

DATA INTERPRETATION

Comprehensive Cheat Sheet & Formula Reference for Competitive Exams

1. Fundamental Metrics & Calculations

Interpretation primarily tests calculation speed and comparative analysis. Master these core formulas:
Percentage (P):

$$P = \left(\frac{\text{Part}}{\text{Whole}} \right) \times 100$$

Percentage Increase/Decrease:

$$\% \text{ Change} = \left(\frac{\text{Final} - \text{Initial}}{\text{Initial}} \right) \times 100$$

Percentage Point Difference: Used when comparing two percentages directly (e.g., 15% to 18% is a 3 percentage point increase, not a 20% increase).
Ratio Proportion: Comparing quantities directly or scaling baseline totals.—

2. Averages, Growth & Ratios

Weighted Average: When combining groups with individual averages A_1, A_2 and sizes N_1, N_2 :

$$A_{avg} = \frac{N_1 A_1 + N_2 A_2}{N_1 + N_2}$$

CAGR (Compound Annual Growth Rate): Measures mean annual growth over multiple periods:

$$\text{CAGR} = \left(\frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{\frac{1}{n}} - 1$$

where n is the number of years.
Index Numbers: Setting a base year equal to 100 and tracking subsequent relative changes.—

3. Types of Data Representations

A. Tables

Rows and columns of numerical data.
Tip: Always check the units (e.g., in thousands vs. in millions) before calculating.

B. Bar Charts & Histograms

Compare discrete categories or frequency distributions.
Tip: Use the grid lines carefully to estimate bar heights if exact values are omitted.

C. Pie Charts

Represent components of a whole ($360^\circ = 100\%$).
Conversion Formula:

$$\text{Angle} = \left(\frac{\text{Value}}{\text{Total Value}} \right) \times 360^\circ$$

$$\text{Value} = \left(\frac{\text{Angle}}{360^\circ} \right) \times \text{Total Value}$$

D. Line Graphs

Ideal for trends over time.
Tip: Look out for dual-axis line graphs where two separate metrics use different scales on the left and right y-axes.—

4. Advanced Graph Types

Radar / Spider Charts: Multi-variable data mapped on radial axes radiating from a central point. Useful for capability or performance profiling.
Caselets: Data presented in a paragraph form rather than structured visual graphics. *Action:* Convert the paragraph into a structured tabular matrix immediately upon reading.
Missing Data Tables:

Use algebraic equations based on row/column totals or given ratios to back-calculate missing entries.—

5. Pro-Tips for Speed & Accuracy

Approximation is Key: If options are well-spaced (e.g., 12%, 25%, 48%, 85%), round numbers aggressively (e.g., $4896 \approx 5000$).
Memorize Fraction-to-Percentage Equivalents:
 $\frac{1}{2} = 50\%$, $\frac{1}{3} = 33.33\%$, $\frac{1}{4} = 25\%$, $\frac{1}{6} = 16.67\%$, $\frac{1}{8} = 12.5\%$, $\frac{1}{12} = 8.33\%$
Elimination Strategy: Glance at the answer choices before performing tedious decimal calculations to eliminate impossible magnitudes.