TANCET Data Analysis & Sufficiency

Sample Paper – 2

Duration: 24 Minutes **Maximum Marks: 20**

Instructions

- This paper contains **20 MCQs** modelled on the Data Analysis & Sufficiency section of the **TANCET MBA** entrance examination.
- **Q1–Q10** are Data Interpretation questions with four options (A–D). **Q11–Q20** are Data Sufficiency questions with five options (A–E).
- Each correct answer carries **+1 mark**. Each wrong answer carries a penalty of $-\frac{1}{3}$ **mark**. Unattempted questions carry **no penalty**.
- For **Data Sufficiency** questions (Q11–Q20), the five options always mean:

  (A) Statement I alone is sufficient but Statement II alone is not sufficient.

  (B) Statement II alone is sufficient but Statement I alone is not sufficient.

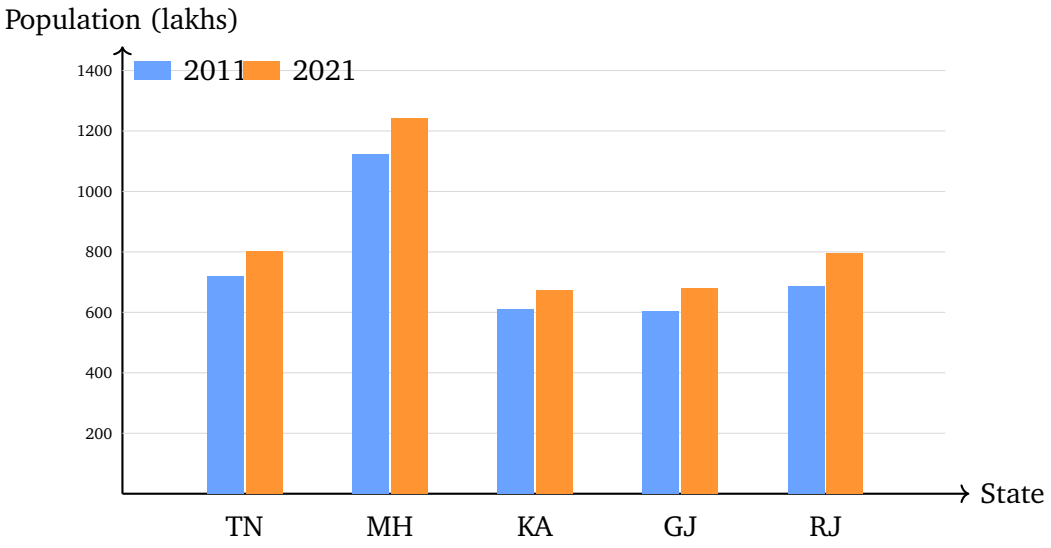
  (C) Each statement alone is sufficient.

  (D) Both statements together are not sufficient to answer the question.

  (E) Both statements together are sufficient, but neither statement alone is sufficient.
- Personal calculators, mobile phones, and electronic gadgets are **strictly prohibited**. Rough work may be done in the space provided on the question paper.

Part A: Data Interpretation (Q1–Q10, 10 Marks)

Directions (Q1–Q5): The bar chart below shows the population (in lakhs) of five states in 2011 and 2021. Study the chart carefully and answer questions 1–5.



Q1. Which state recorded the smallest absolute increase in population from 2011 to 2021?

(A) Tamil Nadu

(B) Karnataka

(C) Gujarat

(D) Rajasthan

Q2. The percentage increase in Maharashtra's population from 2011 to 2021 is approximately:

(A) 9%

(B) 10%

(C) 11%

(D) 12%

Q3. The combined population of Tamil Nadu and Rajasthan in 2021 (in lakhs) is:

(A) 1597

(B) 1607

(C) 1587

(D) 1617

Q4. In 2011, the ratio of Gujarat's population to Rajasthan's population is:

(A) 31 : 34

(B) 151 : 172

(C) 3 : 4

(D) 302 : 343

Q5. Which state had the highest population in 2021?

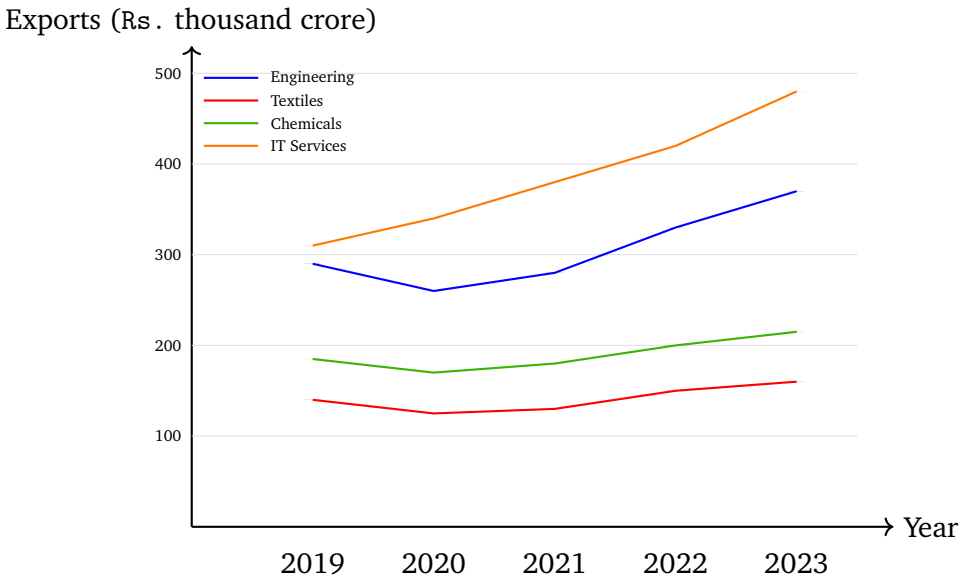
(A) Tamil Nadu

(B) Maharashtra

(C) Rajasthan

(D) Karnataka

Directions (Q6–Q10): The line graph below shows India's export values (in ₹ thousand crore) across four sectors from 2019 to 2023. Study the graph carefully and answer questions 6–10.



Q6. In which year did Engineering goods exports recover (i.e. increase) after a decline?

(A) 2021

(B) 2022

(C) 2020

(D) 2023

Q7. Total IT Services exports from 2019 to 2023 (in Rs. thousand crore):

(A) 1850

(B) 1900

(C) 1930

(D) 1980

Q8. By approximately what percentage did Chemicals exports increase from 2019 to 2023?

(A) 12%

(B) 16%

(C) 20%

(D) 18%

Q9. In 2022, the sector with the highest exports was:

(A) Engineering

(B) Textiles

(C) Chemicals

(D) IT Services

Q10. The ratio of Textiles exports to Engineering exports in 2020 is:

(A) 25 : 52

(B) 5 : 10

(C) 1 : 2

(D) 12 : 26

Part B: Data Sufficiency (Q11–Q20, 10 Marks)

Directions (Q11–Q20): Each question is followed by two statements labelled **Statement I** and **Statement II**. You are to determine whether the data given in the statements are sufficient to answer the question. Choose:

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q11. What is the value of x^2?

Statement I: $x + 4 = 9$.

Statement II: $x - 4 = 1$.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

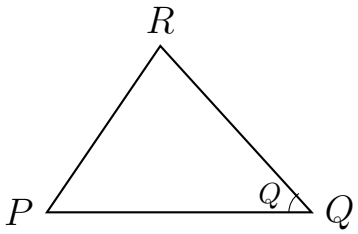
(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q12. Is triangle PQR a right triangle?



Statement I: $PQ^2 + QR^2 = PR^2 + 5$.

Statement II: $\angle Q = 80^\circ$.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q13. What is the simple interest earned on a principal of Rs. P in 3 years?

Statement I: The rate of interest is 8% per annum and the principal is Rs. 5000.

Statement II: The principal is Rs. 6000.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q14. What is the LCM of two numbers m and n?

Statement I: $m + n = 35$.

Statement II: $m = 15$ and $n = 20$.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q15. What is Sunita's monthly salary?

Statement I: Sunita saves 30% of her monthly salary.

Statement II: Sunita's monthly savings are Rs. 9,000.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q16. What is $x - y$?

Statement I: $x + y = 12$.

Statement II: $xy = 35$.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q17. Is the integer $N > 1$ a prime number?

Statement I: N has no factor between 2 and $\sqrt{N}$ (inclusive).

Statement II: N is an odd number.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q18. What is 25% of a number W?

Statement I: 75% of W is 90.

Statement II: $W = 120$.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

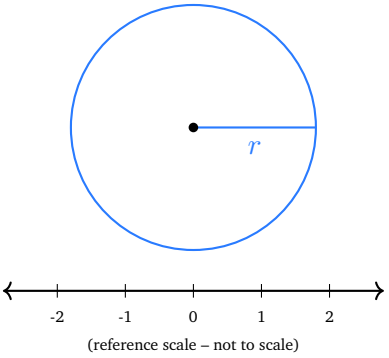
(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q19. What is the area of a circle?



Statement I: The diameter of the circle is twice its radius.

Statement II: The circumference of the circle is 44 cm.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Q20. What is the speed of a boat in still water?

Statement I: The boat travels 30 km downstream in 2 hours.

Statement II: The speed of the current is 3 km/h.

(A) Statement I alone is sufficient but Statement II alone is not sufficient.

(B) Statement II alone is sufficient but Statement I alone is not sufficient.

(C) Each statement alone is sufficient.

(D) Both statements together are not sufficient to answer the question.

(E) Both statements together are sufficient, but neither statement alone is sufficient.

Detailed Solutions

Solution

Q1 — Data Interpretation: State with smallest absolute population increase

Step 1 — Compute absolute increases for each state (2021 − 2011):

$$\text{TN} = 802 - 721 = 81 \quad \text{MH} = 1242 - 1123 = 119 \quad \text{KA} = 672 - 611 = 61$$

$$\text{GJ} = 680 - 604 = 76 \quad \text{RJ} = 795 - 686 = 109$$

Step 2 — Identify the minimum:

$$\min\{81,\ 119,\ 61,\ 76,\ 109\} = 61 \quad \Rightarrow \quad \textbf{Karnataka (KA)}$$

Why other options are wrong:

- (A) Tamil Nadu: Increase = 81 lakhs, larger than Karnataka's 61.
- (C) Gujarat: Increase = 76 lakhs, larger than Karnataka's 61.
- (D) Rajasthan: Increase = 109 lakhs, the second largest.

Answer: (B) Go Back to Q 1

Solution

Q2 — Data Interpretation: Percentage increase in Maharashtra's population

Step 1 — Identify values:

$$\text{Population}_{2011} = 1123 \text{ lakhs}, \quad \text{Population}_{2021} = 1242 \text{ lakhs}$$

Step 2 — Compute percentage increase:

$$\% \text{ increase} = \frac{1242 - 1123}{1123} \times 100 = \frac{119}{1123} \times 100 \approx 10.6\% \approx \mathbf{11}\%$$

Why other options are wrong:

- (A) 9%: Would require increase of ≈ 101 lakhs; actual increase is 119.
- (B) 10%: Would require $\frac{112.3}{1123} \times 100$; actual is 10.6%, which rounds to 11%.
- (D) 12%: Would require increase of ≈ 135 lakhs; actual is 119.

Answer: (C) Go Back to Q 2

Solution

Q3 — Data Interpretation: Combined population of Tamil Nadu and Rajasthan in 2021

Step 1 — Read values from chart:

$$\text{Tamil Nadu}_{2021} = 802 \text{ lakhs}, \quad \text{Rajasthan}_{2021} = 795 \text{ lakhs}$$

Step 2 — Compute sum:

$$802 + 795 = \mathbf{1597} \text{ lakhs}$$

Why other options are wrong:

- (B) 1607: Off by 10; would require one of the values to be 10 more than given.
- (C) 1587: Off by 10 in the other direction; arithmetic error.
- (D) 1617: Off by 20; double arithmetic error.

Answer: (A) Go Back to Q 3

Solution

Q4 — Data Interpretation: Ratio of Gujarat to Rajasthan populations in 2011

Step 1 — Read 2011 populations:

$$\text{Gujarat} = 604 \text{ lakhs}, \quad \text{Rajasthan} = 686 \text{ lakhs}$$

Step 2 — Form and simplify the ratio:

$$604 : 686$$

Find GCD$(604, 686)$: $686 = 1\times604+82$; $604 = 7\times82+30$; $82 = 2\times30+22$; $30 = 1\times22+8$; $22 = 2\times8+6$; $8 = 1\times6+2$; $6 = 3\times2$. So GCD $= 2$.

$$604 : 686 = 302 : 343$$

Step 3 — Verify 302 and 343 share no further common factor: $343 = 7^3$, $302 = 2\times151$ (151 is prime). No common factor. Ratio in lowest terms: **302 : 343.**

Why other options are wrong:

- (A) 31 : 34: $31 \times 2 = 62 \neq 302$; not equivalent.
- (B) 151 : 172: $604/4 = 151$, $686/4 = 171.5$ — non-integer; not equivalent.

- (C) 3 : 4: Would imply Gujarat = 3k and Rajasthan = 4k for some k; $604/3 \neq 686/4$.

Answer: (D) Go Back to Q 4

Solution

Q5 — Data Interpretation: State with highest population in 2021

Step 1 — Read 2021 populations from chart:

$$\text{TN} = 802, \quad \text{MH} = 1242, \quad \text{KA} = 672, \quad \text{GJ} = 680, \quad \text{RJ} = 795$$

Step 2 — Identify the maximum:

$$\max\{802,\ 1242,\ 672,\ 680,\ 795\} = 1242 \quad \Rightarrow \quad \textbf{Maharashtra}$$

Why other options are wrong:

- (A) Tamil Nadu: 802 lakhs, well below Maharashtra's 1242.
- (C) Rajasthan: 795 lakhs, the third highest.
- (D) Karnataka: 672 lakhs, the lowest among the five states in 2021.

Answer: (B) Go Back to Q 5

Solution

Q6 — Data Interpretation: Year Engineering exports recovered after decline

Step 1 — List Engineering exports year-wise:

$$2019 : 290 \quad 2020 : 260 \quad 2021 : 280 \quad 2022 : 330 \quad 2023 : 370$$

Step 2 — Identify trend: $290 \to 260$ (decline in 2020); $260 \to 280$ (recovery in 2021).

Recovery occurred in **2021**.

Why other options are wrong:

- (B) 2022: Exports did increase in 2022, but the question asks for the year of *recovery after a decline*; that was 2021.
- (C) 2020: This is the year of *decline*, not recovery.
- (D) 2023: Continued growth, not a post-decline recovery.

Answer: (A) Go Back to Q 6

Solution

Q7 — Data Interpretation: Total IT Services exports 2019–2023

Step 1 — List IT Services exports:

$$2019 : 310, \quad 2020 : 340, \quad 2021 : 380, \quad 2022 : 420, \quad 2023 : 480$$

Step 2 — Sum:

$$310 + 340 + 380 + 420 + 480 = \textbf{1930} \text{ thousand crore}$$

Verification: $(310 + 480) + (340 + 420) + 380 = 790 + 760 + 380 = 1930$. ✓

Why other options are wrong:

- (A) 1850: Under by 80; likely misread 2020 as 260 or 2021 as 300.
- (B) 1900: Under by 30; arithmetic slip.
- (D) 1980: Over by 50; arithmetic slip.

Answer: (C) Go Back to Q 7

Solution

Q8 — Data Interpretation: Percentage increase in Chemicals exports 2019–2023

Step 1 — Read values:

$$\text{Chemicals}_{2019} = 185, \quad \text{Chemicals}_{2023} = 215$$

Step 2 — Percentage increase:

$$\% \text{ increase} = \frac{215 - 185}{185} \times 100 = \frac{30}{185} \times 100 \approx 16.2\% \approx \textbf{16}\%$$

Why other options are wrong:

- (A) 12%: Would require increase of ≈ 22.2; actual increase is 30.
- (C) 20%: Would require increase of 37; actual is 30.
- (D) 18%: Would require increase of ≈ 33.3; actual is 30.

Answer: (B) Go Back to Q 8

Solution

Q9 — Data Interpretation: Sector with highest exports in 2022

Step 1 — Read 2022 export values:

$$\text{Engineering} = 330, \quad \text{Textiles} = 150, \quad \text{Chemicals} = 200, \quad \text{IT Services} = 420$$

Step 2 — Identify maximum:

$$\max\{330,\ 150,\ 200,\ 420\} = 420 \quad \Rightarrow \quad \textbf{IT Services}$$

Why other options are wrong:

- (A) Engineering: 330, significantly below IT Services at 420.
- (B) Textiles: 150, the lowest sector in 2022.
- (C) Chemicals: 200, third highest in 2022.

Answer: (D) Go Back to Q 9

Solution

Q10 — Data Interpretation: Ratio of Textiles to Engineering in 2020

Step 1 — Read 2020 values:

$$\text{Textiles}_{2020} = 125, \quad \text{Engineering}_{2020} = 260$$

Step 2 — Form and simplify the ratio:

$$125 : 260 = \frac{125}{5} : \frac{260}{5} = 25 : 52$$

Step 3 — Verify GCD$(25, 52) = 1$: $52 = 2 \times 25 + 2$; $25 = 12 \times 2 + 1$. GCD=1. Already in lowest terms: **25 : 52**.

Why other options are wrong:

- (B) 5 : 10: Simplifies to 1 : 2; does not equal 25 : 52.
- (C) 1 : 2: Would require Textiles = 130, not 125.

- (D) $12:26$: Simplifies to $6:13$; does not equal $25:52$.

Answer: (A) Go Back to Q 10

Solution

Q11 — Data Sufficiency: Value of x^2

Analysing Statement I: $x + 4 = 9 \implies x = 5 \implies x^2 = 25$. **Sufficient.**

Analysing Statement II: $x - 4 = 1 \implies x = 5 \implies x^2 = 25$. **Sufficient.**

Since each statement independently gives a unique value for x^2, the answer is **(C)**.

Why other options are wrong:

- (A): Incorrect, because Statement II is also sufficient.
- (B): Incorrect, because Statement I is also sufficient.
- (D): Both statements do give a definite answer.
- (E): Each alone is sufficient, so (E) is not the right classification.

Answer: (C) Go Back to Q 11

Solution

Q12 — Data Sufficiency: Is triangle PQR a right triangle?

Analysing Statement I: $PQ^2 + QR^2 = PR^2 + 5$. This tells us the triangle does *not* satisfy the Pythagorean theorem with the right angle at Q. However, the right angle could still potentially be at P or R — Statement I gives no information about those angle conditions. We **cannot** conclusively say the triangle is or is not right-angled. **Not sufficient.**

Analysing Statement II: $\angle Q = 80^\circ$. This rules out a right angle at Q. However, we have no information about $\angle P$ or $\angle R$, so we cannot determine whether any angle equals 90°. **Not sufficient.**

Both together: We know $\angle Q = 80^\circ$ and $PQ^2 + QR^2 \neq PR^2$. We still do not know $\angle P$ and $\angle R$ individually. The triangle could have $\angle P = 90^\circ$, $\angle R = 10^\circ$, or $\angle P = 50^\circ$, $\angle R = 50^\circ$ (not right-angled). **Not sufficient together.**

Answer: **(D)**.

Answer: (D) Go Back to Q 12

Solution

Q13 — Data Sufficiency: Simple interest on principal P in 3 years

Recall: SI $= \dfrac{P \times R \times T}{100}$, where $T = 3$ years is already given.

Analysing Statement I: $R = 8\%$ and $P =$ Rs. 5000.

$$\text{SI} = \frac{5000 \times 8 \times 3}{100} = \text{Rs. } 1200.$$

A unique numerical answer is obtained. **Sufficient.**

Analysing Statement II: $P =$ Rs. 6000, but the rate R is not given. Without R, SI cannot be calculated. **Not sufficient.**

Answer: **(A)**.

Why other options are wrong:

- (B): Statement I also gives the answer; Statement II alone does not.
- (C): Statement II alone is insufficient.
- (E): Statement I alone is sufficient, so (E) is ruled out.

Answer: (A) Go Back to Q 13

Solution

Q14 — Data Sufficiency: LCM of m and n

Analysing Statement I: $m + n = 35$. Multiple pairs sum to 35: $(5, 30)$, $(14, 21)$, $(15, 20)$, $(7, 28)$, etc. Each pair yields a different LCM. **Not sufficient.**

Analysing Statement II: $m = 15$, $n = 20$. Prime factorisations: $15 = 3 \times 5$, $20 = 2^2 \times 5$.

$$\text{LCM}(15, 20) = 2^2 \times 3 \times 5 = 60.$$

Unique answer. **Sufficient.**

Answer: **(B)**.

Why other options are wrong:

- (A): Statement I cannot determine unique values of m and n.
- (C): Statement I alone is not sufficient.
- (E): Statement II alone is sufficient, so (E) is unnecessary.

Answer: (B) Go Back to Q 14

Solution

Q15 — Data Sufficiency: Sunita's monthly salary

Let salary $= S$.

Analysing Statement I: Savings $= 0.30\,S$. This is a relationship, not a specific value. Without the actual amount of savings, we cannot find S. **Not sufficient.**

Analysing Statement II: Monthly savings $=$ Rs. $9{,}000$. Without the savings percentage, we cannot link savings to salary. **Not sufficient.**

Both together:

$$0.30\,S = 9{,}000 \implies S = \frac{9{,}000}{0.30} = \text{Rs. } 30{,}000.$$

A unique answer is obtained. **Together, sufficient.**

Answer: **(E)**.

Answer: (E) Go Back to Q 15

Solution

Q16 — Data Sufficiency: What is $x - y$?

Analysing Statement I: $x + y = 12$. Infinitely many pairs (x, y) satisfy this; $x - y$ varies. **Not sufficient.**

Analysing Statement II: $xy = 35$. Again, infinitely many pairs; e.g. $(5, 7)$ and $(7, 5)$ both give $xy = 35$ but $x - y = -2$ or $+2$. **Not sufficient.**

Both together: Use the identity:

$$(x - y)^2 = (x + y)^2 - 4xy = 144 - 140 = 4 \implies x - y = \pm 2.$$

We get two possible values ($+2$ or -2) and cannot determine a unique answer. **Not sufficient together.**

Answer: **(D)**.

Why (E) is wrong: Even with both statements, $x - y$ is not uniquely determined.

Answer: (D) Go Back to Q 16

Solution

Q17 — Data Sufficiency: Is $N > 1$ a prime number?

Analysing Statement I: N has no integer factor in the range $[2, \sqrt{N}]$. By the fundamental property of primes, an integer $N > 1$ is prime if and only if it has no factor between 2 and $\sqrt{N}$. This statement is the definition of primality; it **conclusively establishes** that

N is prime. **Sufficient.**

Analysing Statement II: N is odd. Many odd numbers are composite: $9 = 3 \times 3$, $15 = 3 \times 5$, $21 = 3 \times 7$, etc. Knowing N is odd does not determine primality. **Not sufficient.**

Answer: **(A)**.

Why other options are wrong:

- (B): Statement I is also sufficient; Statement II alone is not.
- (C): Statement II alone is insufficient, so (C) is incorrect.
- (E): Statement I alone is sufficient, so (E) is unnecessary.

Answer: (A) Go Back to Q 17

Solution

Q18 — Data Sufficiency: What is 25% of W?

Analysing Statement I: $0.75\,W = 90 \implies W = 120$. Then 25% of $W = 0.25 \times 120 = 30$. **Sufficient.**

Analysing Statement II: $W = 120$. Then 25% of $W = 0.25 \times 120 = 30$. **Sufficient.**

Answer: **(C)**.

Why other options are wrong:

- (A): Statement II is also sufficient.
- (B): Statement I is also sufficient.
- (D/E): Both individually yield the answer; no joint dependence needed.

Answer: (C) Go Back to Q 18

Solution

Q19 — Data Sufficiency: Area of a circle

Analysing Statement I: "The diameter is twice its radius." This is a *tautological* statement true for every circle ($d = 2r$ always). It provides **no numerical value** for the radius or diameter. **Not sufficient.**

Analysing Statement II: Circumference $= 44$ cm.

$$2\pi r = 44 \implies r = \frac{44}{2\pi} = \frac{22}{\pi} = 7\,\text{cm} \quad \left(\text{using } \pi = \tfrac{22}{7}\right)$$

$$\text{Area} = \pi r^2 = \frac{22}{7} \times 49 = 154\,\text{cm}^2.$$

A unique numerical answer. **Sufficient.**

Answer: **(B)**.

Why other options are wrong:

- (A): Statement I is a tautology and provides no measurement.
- (C): Statement I alone does not give any numerical information.
- (E): Statement II alone is sufficient; no need for Statement I.

Answer: (B) Go Back to Q 19

Solution

Q20 — Data Sufficiency: Speed of boat in still water

Let b = speed of boat in still water (km/h) and c = speed of current (km/h).

Downstream speed $= b + c$.

Analysing Statement I: The boat travels 30 km downstream in 2 hours.

$$b + c = \frac{30}{2} = 15\,\text{km/h}.$$

This gives the downstream speed but we need the value of c to isolate b. **Not sufficient alone.**

Analysing Statement II: Speed of current $c = 3$ km/h. Without the boat's speed or any distance/time data, we cannot find b. **Not sufficient alone.**

Both together:

$$b + c = 15 \quad \text{and} \quad c = 3 \implies b = 15 - 3 = \mathbf{12}\,\text{km/h}.$$

A unique answer is obtained. **Together, sufficient.**

Answer: **(E)**.

Why other options are wrong:

- (A): Statement I alone gives only $b + c$, not b individually.

- (B): Statement II alone gives only c, not b individually.
- (C): Neither statement alone is sufficient.
- (D): Together they do give a unique value; not (D).

Answer: (E) Go Back to Q 20

Answer Key

Part A – Data Interpretation (Q1–Q10):

Q	1	2	3	4	5	6	7	8	9	10
Ans	B	C	A	D	B	A	C	B	D	A

Part B – Data Sufficiency (Q11–Q20):

Q	11	12	13	14	15	16	17	18	19	20
Ans	C	D	A	B	E	D	A	C	B	E