

# STRATEGY SUMMARY

## MATH STRATEGIES

## My Notes

When approaching a Mathematics item, there are several things to which you should pay careful attention:

### **Figures**

Figures are usually, but not always, drawn to scale. When all other options for answering the item fail, try the strategy of assuming the figure *is* drawn to scale. Then, use the figure to help you answer the item.

### **Answer Choices**

Most answer choices are arranged in order of ascending or descending value and many incorrect answer choices correspond to conceptual errors.

### **“Signal” Words**

Typically, “signal” words are capitalized (e.g., thought-reversers, such as “NOT,” “CANNOT,” and “EXCEPT”); however, they may sometimes be underlined or italicized (e.g., specified units). While the specific formatting of these words may vary, they can be critical to correctly understanding the item. Pay careful attention to thought-reversers, as they reverse the apparent meaning of an item.

### **Ladder of Difficulty**

Difficult Mathematics items tend to be clustered near the end of the section. When solving items that are high on the ladder of difficulty, be wary of simplistic answers and the “Cannot be determined...” response. Remember to pace yourself—difficult, time-consuming items have the same value as the easy items.

### **Item Stems**

Read the item stem first. Only then should you read the details of the item, keeping this item stem in mind.

### **Solutions**

Double-check the solution by confirming that it answers the particular question that is being asked. When applicable, this confirmation includes verifying that the solution is given in the units specified by the item stem.

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If you are unable to either find an elegant (quick) solution or solve the item directly based on subject knowledge, the following alternative solutions strategies can be extremely helpful:

### **“Test-the-Test” Strategy**

The correct answer to any item is always one of five given choices. Sometimes, the easiest and quickest way to solve an item is to test each of the answer choices. The “test-the-test” strategy can mean plugging answer choices back into the item (starting with the middle answer choice) to test the validity of an expression, or it can mean checking each answer choice against any stated conditions. The “test-the-test” strategy is typically useful for items with numerical solutions or variables and values that meet stated conditions.

### **“Plug-and-Chug” Strategy**

This strategy is similar to the “test-the-test” strategy in that the item stem and answer choices (rather than direct mathematical solution strategies) are used to isolate the correct answer. The difference is that rather than testing the validity of each answer choice against the item stem conditions, the item stem and/or answer choices are evaluated by plugging in chosen numbers: “plug-and-chug.” This strategy is especially helpful when solving Algebra items.

### **“Eliminate-and-Guess” Strategy**

If unable to determine the correct answer directly by using mathematical methods or indirectly by using either the “test-the-test” or “plug-and-chug” strategy, eliminate as many answer choices as possible and then guess from the remaining answer choices. For difficult mathematics items, eliminate answer choices that can be reached either by a single step or by copying a number from the item.

# CHECKLIST OF SKILLS AND CONCEPTS

## My Notes

### Number and Quantity

- Basic Arithmetic Manipulations
- Properties of Numbers (Odd, Even, Negative, Positive, Consecutive)
- Scientific Notation
- Complex Numbers
- Matrices and Vectors
- Ratios (Two-Part, Three-Part, Weighted), Rates, and Proportions (Direct, Indirect)
- Percentages (Change, Original Amount, Price Increase)

### Algebra and Functions

- Evaluation of Expressions (Rational, Radical)
- Exponents (Integer, Rational, Negative)
- Factoring
- Sequence
- Solving Single Variable Equations and Inequalities
- Absolute Value
- Function Math
- Domain and Range
- Solving Equations (Multi-Variable, Linear, Simultaneous, Quadratic)
- Story Problems: Work (Joint Effort), Averages

### Coordinate Geometry

- Coordinate Plane
- Slope of a Line
- Slope-Intercept Form of a Linear Equation
- Distance Formula
- Graphing Linear Equations
- Graphing First-Degree Inequalities
- Graphing Quadratic Equations
- Permutations of Equations and Graphs

# CHECKLIST OF SKILLS AND CONCEPTS

## My Notes

### Geometry

- Lines and Angles (Perpendicular, Parallel, Intersecting, Big Angle/Little Angle Theorem)
- Triangles (Equilateral, Isosceles, Acute, Obtuse, Perimeter, Area, Altitudes, Angles, Bisectors, Pythagorean Theorem)
- Quadrilaterals (Squares, Rectangles, Rhombuses, Parallelograms, Trapezoids, Perimeter, Area)
- Polygons (Sum of Interior Angles)
- Circles (Chords, Tangents, Radius, Diameter, Circumference, Area)
- Solids (Cubes, Cylinders, Spheres, Volumes, Surface Areas)
- Complex Figures

### Trigonometry

- Trigonometric Functions
- Trigonometric Values
- Trigonometric Relationships

### Statistics and Probability

- Measures of Center (Average, Median, Mode)
- Probability
- Counting Methods (Combinations, Permutations)
- Sets (Union, Intersection, Elements)
- Graphs (Bar, Cumulative, Line)
- Pie Charts
- Tables
- Scatterplots