GRE Word Problem Translation Guide

Verbal-to-Mathematical Conversion Reference

Phrase-to-Operation Translation Table

Verbal Cue	Mathematical Meaning
increased by, more than, sum, total	Addition (+)
decreased by, less than, difference, minus	Subtraction (−)
times, product, of (in percent contexts)	Multiplication (×)
divided by, quotient, per, ratio	Division (÷)
is, equals, results in, yields	Equals (=)

Problem Type Identification Flowchart

Start: What does the problem involve?

- If it involves **speed, time, or distance** → Distance-Rate-Time problem
- If it involves **working together** → Work Rate problem
- If it involves **percentages or value per unit** → Mixture or Percent problem
- If it involves **ages of people** → Age problem
- If it involves **part-to-whole relationships** → Ratio/Proportion problem

Setup Templates for Word Problem Types

1. Distance-Rate-Time:
Formula: D = R × T
Example: If a car travels at 60 mph for 2 hours, D = 60 × 2 = 120 miles

2. Work Rate:
Formula: 1/T = 1/A + 1/B
Example: If A can do a job in 4 hrs and B in 6 hrs, together: 1/T = 1/4 + 1/6 = 5/12 ⇒ T = 12/5 hrs

3. Mixture:
Formula: (amount × value) = total value
Example: Mix 3 lb at $4/lb and 2 lb at $6/lb → total = 3×4 + 2×6 = $24

4. Percent Change:
Formula: (New − Original)/Original × 100%
Example: From $80 to $100 → (100−80)/80 × 100% = 25% increase

5. Ratio/Proportion:
Formula: a/b = c/d (cross-multiply)
Example: If 2 pencils cost $1, how many cost $5? 2/1 = x/5 ⇒ x = 10 pencils