



ICAM Content Specifications

Grade 11 Mathematics

11/12/01

ICAM Content Specifications: Eleventh-Grade Mathematics

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

Form: **Z**

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	3
1.2 Uses strategies to understand and solve problems	7
1.3 Identifies relevant, irrelevant, and missing information needed to solve the problem	2
1.4 Understands the process of mathematical justification and constructs logical verifications or counterexamples to test conjectures	8
Total Points:	20

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Module: Number Concepts & Operations

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
2.1 Understands number concepts associated with the real number system	1
2.2 Understands the concepts of fraction, ratio, proportion, and percent, the relationships among them, and their equivalent representations	5
2.3 Understands the characteristics, properties, and uses of roots, exponents, and scientific notation and the relationships among them and their equivalent representations	3
2.4 Understands the properties of operations with real numbers and the correct order of operations for performing arithmetic computations	1
2.5 Solves problems using number concepts (e.g., divisibility, factors, multiples, and proportional reasoning)	10
Total Points:	20

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Module: Measurement

Form: X or Y

Description: This assessment module consists of a total of ten 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, volume, and surface area of geometric shapes	5
3.2 Selects and uses an appropriate direct or indirect method of measurement in a given situation (e.g., uses properties of similar triangles to measure indirectly the height of an object, uses scale drawings or maps to determine distance)	6
3.3 Solves problems involving rate as a measure	6
3.4 Estimates quantities and measurements	1
Total Points:	18

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Module: **Geometry**

Form: **X or Y**

Description: This assessment module consists of a total of 10 multiple-choice questions and three open-ended questions. One of the open-ended questions is 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	2–3
4.2 Uses graphic representations to solve geometric problems involving the symmetry and transformations of figures or problems involving distance, midpoint, and slope.	5
4.3 Uses the Pythagorean Theorem and its converse and properties of special right triangles to solve problems	6–7
4.4 Solves problems using properties of and relationships among geometric figures	6
Total Points:	20

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

Description: This assessment module consists of a total of nine multiple-choice questions and three open-ended questions. One of the open-ended questions is 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 understands how the reader's bias, measurement error, and display distortion can affect the interpretation of data	3
5.2 Organizes and displays data using tables and graphs and used the data to solve problems	4
5.3 Understands measures of central tendency (i.e., mean, median, mode) and variability (i.e., range) and their applications to specific situations	6–7
5.4 Understands how concepts of representativeness, randomness, and bias in sampling can affect experimental outcomes and statistical interpretations	1
5.5 Determines probability using mathematical/theoretical models (e.g., table or tree diagram, area model, list, counting procedures, sample space, simulations) and understands the concepts of independent and dependent events and how they are related to conditional probability	4–5
Total Points:	19

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Module: Patterns, Functions, & Algebra

Form: X or Y

Description: This assessment module consists of a total of nine 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 Uses expressions, equations, and inequalities to represent variable quantity situations	5
6.2 Understands appropriate terminology and notation used to define functions and their properties	1–2
6.3 Represents functions, patterns, and relationships using a variety of models (e.g., written statements, algebraic formulas, table of input output values, graphs)	6
6.4 Solves problems using algebraic concepts and procedures	4–5
Total Points:	17

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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
Total Points:	20