



# GMAT PREP

Course Documents

**Problem Solving Strategies Review**

# Problem Solving Strategies Review

1 Smart Numbers

3 Estimation

2 Working Backwards

## 1 Lesson 1: Smart Numbers

### Smart Numbers Overview

The core idea behind choosing smart numbers is to simplify complex GMAT PS questions by plugging in easy numbers instead of setting up and solving algebraic equations. Success with smart numbers depends on three factors:

#### 1. Recognizing When to Choose Smart Numbers:

- **Content Areas:** Problems from fractions, percents, and ratios are often well-suited for smart numbers, but this strategy can also apply to other content areas.
- **Key Signals:**
  - **No Concrete Values Provided:** The question doesn't give specific numbers you must use, allowing you to choose your own. Instead, it might establish relationships between unknown values (e.g., using percentages).
  - **Variable Expressions in Answer Choices:** If the answer choices contain variables, smart numbers are often a viable option, even if the prompt includes a concrete value.
  - **"In terms of" phrase:** Questions asking to solve for one variable "in terms of" another also signal that smart numbers can be used.
- **Important Note:** Either one of these signals is sufficient to indicate that smart numbers can be used; both are not required.

#### 2. Choosing Good vs. Bad Numbers:

- **Good Smart Numbers:**
  - **100:** Excellent for questions involving percentages with no concrete values.
  - **Common Denominator:** Very effective when an unknown total is broken into fractions.
  - **60:** Useful in rate questions or any scenario where having many divisors is beneficial.
- **Bad Smart Numbers (Generally Avoid):**
  - Zero (0)
  - One (1)
  - Numbers explicitly given in the problem prompt.

#### 3. Knowing Where to Assign Your Smart Numbers:

- There's no universal rule; it depends on the question.
- If unsure, make a logical guess and try it. If you get stuck, re-evaluate and assign the number(s) elsewhere. The problem often becomes straightforward once numbers are assigned correctly.

Problem Solving Process (General)

For consistent success on GMAT quant questions, follow a three-step process:

## Smart Numbers Sub-Strategies

1. Create a plan likely to lead to the correct answer within the time constraint.
2. For smart numbers questions:
  - Determine if smart numbers are a good option (see "Recognizing When to Choose Smart Numbers").
  - Consider helpful sub-strategies (e.g., choosing 100 for percentages, using a common denominator for fractions).
  - **Eliminating Answers Using Logic:** When answers are variable expressions, try to rule out impossible choices before plugging in numbers (e.g., eliminate negative answers if the result must be positive, eliminate fractions if the result must be a whole number). This saves time and reduces computation errors.
  - **Using Tables:** Tables are excellent for organizing information, especially in questions involving multiple time periods (use time periods as columns and relevant categories as rows).

## Smart Numbers Math Tips

1. Be clear about which values correspond to which variables.
2. When dealing with variable expressions in answers, plug your chosen smart numbers into the answer choices to find the match.