Start Strong™

Mathematics

Support Level Descriptors, Reporting Concepts, and Test Blueprints

Fall 2022

State of New Jersey
Department of Education

Contents

Start Strong Mathematics Support Level Descriptors

Grade 4
- This report suggests FIRSTNAME may require strong support in major content for Grade 3 with connections to the Standards for Mathematical Practice: Operations and Algebraic Thinking; Number and Operations – Fractions; and Measurement.
- This report suggests FIRSTNAME may require some support in major content for Grade 3 with connections to the Standards for Mathematical Practice: Operations and Algebraic Thinking; Number and Operations – Fractions; and Measurement.
- This report suggests FIRSTNAME may require less support in major content for Grade 3 with connections to the Standards for Mathematical Practice: Operations and Algebraic Thinking; Number and Operations – Fractions; and Measurement.

Grade 5
- This report suggests FIRSTNAME may require strong support in major content for Grade 4 with connections to the Standards for Mathematical Practice: Operations and Algebraic Thinking; Number and Operations in Base Ten; and Number and Operations – Fractions.
- This report suggests FIRSTNAME may require some support in major content for Grade 4 with connections to the Standards for Mathematical Practice: Operations and Algebraic Thinking; Number and Operations in Base Ten; and Number and Operations – Fractions.
- This report suggests FIRSTNAME may require less support in major content for Grade 4 with connections to the Standards for Mathematical Practice: Operations and Algebraic Thinking; Number and Operations in Base Ten; and Number and Operations – Fractions.

Grade 6
- This report suggests FIRSTNAME may require strong support in major content for Grade 5 with connections to the Standards for Mathematical Practice: Number and Operations in Base Ten; Number and Operations – Fractions; and Measurement.
- This report suggests FIRSTNAME may require some support in major content for Grade 5 with connections to the Standards for Mathematical Practice: Number and Operations in Base Ten; Number and Operations – Fractions; and Measurement.
- This report suggests FIRSTNAME may require less support in major content for Grade 5 with connections to the Standards for Mathematical Practice: Number and Operations in Base Ten; Number and Operations – Fractions; and Measurement.

Grade 7

- This report suggests FIRSTNAME may require strong support in major content for Grade 6 with connections to the Standards for Mathematical Practice: Ratios and Proportional Relationships; the Number System; and Expressions and Equations.
- This report suggests FIRSTNAME may require some support in major content for Grade 6 with connections to the Standards for Mathematical Practice: Ratios and Proportional Relationships; the Number System; and Expressions and Equations.
- This report suggests FIRSTNAME may require less support in major content for Grade 6 with connections to the Standards for Mathematical Practice: Ratios and Proportional Relationships; the Number System; and Expressions and Equations.

Grade 8

- This report suggests FIRSTNAME may require strong support in major content for Grade 7 with connections to the Standards for Mathematical Practice: Ratios and Proportional Relationships; the Number System; and Expressions and Equations.
- This report suggests FIRSTNAME may require some support in major content for Grade 7 with connections to the Standards for Mathematical Practice: Ratios and Proportional Relationships; the Number System; and Expressions and Equations.
- This report suggests FIRSTNAME may require less support in major content for Grade 7 with connections to the Standards for Mathematical Practice: Ratios and Proportional Relationships; the Number System; and Expressions and Equations.

Algebra 1

- This report suggests FIRSTNAME may require strong support in major content for Grade 8 with connections to the Standards for Mathematical Practice: Expressions and Equations; Functions; and Geometry.
- This report suggests FIRSTNAME may require some support in major content for Grade 8 with connections to the Standards for Mathematical Practice: Expressions and Equations; Functions; and Geometry.
- This report suggests FIRSTNAME may require less support in major content for Grade 8 with connections to the Standards for Mathematical Practice: Expressions and Equations; Functions; and Geometry.

Geometry

- This report suggests FIRSTNAME may require strong support in major content for Grade 8 with connections to the Standards for Mathematical Practice: Expressions and Equations; Functions; and Geometry.
- This report suggests FIRSTNAME may require some support in major content for Grade 8 with connections to the Standards for Mathematical Practice: Expressions and Equations; Functions; and Geometry.
- This report suggests FIRSTNAME may require less support in major content for Grade 8 with connections to the Standards for Mathematical Practice: Expressions and Equations; Functions; and Geometry.

Algebra II

- This report suggests FIRSTNAME may require strong support in major content for Algebra 1 with connections to the Standards for Mathematical Practice: Seeing Structure in Expressions; Polynomials; Equations; Reasoning with Equations and Inequalities; and Interpreting Functions.
- This report suggests FIRSTNAME may require some support in major content for Algebra 1 with connections to the Standards for Mathematical Practice: Seeing Structure in Expressions; Polynomials; Equations; Reasoning with Equations and Inequalities; and Interpreting Functions.
- This report suggests FIRSTNAME may require less support in major content for Algebra 1 with connections to the Standards for Mathematical Practice: Seeing Structure in Expressions; Polynomials; Equations; Reasoning with Equations and Inequalities; and Interpreting Functions.

Start Strong Mathematics Reporting Concepts

Grade 4 based on Previous Grade's Learning Standards

Reporting Concept	Description
Operations and Algebraic Thinking: Multiplication and Division	Represent and solve problems involving multiplication and division. Understand properties of multiplication and the relationship between multiplication and division.
Operations and Algebraic Thinking: Operations	Multiply and divide whole numbers within 100. Solve problems involving the four operations (addition, subtraction, multiplication, division). Identify and explain patterns in arithmetic.
Number and Operations: Fractions	Develop understanding of fractions as numbers.
Measurement	Solve problems involving measurement and estimation. Understand concepts of area and relate area to multiplication and to addition.

Grade 5 based on Previous Grade's Learning Standards

Reporting Concept	Description
Operations and Algebraic Thinking: Operations	Use the four operations (addition, subtraction, multiplication and division) with whole numbers to solve problems.
Number and Operations: Base Ten	Generalize place value understanding for multi-digit whole numbers. Use place value understanding and properties of operations to perform multi-digit arithmetic.
Numbers and Operations: Fractions	Extend understanding of fraction equivalence and ordering. Understand decimal notation for fractions and compare decimal fractions. A decimal fraction is a fraction where the denominator (the bottom number) is a power of 10, such as 10, 100, 1000, etc.
Numbers and Operations: Unit Fractions	Build fractions from unit fractions, e.g., 1/2, 1/4 and 1/6.

Grade 6 based on Previous Grade's Learning Standards

Reporting Concept	Description
Number and Operations: Base Ten	Understand the place value system. Perform operations with multi-digit whole numbers and with decimals to hundredths.
Number and Operations: Addition and Subtraction of Fractions	Use equivalent fractions as a strategy to add and subtract fractions.
Number and Operations: Multiplication and Division of Fractions	Apply and extend previous understandings of multiplication and division to fractions.
Measurement	Understand concepts of volume. Relate volume to multiplication and to addition.

Grade 7 based on Previous Grade's Learning Standards

Reporting Concept	Description
Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.
The Number System: Fractions	Apply and extend previous understandings of multiplication and division to divide fractions by fractions. Apply and extend previous understandings of numbers to the system of rational numbers. A rational number is a number that can be written as a fraction, the denominator (bottom number) is not zero and can be positive or negative, e.g., 5/1, –3/7 and 3/2.
Expressions and Equations: Algebraic Expressions	Apply and extend previous understandings of arithmetic to algebraic expressions.
Expressions and Equations: Equations and Inequalities	Reason about and solve one-variable, one-step equations and inequalities. Analyze relationships between the dependent and independent variables.

Grade 8 based on Previous Grade's Learning Standards

Reporting Concept	Description
Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.
The Number System: Signed Numbers	Apply and extend previous understandings of operations with fractions to rational numbers.
Expressions and Equations	Use properties of operations to generate equivalent expressions. Solve real-life and mathematical problems using numerical and algebraic expressions, equations (simple, one-variable) and inequalities.

Algebra I based on Grade 8 Learning Standards

Reporting Concept	Description
Expressions and Equations: Radicals, Integer Exponents, Proportional Relationships, Lines, and Linear Equations	Work with radicals and integer exponents. Integers are whole numbers and their opposites. Understand the connections between proportional relationships, lines and linear equations.
Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.
Functions	Define, evaluate and compare functions.
Geometry	Understand congruence and similarity. Understand and apply the Pythagorean Theorem. Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Geometry based on Grade 8 Learning Standards

Reporting Concept	Description
Expressions and Equations: Radicals, Integer Exponents, Proportional Relationships, Lines, and Linear Equations	Work with radicals and integer exponents. Integers are whole numbers and their opposites. Understand the connections between proportional relationships, lines and linear equations.
Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.
Functions	Define, evaluate and compare functions.
Geometry	Understand congruence and similarity. Understand and apply the Pythagorean Theorem. Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Algebra II based on Algebra I Learning Standards

Reporting Concept	Description
Seeing Structure in Expressions	Interpret the structure of expressions.
Polynomials and Equations	Perform arithmetic operations on polynomials. Create equations that describe numbers or relationships.
Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable. Represent and solve equations and inequalities graphically.
Interpreting Functions	Understand the concept of a function and use function notation. Interpret functions that arise in applications in terms of the context.

Start Strong Mathematics Test Blueprints

These tables describe how many points were allocated to each major content cluster and/or reporting concept in the 2022 Start Strong assessment. Note that information about standard alignment for specific items will be available in the Results by Question and Student Performance Item Level Reports.

Grade 4 based on Previous Grade's Learning Standards

Content Domain	Major Content Cluster	Reporting Concept	Number of Items	Number of Points
Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division (3.OA.A.1–3.OA.A.4) Understand properties of multiplication and the relationship between multiplication and division (3.OA.B.5–3.OA.B.6)	Operations and Algebraic Thinking: Multiplication and Division	6	6
Operations and Algebraic Thinking	Multiply and divide within 100 (3.OA.C.7) Solve problems involving the four operations, and identify and explain patterns in arithmetic (3.OA.D.8–3.OA.D.9)	Operations and Algebraic Thinking: Operations	4	6
Number and Operations – Fractions	Develop understanding of fractions as numbers (3.NF.A.1–3.NF.A.3)	Number and Operations: Fractions	6	6
Measurement and Data	Solve problems involving measurement and estimation (3.MD.A.1–3.MD.A.2) Geometric measurement: understand concepts of area and relate area to multiplication and to addition (3MD.C.5–3.MD.C.7)	Measurement	5	6

Grade 5 based on Previous Grade's Learning Standards

Content Domain	Major Content Cluster	Reporting Concept	Number of Items	Number of Points
Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems (4.OA.A.1–4.OA.A.3)	Operations and Algebraic Thinking: Operations	6	6
Number and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers (4.NBT.A.1–4.NBT.A.3) Use place value understanding and properties of operations to perform multi-digit arithmetic (4.NBT.B.4–4.NBT.B.6)	Number and Operations: Base Ten	7	7
Number and Operations – Fractions	Extend understanding of fraction equivalence and ordering (4.NF.A.1–4.NF.A.2) Understand decimal notation for fractions, and compare decimal fractions (4.NF.C.5–4.NF.C.7)	Number and Operations: Fractions	5	6
Number and Operations – Fractions	Build fractions from unit fractions (4.NF.B.3–4.NF.B.4)	Number and Operations: Unit Fractions	5	6

Grade 6 based on Previous Grade's Learning Standards

Content Domain	Major Content Cluster	Reporting Concept	Number of Items	Number of Points
Number and Operations in Base Ten	Understand the place value system (5.NBT.A.1–5.NBT.A.4) Perform operations with multi-digit whole numbers and with decimals to hundredths (5.NBT.B.5–5.NBT.B.7)	Number and Operations: Base Ten	7	7
Number and Operations – Fractions	Use equivalent fractions as a strategy to add and subtract fractions (5.NF.A.1–5.NF.A.2)	Number and Operations: Addition and Subtraction of Fractions	5	6
Number and Operations – Fractions	Apply and extend previous understandings of multiplication and division (5.NF.B.3–5.NF.B.7)	Number and Operations: Multiplication and Division of Fractions	6	6
Measurement and Data	Geometric measurement: understand concepts of volume (5.MD.C.3–5.MD.C.5)	Measurement	5	6

Grade 7 based on Previous Grade's Learning Standards

Content Domain	Major Content Cluster	Reporting Concept	Number of Items	Number of Points
Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems (6.RP.A.1–6.RP.A.3)	Ratios and Proportional Relationships	6	7
The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions (6.NS.A.1) Apply and extend previous understandings of numbers to the system of rational numbers (6.NS.C.5–6.NS.C.8)	The Number System: Fractions	6	6
Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions (6.EE.A.1–6.EE.A.4)	Expressions and Equations: Algebraic Expressions	6	6
Expressions and Equations	Reason about and solve one-variable equations and inequalities (6.EE.B.5–6.EE.B.8) Represent and analyze quantitative relationships between dependent and independent variables (6.EE.C.9)	Expressions and Equations: Equations and Inequalities	4	6

Grade 8 based on Previous Grade's Learning Standards

Content Domain	Major Content Cluster	Reporting Concept	Number of Items	Number of Points
Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems (7.RP.A.1–7.RP.A.3)	Ratios and Proportional Relationships	9	9
The Number System: Signed Numbers	Apply and extend previous understandings of operations with fractions to rational numbers (7.NS.A.1–7.NS.A.3)	The Number System: Fractions	6	6
Expressions and Equations	Use properties of operations to generate equivalent expressions (7.EE.A.1–7.EE.A.2) Solve real-life and mathematical problems using numerical and algebraic expressions and equations (7.EE.B.3–7.EE.B.4)	Expressions and Equations	5	8

Algebra I based on Grade 8 Learning Standards

Content Domain	Major Content Cluster	Reporting Concept	Number of Items	Number of Points
Expressions and Equations	Work with radicals and integer exponents (8.EE.A.1– 8.EE.A.4) Understand the connections between proportional relationships, lines and linear equations (8.EE.B.5–8.EE.B.6)	Expressions and Equations: Radicals, Integer Exponents, Proportional Relationships, Lines, and Linear Equations	7	7
Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations (8.EE.C.7–8.EE.C.8 & 8.EE.C.Int.1)	Expressions and Equations: Linear Equations and System of Two Linear Equations	5	6
Functions	Define, evaluate, and compare functions (8.F.A.1–8.F.A.3)	Functions	6	6
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software (8.G.A.1–8.G.A.4) Understand and apply the Pythagorean Theorem (8.G.B.7–8.G.B.8) Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres (8.G.C.9)	Geometry	5	6

Geometry based on Grade 8 Learning Standards

Content Domain	Major Content Cluster	Reporting Concept	Number of Items	Number of Points
Expressions and Equations	Work with radicals and integer exponents (8.EE.A.1–8.EE.A.4) Understand the connections between proportional relationships, lines, and linear equations (8.EE.B.5–8.EE.B.6)	Expressions and Equations: Radicals, Integer Exponents, Proportional Relationships, Lines, and Linear Equations	6	6
Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations (8.EE.C.7–8.EE.C.8 & 8.EE.C.Int.1)	Expressions and Equations: Linear Equations and System of Two Linear Equations	4	6
Functions	Define, evaluate, and compare functions (8.F.A.1– 8.F.A.3)	Functions	6	6
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software (8.G.A.1–8.G.A.4) Understand and apply the Pythagorean Theorem (8.G.B.7–8.G.B.8) Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres (8.G.C.9)	Geometry	8	10

Algebra II based on Algebra I Learning Standards

Content Domain	Major Content Cluster	Reporting Concept	Number of Items	Number of Points
Seeing Structure in Expressions	Interpret the structure of expressions (A-SSE.A.1–A-SSE.A.2)	Seeing Structure in Expressions	5	7
Polynomials and Equations	Perform arithmetic operations on polynomials (A-APR.A.1) Create equations that describe numbers or relationships (A-CED.A.3–A-CED.A.4)	Polynomials and Equations	6	6
Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable (A-REI.B.3–A-REI.B.4) Represent and solve equations and inequalities graphically (A-REI.D.10–A-REI.D.12)	Reasoning with Equations and Inequalities	6	6
Interpreting Functions	Understand the concept of a function and use function notation (F-IF.A.1–F-IF.A.2 and F-IF.A.Int.1) Interpret functions that arise in applications in terms of the context (F-IF.B.4–F-IF.B.6)	Interpreting Functions	7	9