

SNAP Quantitative, Data Interpretation and Data Sufficiency

Sample Paper – 8

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 number is first increased by 20% and the result is then decreased by 20%. What is the net change in the number?
- (A) No change
(B) 4% decrease
(C) 4% increase
(D) 2% decrease
- Q2.** The ratio of two numbers is 5 : 7 and their sum is 96. What is the smaller of the two numbers?
- (A) 40



- (B) 56
- (C) 48
- (D) 35

Q3. In an election between two candidates, the winner secured 60% of the total votes and won by 800 votes. What was the total number of votes polled?

- (A) 1600
- (B) 2000
- (C) 3200
- (D) 4000

Q4. A can complete a piece of work in 10 days and B can complete the same work in 15 days. Working together, in how many days will they finish the work?

- (A) 5
- (B) 12.5
- (C) 6
- (D) 25

Q5. The average age of a class of 30 students is 14 years. When the teacher's age is included, the average becomes 15 years. What is the age of the teacher?

- (A) 30 years
- (B) 44 years
- (C) 45 years
- (D) 15 years

Q6. A car covers a distance of 150 km in 3 hours. What is its average speed in km/h?



- (A) 50
- (B) 45
- (C) 60
- (D) 75

Part B: Algebra and Number System

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

- (A) 25
- (B) 37
- (C) 13
- (D) 49

Q8. What is the highest common factor (HCF) of 36 and 48?

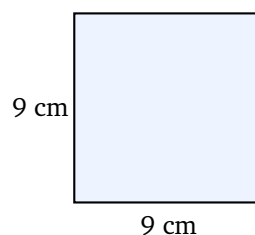
- (A) 6
- (B) 12
- (C) 24
- (D) 16

Q9. Solve for x : $5x + 3 = 2x + 18$.

- (A) 3
- (B) 7
- (C) 5
- (D) 6

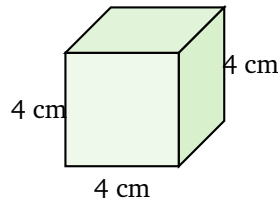
Part C: Geometry and Mensuration

Q10. Find the area of the square shown below, whose side is 9 cm.



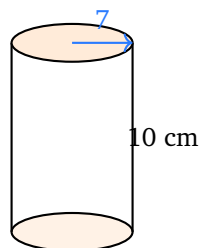
- (A) 81 sq. cm
- (B) 36 sq. cm
- (C) 18 sq. cm
- (D) 72 sq. cm

Q11. Find the volume of the cube shown below, whose edge is 4 cm.



- (A) 16 cu. cm
- (B) 48 cu. cm
- (C) 96 cu. cm
- (D) 64 cu. cm

Q12. Find the volume of the cylinder shown below, with radius 7 cm and height 10 cm. (Take $\pi = \frac{22}{7}$.)

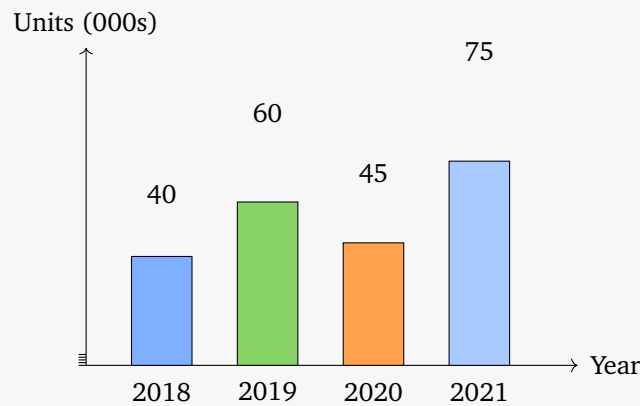


- (A) 440 cu. cm
- (B) 220 cu. cm
- (C) 770 cu. cm
- (D) 1540 cu. cm

Part D: Data Interpretation



Directions (Q13–Q16): The bar chart below shows the annual production (in thousands of units) of a factory over four consecutive years. Study it and answer the questions that follow.



- Q13.** In which year did the factory record the highest production?
- (A) 2019
(B) 2021
(C) 2020
(D) 2018
- Q14.** What is the total production (in thousands of units) over the four years?
- (A) 210
(B) 220
(C) 230
(D) 215
- Q15.** What is the percentage increase in production from 2018 to 2019?
- (A) 50%
(B) 33.3%
(C) 20%
(D) 25%
- Q16.** What is the average production (in thousands of units) per year over the four years?



- (A) 60
- (B) 50
- (C) 55
- (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 present age of A?

- I. A is 5 years older than B.
- II. The present age of B is 20 years.

- (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 value of x ?

- I. $3x = 21$.
- II. $x - 2 = 5$.

- (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 area of a square?
- I. The side of the square is 6 cm.
 - II. The perimeter of the square is 24 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

- Q20.** What is the value of the number x ?
- I. x is a positive integer less than 5.
 - II. x is the cube root of 27.
- (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 — Successive percentage change: Apply each percentage change one after the other on a convenient starting value.

Step 1: Let the original number be 100.

Step 2: Increase by 20%: $100 + 0.20 \times 100 = 120$.

Step 3: Decrease this 120 by 20%: $0.20 \times 120 = 24$, so the result is $120 - 24 = 96$.

Step 4: The number has gone from 100 to 96, a fall of 4, which is a 4% decrease.

Why other options are wrong:

- Option A: “No change” wrongly assumes +20% and –20% cancel out.
- Option C: A 4% increase reverses the direction of the change.
- Option D: 2% decrease uses a wrong base for the second step.

Final Answer: The net change is a 4% decrease $\Rightarrow$ **B**

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

Q2.**Solution**

Concept — Ratio and sum: Add the ratio parts, find the value of one part, then scale.

Step 1: The ratio is 5 : 7, so the total number of parts is $5 + 7 = 12$.

Step 2: One part $= \frac{96}{12} = 8$.

Step 3: The smaller number corresponds to 5 parts $= 5 \times 8 = 40$.

Why other options are wrong:

- Option B: 56 is the larger number (7 parts).
- Option C: 48 splits the sum equally and ignores the ratio.
- Option D: 35 does not match any multiple of one part.

Final Answer: The smaller number is 40 $\Rightarrow$ **A**

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



Q3.

Solution

Concept — Election percentages: The winning margin equals the difference between the two candidates' vote shares.

Step 1: The winner got 60%, so the loser got $100\% - 60\% = 40\%$.

Step 2: The margin is $60\% - 40\% = 20\%$ of the total votes.

Step 3: This margin equals 800 votes, so 20% of total = 800.

Step 4: Total votes = $\frac{800}{20} \times 100 = 4000$.

Why other options are wrong:

- Option A: 1600 treats 800 as 50% of the total.
- Option B: 2000 treats the 800 as 40% of the total.
- Option C: 3200 uses a 25% margin.

Final Answer: The total votes polled were 4000 $\Rightarrow$ D

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

Q4.

Solution

Concept — Combined work: Add the one-day work rates of the two workers, then invert.

Step 1: A's one-day work = $\frac{1}{10}$ and B's one-day work = $\frac{1}{15}$.

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

Step 3: Time to finish = $\frac{1}{(1/6)} = 6$ days.

Why other options are wrong:

- Option A: 5 days is faster than physically possible from these rates.
- Option B: 12.5 days averages the two times, which is not valid for combined work.
- Option D: 25 days adds the two times, which is incorrect.

Final Answer: Together they finish in 6 days $\Rightarrow$ C

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



Q5.

Solution

Concept — Average with a new member: The extra total added by the new member changes the average for everyone.

Step 1: Total age of the 30 students = $30 \times 14 = 420$ years.

Step 2: With the teacher there are 31 people at an average of 15, so the new total = $31 \times 15 = 465$ years.

Step 3: Teacher's age = $465 - 420 = 45$ years.

Why other options are wrong:

- Option A: 30 ignores the rise in the average.
- Option B: 44 uses 30 people instead of 31 for the new total.
- Option D: 15 is simply the new average, not the teacher's age.

Final Answer: The teacher is 45 years old $\Rightarrow$

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

Q6.

Solution

Concept — Average speed: $\text{Speed} = \frac{\text{distance}}{\text{time}}$.

Step 1: Distance = 150 km and time = 3 hours.

Step 2: $\text{Speed} = \frac{150}{3} = 50$ km/h.

Why other options are wrong:

- Option B: 45 km/h does not divide 150 by 3.
- Option C: 60 km/h would cover 180 km in 3 hours.
- Option D: 75 km/h would cover 225 km in 3 hours.

Final Answer: The average speed is 50 km/h $\Rightarrow$

Answer: (A) [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:** $(a + b)^2 = 7^2 = 49$.**Step 3:** $2ab = 2 \times 12 = 24$.**Step 4:** $a^2 + b^2 = 49 - 24 = 25$.**Why other options are wrong:**

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

Final Answer: The value is 25 $\Rightarrow$ AAnswer: (A) [Go Back to Q7](#)

Q8.

Solution**Concept — HCF by prime factorisation:** The HCF is the product of the common prime factors taken to the lowest power.**Step 1:** $36 = 2^2 \times 3^2$.**Step 2:** $48 = 2^4 \times 3$.**Step 3:** Common factors: 2^2 (lowest power of 2) and 3^1 (lowest power of 3).**Step 4:** $\text{HCF} = 2^2 \times 3 = 4 \times 3 = 12$.**Why other options are wrong:**

- Option A: 6 is a common factor but not the highest one.
- Option C: 24 does not divide 36.
- Option D: 16 does not divide 36.

Final Answer: The HCF is 12 $\Rightarrow$ BAnswer: (B) [Go Back to Q8](#)

Q9.

Solution

Concept — Linear equation: Bring the variable terms to one side and the constants to the other.

Step 1: Start with $5x + 3 = 2x + 18$.

Step 2: Subtract $2x$ from both sides: $3x + 3 = 18$.

Step 3: Subtract 3 from both sides: $3x = 15$.

Step 4: Divide both sides by 3: $x = 5$.

Why other options are wrong:

- Option A: 3 gives $18 \neq 24$ when substituted.
- Option B: 7 gives $38 \neq 32$.
- Option D: 6 gives $33 \neq 30$.

Final Answer: $x = 5 \Rightarrow$ C

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

Q10.

Solution

Concept — Area of a square: $\text{Area} = \text{side}^2$.

Step 1: The side is 9 cm.

Step 2: $\text{Area} = 9^2 = 9 \times 9 = 81 \text{ sq. cm.}$

Why other options are wrong:

- Option B: 36 sq. cm uses a side of 6 cm.
- Option C: 18 sq. cm doubles the side instead of squaring it.
- Option D: 72 sq. cm does not follow from a side of 9 cm.

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

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



Q11.

Solution**Concept — Volume of a cube:** $\text{Volume} = \text{edge}^3$.**Step 1:** The edge is 4 cm.**Step 2:** $\text{Volume} = 4^3 = 4 \times 4 \times 4 = 64 \text{ cu. cm.}$ **Why other options are wrong:**

- Option A: 16 cu. cm squares the edge instead of cubing it.
- Option B: 48 cu. cm is not 4^3 .
- Option C: 96 cu. cm is the total surface area value, not the volume.

Final Answer: The volume is 64 cu. cm $\Rightarrow$ **D****Answer: (D)** [Go Back to Q11](#)

Q12.

Solution**Concept — Volume of a cylinder:** $\text{Volume} = \pi r^2 h$.**Step 1:** Here $r = 7 \text{ cm}$ and $h = 10 \text{ cm}$.**Step 2:** $r^2 = 7 \times 7 = 49$.**Step 3:** $\text{Volume} = \frac{22}{7} \times 49 \times 10 = 22 \times 7 \times 10 = 1540 \text{ cu. cm.}$ **Why other options are wrong:**

- Option A: 440 cu. cm uses the circumference instead of the area of the base.
- Option B: 220 cu. cm halves that wrong value.
- Option C: 770 cu. cm is exactly half of the correct volume.

Final Answer: The volume is 1540 cu. cm $\Rightarrow$ **D****Answer: (D)** [Go Back to Q12](#)

Q13.

Solution

Concept — Reading a bar chart: The tallest bar shows the largest value.

Step 1: The values are 2018 = 40, 2019 = 60, 2020 = 45, 2021 = 75 (thousand units).

Step 2: The largest value, 75, belongs to the year 2021.

Why other options are wrong:

- Option A: 2019 produced 60 thousand, not the highest.
- Option C: 2020 produced 45 thousand.
- Option D: 2018 produced the least, 40 thousand.

Final Answer: Production was highest in 2021 $\Rightarrow$ **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 + 45 + 75.

Step 2: 40 + 60 = 100; 100 + 45 = 145; 145 + 75 = 220 (thousand units).

Why other options are wrong:

- Option A: 210 undercounts by 10.
- Option C: 230 overcounts by 10.
- Option D: 215 undercounts by 5.

Final Answer: The total is 220 thousand units $\Rightarrow$ **B**

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



Q15.

Solution

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

Step 1: Rise from 2018 to 2019 = $60 - 40 = 20$ thousand.

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

Why other options are wrong:

- Option B: 33.3% wrongly uses 60 as the base.
- Option C: 20% takes the raw rise as the percentage.
- Option D: 25% does not match the values.

Final Answer: The increase is 50% $\Rightarrow$ **A**

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

Q16.

Solution

Concept — Average: $\text{Average} = \frac{\text{total}}{\text{number of years}}.$

Step 1: Total over four years = 220 thousand (from Q14).

Step 2: Average = $\frac{220}{4} = 55$ thousand.

Why other options are wrong:

- Option A: 60 is above the true average.
- Option B: 50 is below the true average.
- Option D: 52.5 uses a wrong total.

Final Answer: The average is 55 thousand units $\Rightarrow$ **C**

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



Q17.

Solution

Concept — Data sufficiency: Test each statement on its own, then together, to see if A's age is pinned to a single value.

Statement I: "A is 5 years older than B" gives $A = B + 5$, but B is unknown, so A cannot be found. I alone is not sufficient.

Statement II: "B is 20 years" tells us B but says nothing directly about A, so II alone is not sufficient.

Both together: Substitute $B = 20$ into $A = B + 5$ to get $A = 25$ years. A unique value results only when both statements are used.

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

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

Q18.

Solution

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

Statement I: $3x = 21$ gives $x = \frac{21}{3} = 7$ on its own, so I alone is sufficient.

Statement II: $x - 2 = 5$ gives $x = 5 + 2 = 7$ 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 $\Rightarrow$

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

Q19.

Solution

Concept — Data sufficiency: The area of a square is fixed once its side is known, and each statement lets us find the side.

Statement I: The side is 6 cm, so area = $6^2 = 36$ sq. cm. I alone is sufficient.

Statement II: Perimeter = 24 cm, so side = $\frac{24}{4} = 6$ cm and area = 36 sq. cm. II alone is sufficient.



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

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

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

Q20.

Solution

Concept — Data sufficiency: Check whether each statement pins x down to a single value.

Statement I: “ x is a positive integer less than 5” allows 1, 2, 3 or 4. This does not give a unique value, so I alone is not sufficient.

Statement II: “ x is the cube root of 27” gives $x = 3$, since $3^3 = 27$. This is a unique value, so II alone is sufficient.

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

Final Answer: Statement II alone is sufficient $\Rightarrow$ B

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



Answer Key

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

