Directions (Q17–Q20): Each question is followed by two statements, I and II. Decide whether the statements are sufficient to answer the question, and mark:
(A) if Statement I alone is sufficient but Statement II alone is not;
(B) if Statement II alone is sufficient but Statement I alone is not;
(C) if both statements together are sufficient but neither alone is;
(D) if either statement alone is sufficient.

Q17. What is the value of the number x?

I. $3x = 21$.

II. x is a positive integer less than 10.

(A) Statement I alone is sufficient

(B) Statement II alone is sufficient

(C) Both statements together are needed

(D) Either statement alone is sufficient

Q18. What is the area of a rectangle?

I. Its length is 8 cm and its breadth is 5 cm.

II. Its perimeter is 26 cm.

(A) Statement I alone is sufficient

(B) Statement II alone is sufficient

(C) Both statements together are needed

(D) Either statement alone is sufficient

Q19. What is the value of x?

I. $x + y = 10$.

II. $x - y = 4$.

(A) Statement I alone is sufficient

(B) Statement II alone is sufficient

(C) Both statements together are needed

(D) Either statement alone is sufficient

Q20. What is the value of x?

I. $4x = 20$.

II. $x + 3 = 8$.

(A) Statement I alone is sufficient

(B) Statement II alone is sufficient

(C) Both statements together are needed

(D) Either statement alone is sufficient

Detailed Solutions

Q1.

Solution

Concept — Loss and profit on the same cost price: Both the selling prices are fractions of the same cost price, so their difference equals the difference of those fractions.

Step 1: Let the cost price be C.

Step 2: Selling at a loss of 10% gives a selling price of $0.90\,C$.

Step 3: Selling at a profit of 8% gives a selling price of $1.08\,C$.

Step 4: The second price is Rs. 90 more than the first, so $1.08\,C - 0.90\,C = 90$.

Step 5: This is $0.18\,C = 90$, so $C = \dfrac{90}{0.18} = 500$.

Why other options are wrong:

- Option A: Rs. 450 gives a difference of $0.18 \times 450 =$ Rs. 81, not Rs. 90.
- Option B: Rs. 550 gives a difference of Rs. 99.
- Option D: Rs. 600 gives a difference of Rs. 108.

Final Answer: The cost price is Rs. 500 $\Rightarrow$ C

Answer: (C) Go Back to Q1

Q2.

Solution

Concept — Mixture and ratio: The quantity of milk stays fixed while water is added, so express both amounts through one variable.

Step 1: Let milk $= 5x$ litres and water $= x$ litres, so the ratio is $5 : 1$.

Step 2: After adding 6 litres of water, water becomes $x+6$ and the ratio is $\dfrac{5x}{x+6} = \dfrac{5}{2}$.

Step 3: Cross-multiply: $2 \times 5x = 5 \times (x+6)$, that is $10x = 5x + 30$.

Step 4: So $5x = 30$, giving $x = 6$.

Step 5: Milk $= 5x = 5 \times 6 = 30$ litres.

Why other options are wrong:

- Option A: 24 litres would make the starting total 28.8 litres, not 36.
- Option B: 36 litres leaves no room for water in a 36-litre mixture.
- Option D: 25 litres does not fit the $5 : 1$ starting ratio.

Final Answer: The mixture has 30 litres of milk $\Rightarrow$ C

Answer: (C) Go Back to Q2

Q3.

Solution

Concept — Combined work: Add the one-day work of each person, then take the reciprocal for the time taken together.

Step 1: A does $\frac{1}{12}$ of the work in one day.

Step 2: B does $\frac{1}{18}$ of the work in one day.

Step 3: Together in one day they do $\frac{1}{12} + \frac{1}{18} = \frac{3}{36} + \frac{2}{36} = \frac{5}{36}$.

Step 4: Time taken together $= \frac{36}{5} = 7.2$ days.

Why other options are wrong:

- Option A: 6 days is faster than either person could justify.
- Option B: 9 days ignores that two people work together.
- Option C: 7.5 days comes from averaging 12 and 18 incorrectly.

Final Answer: They finish in 7.2 days $\Rightarrow$ D

Answer: (D) Go Back to Q3

Q4.

Solution

Concept — Compound interest: Amount $= P\left(1 + \frac{R}{100}\right)^T$, and CI $=$ Amount $- P$.

Step 1: Here $P = 8000$, $R = 10$ and $T = 2$.

Step 2: Amount $= 8000 \times \left(1 + \frac{10}{100}\right)^2 = 8000 \times (1.1)^2$.

Step 3: $(1.1)^2 = 1.21$, so Amount $= 8000 \times 1.21 = 9680$.

Step 4: CI $= 9680 - 8000 =$ Rs. 1680.

Why other options are wrong:

- Option B: Rs. 1600 is the simple interest, which ignores interest on interest.
- Option C: Rs. 1700 does not match the compounding.
- Option D: Rs. 1720 overstates the interest.

Final Answer: The compound interest is Rs. 1680 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q4

Q5.

Solution

Concept — Average and replacement: A change in the average of a group of fixed size tells you the change in the total.

Step 1: With 6 boys, a rise in average of 1 kg means the total rises by $6 \times 1 = 6$ kg.

Step 2: The total rises only because the new boy is heavier than the one who left.

Step 3: New boy's weight = weight of the boy who left + rise in total $= 60+6 = 66$ kg.

Why other options are wrong:

- Option B: 70 kg would raise the average by more than 1 kg.
- Option C: 64 kg would raise the total by only 4 kg.
- Option D: 72 kg overshoots the required increase.

Final Answer: The new boy weighs 66 kg $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q5

Q6.

Solution

Concept — Partnership: When investments run for the same time, profit is shared in the ratio of the investments.

Step 1: Ratio of investments $= 6000 : 9000 = 2 : 3$.

Step 2: Total parts $= 2 + 3 = 5$.

Step 3: B has 3 parts, so B's share $= \frac{3}{5} \times 2500 = 1500$.

Why other options are wrong:

- Option A: Rs. 1000 is A's share (2 parts).
- Option B: Rs. 1200 does not match the $2:3$ split.
- Option C: Rs. 900 is below B's correct share.

Final Answer: B's share is Rs. 1500 $\Rightarrow$ D

Answer: (D) Go Back to Q6

Q7.

Solution

Concept — Algebraic identity: $a^2 + b^2 = (a+b)^2 - 2ab$.

Step 1: We are given $a + b = 7$ and $ab = 12$.

Step 2: Square the sum: $(a+b)^2 = 7^2 = 49$.

Step 3: Subtract $2ab$: $a^2 + b^2 = 49 - 2 \times 12 = 49 - 24 = 25$.

Why other options are wrong:

- Option A: 37 subtracts only ab instead of $2ab$.
- Option C: 13 subtracts $2(a+b)$ by mistake.
- Option D: 49 forgets to subtract $2ab$ at all.

Final Answer: The value is 25 $\Rightarrow$ B

Answer: (B) Go Back to Q7

Q8.

Solution

Concept — Highest common factor: The greatest number that divides two numbers exactly is their HCF.

Step 1: Factorise: $60 = 2^2 \times 3 \times 5$.

Step 2: Factorise: $84 = 2^2 \times 3 \times 7$.

Step 3: Common factors are 2^2 and 3, so HCF $= 4 \times 3 = 12$.

Why other options are wrong:

- Option A: 6 divides both but is not the greatest such number.
- Option B: 24 does not divide 60 exactly.
- Option C: 18 does not divide either number exactly.

Final Answer: The greatest divisor is 12 $\Rightarrow$ D

Answer: (D) Go Back to Q8

Q9.

Solution

Concept — Linear equation: Clear the fraction first, then isolate the variable.

Step 1: Start with $\frac{2x+3}{5} = 3$.

Step 2: Multiply both sides by 5: $2x + 3 = 15$.

Step 3: Subtract 3 from both sides: $2x = 12$.

Step 4: Divide both sides by 2: $x = 6$.

Why other options are wrong:

- Option A: 5 gives $\frac{13}{5} = 2.6$, not 3.
- Option C: 9 gives $\frac{21}{5} = 4.2$, not 3.
- Option D: 4 gives $\frac{11}{5} = 2.2$, not 3.

Final Answer: $x = 6 \Rightarrow$ B

Answer: (B) Go Back to Q9

Q10.

Solution

Concept — Square: Perimeter $= 4\times$ side, and area $=$ side^2.

Step 1: Perimeter $= 36$ cm, so side $= \frac{36}{4} = 9$ cm.

Step 2: Area $= 9^2 = 81$ sq. cm.

Why other options are wrong:

- Option A: 144 sq. cm uses a side of 12 cm, which gives a perimeter of 48 cm.

- Option B: 72 sq. cm does not come from any whole-number side.
- Option D: 36 sq. cm wrongly takes the perimeter value as the area.

Final Answer: The area is 81 sq. cm $\Rightarrow$ C

Answer: (C) Go Back to Q10

Q11.

Solution

Concept — Volume of a cylinder: Volume $= \pi r^2 h$.

Step 1: Here $r = 7$ cm and $h = 10$ cm.

Step 2: $r^2 = 7^2 = 49$.

Step 3: Volume $= \dfrac{22}{7} \times 49 \times 10$.

Step 4: $\dfrac{22}{7} \times 49 = 22 \times 7 = 154$, so Volume $= 154 \times 10 = 1540$ cu. cm.

Why other options are wrong:

- Option A: 1450 cu. cm rounds the value incorrectly.
- Option C: 1500 cu. cm does not follow from the exact figures.
- Option D: 1600 cu. cm overstates the volume.

Final Answer: The volume is 1540 cu. cm $\Rightarrow$ B

Answer: (B) Go Back to Q11

Q12.

Solution

Concept — Area of a trapezium: Area $= \dfrac{1}{2} \times$ (sum of parallel sides) $\times$ height.

Step 1: Sum of the parallel sides $= 12 + 8 = 20$ cm.

Step 2: Half of this sum $= \dfrac{20}{2} = 10$ cm.

Step 3: Area $= 10 \times 5 = 50$ sq. cm.

Why other options are wrong:

- Option A: 40 sq. cm multiplies only one parallel side by the height.
- Option B: 60 sq. cm forgets the factor of one-half.

- Option D: 45 sq. cm does not follow from the given values.

Final Answer: The area is 50 sq. cm $\Rightarrow$ C

Answer: (C) Go Back to Q12

Q13.

Solution

Concept — Reading a bar chart: The shortest bar shows the smallest value.

Step 1: The values are Q1 $= 40$, Q2 $= 60$, Q3 $= 50$, Q4 $= 70$ (Rs. lakh).

Step 2: The smallest value, 40, belongs to Q1.

Why other options are wrong:

- Option A: Q2 earned 60 lakh, not the lowest.
- Option C: Q3 earned 50 lakh.
- Option D: Q4 earned the highest, 70 lakh.

Final Answer: Profit was lowest in Q1 $\Rightarrow$ B

Answer: (B) Go Back to Q13

Q14.

Solution

Concept — Total from a chart: Add the values of all the bars.

Step 1: Total $= 40 + 60 + 50 + 70$.

Step 2: $40 + 60 = 100$; $100 + 50 = 150$; $150 + 70 = 220$ (Rs. lakh).

Why other options are wrong:

- Option B: 210 misreads one of the bars.
- Option C: 230 overcounts by 10.
- Option D: 200 undercounts by 20.

Final Answer: The total is Rs. 220 lakh $\Rightarrow$ A

Answer: (A) Go Back to Q14

Q15.

Solution

Concept — Percentage increase: Increase percentage $= \dfrac{\text{rise}}{\text{original}} \times 100$.

Step 1: Rise from Q1 to Q2 $= 60 - 40 = 20$ lakh.

Step 2: Percentage increase $= \dfrac{20}{40} \times 100 = 50\%$.

Why other options are wrong:

- Option A: 20% wrongly uses 100 as the base.
- Option B: 33.3% uses 60 as the base instead of 40.
- Option C: 25% does not match the rise.

Final Answer: The increase is 50% $\Rightarrow$ D

Answer: (D) Go Back to Q15

Q16.

Solution

Concept — Average: Average $= \dfrac{\text{total}}{\text{number of quarters}}$.

Step 1: Total over four quarters $= 220$ lakh (from Q14).

Step 2: Average $= \dfrac{220}{4} = 55$ lakh.

Why other options are wrong:

- Option A: 50 is below the true average.
- Option C: 60 is above the true average.
- Option D: 52.5 comes from a wrong total.

Final Answer: The average is Rs. 55 lakh $\Rightarrow$ B

Answer: (B) Go Back to Q16

Q17.

Solution

Concept — Data sufficiency: Test each statement on its own to see if it pins down a single value.

Statement I: "$3x = 21$" gives $x = \dfrac{21}{3} = 7$, a unique value, so I alone is sufficient.

Statement II: "x is a positive integer less than 10" allows 1, 2, 3, . . . , 9. This does not give a unique value, so II alone is not sufficient.

Conclusion: Statement I alone is sufficient but Statement II alone is not.

Final Answer: Statement I alone is sufficient $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q17

Q18.

Solution

Concept — Data sufficiency: The area of a rectangle needs both its length and breadth, not merely a relation between them.

Statement I: Length $= 8$ cm and breadth $= 5$ cm give area $= 8 \times 5 = 40$ sq. cm, a unique value, so I alone is sufficient.

Statement II: "Perimeter is 26 cm" gives length + breadth $= 13$, but many pairs (such as 8 and 5, or 7 and 6) satisfy this with different areas, so II alone is not sufficient.

Conclusion: Statement I alone is sufficient but Statement II alone is not.

Final Answer: Statement I alone is sufficient $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q18

Q19.

Solution

Concept — Data sufficiency: One equation in two unknowns cannot fix x alone; two independent equations can.

Statement I: "$x + y = 10$" has many solutions for x depending on y, so I alone is not sufficient.

Statement II: "$x - y = 4$" also has many solutions for x depending on y, so II alone is not sufficient.

Both together: Add the two equations: $(x+y)+(x-y)=10+4$, so $2x=14$ and $x=7$. A unique answer results only when both are used.

Final Answer: Both statements together are needed $\Rightarrow$ C

Answer: (C) Go Back to Q19

Q20.

Solution

Concept — Data sufficiency: If each statement alone fixes the value, either one is sufficient.

Statement I: "$4x=20$" gives $x=\dfrac{20}{4}=5$ on its own, so I alone is sufficient.

Statement II: "$x+3=8$" gives $x=8-3=5$ on its own, so II alone is sufficient.

Conclusion: Each statement alone gives the same unique value, so either alone is sufficient.

Final Answer: Either statement alone is sufficient $\Rightarrow$ D

Answer: (D) Go Back to Q20

Answer Key

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