



# **ICAM Content Specifications**

## **Grade 8 Mathematics**

11/12/01

## ICAM Content Specifications: Eighth-Grade Mathematics

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**Module:** Problem-Solving Strategies and Process

**Form:** X or Y

**Description:** This assessment module consists of a total of eight multiple-choice questions and four open-ended questions. Two of the open-ended questions are scored using a 3-point (0 to 2) focused-holistic rubric. The remaining two open-ended questions are scored using a 5-point (0 to 4) focused-holistic rubric.

Benchmarks	Points Possible
1.1 Understands the relationship between the language of mathematics and real-world situations	2–3
1.2 Uses strategies to understand and solve problems	8–9
1.3 Identifies relevant, irrelevant, and missing information needed to solve the problem	3
1.4 Uses informal deductive reasoning (i.e., constructs informal logical arguments) and inductive reasoning to justify reasoning processes and methods of solutions to problems	6
<b>Total Points:</b>	20

## ICAM Content Specifications: Eighth-Grade Mathematics

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**Module:** Number Concepts & Operations

**Form:** X or Y

**Description:** This assessment module consists of a total of 10 multiple-choice questions and three open-ended questions. Two of the open-ended questions are scored using a 3-point (0 to 2) focused-holistic rubric. The remaining open-ended question is scored using a 5-point (0 to 4) focused-holistic rubric.

Benchmarks	Points Possible
2.1 Understands basic number concepts associated with the rational number system (e.g., prime and composite numbers, factors, multiples, positive and negative numbers, place value, divisibility)	3–4
2.2 Understands the concepts of fraction, ratio, proportion, and percent and the relationships among them and their equivalent representations	5
2.3 Understands the characteristics and uses of roots, exponents, and scientific notation and the relationships among them and their equivalent representations	2
2.4 Understands the properties of operations with rational numbers and the correct order of operations for performing arithmetic computations	1–2
2.5 Solves problems using number concepts (e.g., factors, multiples, and proportional reasoning)	6
<b>Total Points:</b>	18

## ICAM Content Specifications: Eighth-Grade Mathematics

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**Module:**      **Measurement**

**Form:**    **X or Y**

**Description:** This assessment module consists of a total of 10 multiple-choice questions and three open-ended questions. Two of the open-ended questions are scored using a 3-point (0 to 2) focused-holistic rubric. The remaining open-ended question is scored using a 5-point (0 to 4) focused-holistic rubric.

Benchmarks	Points Possible
3.1 Solves problems involving perimeter (circumference), area, and volume of geometric shapes	6–7
3.2 Uses measurement tools appropriately for given situations	1–2
3.3 Understands the relationships among linear dimensions, area, and volume, uses appropriate units of measure, and solves problems involving units of measurement and converts units as appropriate	4
3.4 Understands the basic concept of rate as a measure	4
3.5 Estimates quantities and measurements	2
<b>Total Points:</b>	<b>18</b>

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**Module:** Geometry

**Form:** X or Y

**Description:** This assessment module consists of a total of eight multiple-choice questions and four open-ended questions. Two of the open-ended questions are scored using a 3-point (0 to 2) focused-holistic rubric. The remaining two open-ended questions are scored using a 5-point (0 to 4) focused-holistic rubric.

Benchmarks	Points Possible
4.1 Understands the properties of lines, angles, planes, and two- and three-dimensional figures and knows geometric language for describing and naming them	6–7
4.2 Understands the geometric concepts of similarity, congruency, and symmetry	2–3
4.3 Understands geometric transformations of figures (e.g., rotations and translations)	2
4.4 Uses the x-y coordinate system to model and solve basic problems	6
4.5 Solves problems using properties of and relationships among geometric figures	2–4
<b>Total Points:</b>	20

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**Module:** Data Interpretation, Statistics, & Probability      **Form:** X or Y

**Description:** This assessment module consists of a total of eight multiple-choice questions and four open-ended questions. Two of the open-ended questions are scored using a 3-point (0 to 2) focused-holistic rubric. The remaining two open-ended questions are scored using a 5-point (0 to 4) focused-holistic rubric.

Benchmarks	Points Possible
5.1 Reads and interprets data in charts, tables, plots, and graphs and can identify common errors and misleading presentations of data	4
5.2 Organizes and displays data using tables and graphs	4
5.3 Understands basic characteristics of measures of central tendency (i.e., mean, median, mode) and variability (i.e., range)	4
5.4 Determines probability using mathematical/theoretical models (e.g., table or tree diagram, area model, list, counting procedures, sample space) and understands the relationship between the expression of a probability and the events that produce these numbers (e.g., fraction, percentage, odds)	8
<b>Total Points:</b>	20

## ICAM Content Specifications: Eighth-Grade Mathematics

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**Module:** Patterns, Functions, & Algebra

**Form:** X or Y

**Description:** This assessment module consists of a total of 10 multiple-choice questions and three open-ended questions. Two of the open-ended questions are scored using a 3-point (0 to 2) focused-holistic rubric. The remaining open-ended question is scored using a 5-point (0 to 4) focused-holistic rubric.

Benchmarks	Points Possible
6.1 Knows that a variable can be used in an expression, equation, or inequality that represents relationships and real-world situations	3
6.2 Understands the basic concept of a function (i.e., a functions describe how changes in one quantity or variable result in changes in another)	4
6.3 Understands basic operations on algebraic expressions	2
6.4 Solves linear equations using concrete, informal, and formal methods	2–3
6.5 Solves problems using basic algebraic concepts and procedures	6–7
<b>Total Points:</b>	18

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**Module:** Solving Work-Related Math Problems

**Form:** X or Y

**Description:** This assessment module consists of a total of eight multiple-choice questions and four open-ended questions. Two of the open-ended questions are scored using a 3-point (0 to 2) focused-holistic rubric. The remaining two open-ended question are scored using a 5-point (0 to 4) focused-holistic rubric.

Benchmarks	Points Possible
7.1 Solves work-related mathematics problems using a variety of mathematical concepts and computations.	20
<b>Total Points:</b>	20