GMAT Math Skills

PROBLEM SOLVING | DATA SUFFICIENCY | WORD PROBLEMS

Kaplan Method for Problem Solving

1) Study the question stem and the answers.
2) Determine what the question asks.
3) Choose an approach, or combine approaches:
   a) Use a strategy.
      i) Picking Numbers
      ii) Backsolving
   b) Do the straightforward math.
   c) Guess strategically.
      i) Use logic to eliminate answers.
      ii) Estimate the value of the correct answer.
      iii) Be wary of answer choices that are structurally different from others.
      iv) On Roman numeral questions, try to verify or disprove one or more statements and any related answer choices.
      v) On "which of the following" questions, be partial to the latter choices.
   4) Read the question again, making sure your answer makes sense.

Kaplan Method for Data Sufficiency

1) Preview the question stem, determine what type of information would be needed to answer the question.
   - Determine whether the question requires a "yes/no" answer or a "value" answer.
   - If the stem contains an algebraic expression, see if the expression can be put in a simpler form.
   - Determine what type of information would be needed to answer the question.
2) Evaluate each statement separately.
   - For yes/no questions, seek to find a single answer to the question.
   - For value questions, seek to find a single value.
   - Determine the sufficiency of one statement.
   - Determine the sufficiency of the other statement.
   - Keep track of your options as you go.
   - If (2) is insufficient, the answer must be (A), (C), or (E).
   - If (2) is sufficient, the answer must be (B) or (D).
   - If (1) is insufficient, the answer must be (B), (C), or (E).
   - If (1) is sufficient, the answer must be (A) or (D).
   - Do not let information from one statement influence your decision about the other statement.
3) Evaluate the statements in combination, if necessary.
4) When combining the statements, treat them as one long statement.

Dealing With Word Problems

The key to solving word problems is translation: turning English into math. Rather than having an equation set up for you, *you* have to decide what arithmetic or algebraic operations to perform on which numbers.

Your job is to translate the problem from English into math. A phrase like "three times as many as John has" can be translated as 3j; the phrase "four fewer than Susan" can be translated as "s – 4."

Here's a general approach to any word problem:

1. Read through the whole question once, without lingering over details, to get a sense of the overall problem.
2. Identify and label the variables or unknowns in a way that makes it easy to remember what they stand for.
3. Translate the problem into one or more equations, sentence by sentence. Be careful of the order in which you translate the terms. For example, consider the phrase: "5 less than 4x equals 9." The *correct* way to translate it is: "4x – 5 = 9." But many students make the mistake of writing the terms in the order in which they appear in words: "5 – 4x = 9."
4. Solve the equation(s).
5. Check your work, if time permits.

STRATEGIES AND TEST-DAY TIPS

Picking numbers:
Pick numbers that are permissible and manageable.

Backsolving:
Start with choice (B) or (D).

DATA SUFFICIENCY
1 (A) #1 is Suff.; #2 is Not Suff.
2 (B) #2 is Suff.; #1 is Not Suff.
T (C) #1 is Not Suff.; #2 is Not Suff.; #1 AND #2 are Suff.
E (D) #1 is Suff.; #2 is Suff.
N (E) #1 is Not Suff.; #2 is Not Suff.; #1 AND #2 are Not Suff.

Equations and Variables:
n distinct linear equations are needed to solve for *n* variables.

OTHER FORMULAS AND THINGS TO KNOW:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \qquad \text{Average} = \frac{\text{Sum of the terms}}{\text{Number of terms}} \qquad \text{Average Speed} = \frac{\text{Total Distance}}{\text{Total Time}} \qquad \text{Rate} = \frac{\text{Quantity of } A}{\text{Quantity of } B}$$

$$\%\ \text{Increase} = \frac{\text{New Amount} - \text{Original Amount}}{\text{Original Amount}} \times 100\% \qquad \%\ \text{Decrease} = \frac{\text{Original Amount} - \text{New Amount}}{\text{Original Amount}} \times 100\%$$

EXPONENT RULES:

$x \cdot x = x^2$ $\qquad (x^a)^b = x^{ab}$

$x^{-a} = \frac{1}{x^a}$ $\qquad \frac{x^a}{x^b} = x^{a\ b}$

$x^0 = 1$ $\qquad$ (negative)$^{\text{odd}}$ = negative

$x^a x^b = x^{a+b}$ $\qquad$ (negative)$^{\text{even}}$ = positive

RADICAL RULES:

$\sqrt{a}\sqrt{b} \quad \sqrt{ab}$

$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$

$a\sqrt{c} + b\sqrt{c} = (a+b)\sqrt{c}$

$\sqrt{a} + \sqrt{b} \neq \sqrt{a+b}$

$(\sqrt{a})^2 = a$

NUMBERS:

0 is an even integer.

1 is *not* prime.

2 is the lowest prime number.

Mode: the most common number(s) in a set

Median: the middle term in a set of ascending or descending numbers; when the set has an even number of numbers, the average of the two middle terms.

Only (odd) × (odd) and (odd) + (even) yield odd numbers.

MISCELLANEOUS:

$ab + ac = a(b + c)$ $\qquad |-x| = |x|$

$x\%$ of $y = y\%$ of x $\qquad \frac{a+b}{c} \quad \frac{a}{c} + \frac{b}{c}$

GMAT Verbal Skills

READING COMPREHENSION | CRITICAL REASONING | SENTENCE CORRECTION

Kaplan Method for Reading Comprehension

1) Read the passage, write a Passage Map, and note Topic, Scope, and Purpose.
2) Read the question stem, determining which type of question it is.
3) Answer the question, following the Kaplan strategies for that question type.
   a) On Global questions, use your Passage Map, Topic, Scope, and Purpose/Main Idea to prephrase an answer.
   b) On Detail questions, use your Passage Map to locate the relevant text in the passage. If necessary, read that portion of the passage again. Then prephrase a response.
   c) On Inference questions, search for the answer choice that follows from the passage.
   d) On Logic questions, determine the author's intentions in a particular part of the passage, and prephrase an answer.

KAPLAN METHOD FOR CRITICAL REASONING

1) Preview the question stem.
2) Read the stimulus.
3) Try to prephrase an answer.
   a) For an Assumption question, find the conclusion, evidence, and central assumption(s), then prephrase an answer.
   b) For a Strengthen or Weaken question, find the conclusion, evidence, and central assumption(s), then prephrase an answer that confirms (strengthens) or denies (weakens) a central assumption.
   c) For a Flaw question, find the conclusion, evidence, and central assumption(s), then prephrase a choice that indicates the logical fallacy of the assumption.
   d) For an Explain question, search the answer choices for a statement that, if true, could explain how the statements in the stimulus could all be true.
   e) For an Inference question, accept that the stimulus is true and locate the answer choice that must follow from the stimulus.
4) Choose an answer.

Kaplan Method for Sentence Correction

1) Read the original sentence carefully, looking for errors.
   - Look for classic errors.
   - If you find an error in the sentence, eliminate choice (A), which repeats the underlined part.
   - Eliminate any other answer choice that contains the same error you found.
   - Realize that the sentence is sometimes correct as written, making choice (A) correct.
2) Scan the answer choices.
   - Scan vertically for differences in the wording that will help you zero in on the types of errors being tested.
   - Once you know what wording is at issue, determine which alternative is preferable.
3) Eliminate choices until only one remains.
   - As soon as you find one error, eliminate that answer choice.
   - Eliminate other answer choices that repeat the error.
   - Scan the remaining choices for other differences by which you can zero in on other errors.
   - If you have to guess, go for the shortest answer that's clear and unambiguous.
   - Confirm your answer by reading your choice back in the sentence.

GMAT AWA Essay Skills

ISSUE ESSAY | ARGUMENT ESSAY

Kaplan Method for an Issue Essay

1) Take the issue apart.
   - Determine the conclusion and the (offered or implied) counter-conclusion.
   - Consider the circumstances under which the conclusion would be true/untrue.
2) Select the points you will make. Decide whether to agree or disagree, naming 2–4 reasons.
3) Organize:
   - Paragraph 1: Restate the issue, agree/disagree, and state two to four reasons.
   - Paragraphs 2–4: Elaborate on reasons, using evidence, testimony, and anecdotes.
   - Second to last paragraph: Present and refute an alternative argument.
   - Last paragraph: Summarize your points.
4) Type your essay.
5) Proofread.

Kaplan Method for an Argument Essay

1) Take the argument apart.
   - Determine the conclusion, evidence, and assumptions.
   - Consider the circumstances under which the assumptions are valid/invalid.
   - Consider what would strengthen/weaken the argument.
2) Select the points you will make. What weaknesses/strengths of the argument are critical? For which of those can you marshal evidence?
3) Organize:
   - Paragraph 1: Demonstrate that you understand the argument, list weaknesses, and describe what could strengthen the argument.
   - Paragraph 2: Detail assumptions on which the argument hinges, describe what would be required to validate the assumptions, and list gaps between existing evidence and what's necessary.
   - Paragraph 3: Discuss poorly defined terms, and their effect on the argument.
   - Final paragraph: Discuss what could strengthen the argument, and summarize your points.
4) Type your essay.
5) Proofread.

COMMON GMAT IDIOMS

able to (ability to)

among vs. between (Use *among* to refer to 3+ items; *between* to refer to 2 items.)

as vs. like (Use *like* to compare nouns; *as* to compare actions)

associate with

at least as . . . as

between . . . and . . .

compare to vs. compare with (*Compare with* is more common than *compare to* on the GMAT.)

connection between

consequence of

continue to

credit with

different from

distinguish between . . . and . . .

distinguish . . . from . . .

each other vs. one another (In GMAT English, *each other* is used to refer to 2 things; *one another* is used for 3+.)

either . . . or . . .

extent to which (common on the GMAT)

fewer vs. less (*Fewer* describes countable things; *less* describes an uncountable quantity.)

if vs. whether (*Whether* is far more common than *if* on the GMAT. *If* is reserved for conditional "if–then" statements.)

like vs. such as (*Such as* is far more common than *like* on the GMAT.)

more than

neither . . . nor . . .

not only . . . but also . . .

not so much . . . as . . .

perceive as

prohibit from

regard as

so . . . as to be . . .

so . . . that

superior to

use as