Standards Correlated to **Targeted Mathematics Intervention Level 3 11129**

**New York State P-12 Common Core Learning Standards**

**Grade 3**

**Mathematics**

<table>
<thead>
<tr>
<th>STRAND / DOMAIN</th>
<th>NY.CC.3.OA.</th>
<th>Category / Cluster</th>
<th>Standard</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Operations and Algebraic Thinking</strong></td>
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<tr>
<td></td>
<td></td>
<td>Represent and solve problems involving multiplication and division.</td>
<td>3.OA.1.</td>
<td>Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 x 7.</td>
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<td><strong>Correlated Lessons:</strong></td>
<td></td>
<td><strong>Multiplication Facts Page 88 Objective 12:</strong> Understand the relationship between multiplication and addition.</td>
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<td>3.OA.2.</td>
<td>Interpret whole-number quotients of whole numbers, e.g., interpret 56 / 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 / 8.</td>
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<td><strong>Correlated Lessons:</strong></td>
<td></td>
<td><strong>Fundamentals of Division Page 93 Objective 15:</strong> Use vocabulary related to division to understand the operation of division.</td>
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<td>3.OA.5.</td>
<td>Understand properties of multiplication and the relationship between multiplication and division.</td>
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<td>Apply properties of operations as strategies to multiply and divide. Examples: If 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. (Commutative property of multiplication.) 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30.</td>
</tr>
</tbody>
</table>
(Associative property of multiplication.) Knowing that \(8 \times 5 = 40\) and \(8 \times 2 = 16\), one can find \(8 \times 7\) as \(8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56\). (Distributive property.)

Correlated Lessons:
**Fundamentals of Division Page 93 Objective 14:** Understand the relationship between division, multiplication, and subtraction and the principal of the commutative property of multiplication.

**More Multiplication Page 81 Objective 11:** Recognize and understand the multiplication tables for 3 and 5 by using arrays and the commutative property of multiplication.

**STANDARD 3.OA.6.** Understand division as an unknown-factor problem. For example, find \(32 / 8\) by finding the number that makes 32 when multiplied by 8.

Correlated Lessons:
**Division Practice Page 100 Objective 17:** Check answers to division problems using multiplication.

**Fundamentals of Division Page 93 Objective 14:** Understand the relationship between division, multiplication, and subtraction and the principal of the commutative property of multiplication.

**CATEGORY / CLUSTER**

**STANDARD 3.OA.7.** Multiply and divide within 100.

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that \(8 \times 5 = 40\), one knows \(40 / 5 = 8\)) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Correlated Lessons:
**Division Practice Page 100 Objective 16:** Practice dividing two-digit by one-digit numbers.

**Division Practice Page 100 Objective 17:** Check answers to division problems using multiplication.
Fundamentals of Division Page 93 Objective 14: Understand the relationship between division, multiplication, and subtraction and the principal of the commutative property of multiplication.

Fundamentals of Division Page 93 Objective 15: Use vocabulary related to division to understand the operation of division.

More Multiplication Page 81 Objective 11: Recognize and understand the multiplication tables for 3 and 5 by using arrays and the commutative property of multiplication.

Multiplication Facts Page 88 Objective 13: Understand how to double or halve known multiplication facts.

**CATEGORY / CLUSTER**
Solve problems involving the four operations, and identify and explain patterns in arithmetic.

**STANDARD**
3.OA.9.
Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

Correlated Lessons:
**Patterns and Sequences Page 130 Objective 23:** Recognize and extend number patterns and sequences.

**STRAND / DOMAIN**
NY.CC.3.NBT. Number and Operations in Base Ten

**CATEGORY / CLUSTER**
Use place value understanding and properties of operations to perform multi-digit arithmetic.

**STANDARD**
3.NBT.1.
Use place value understanding to round whole numbers to the nearest 10 or 100.

Correlated Lessons:
**Rounding to the Nearest 100 Page 70 Objective 09:** Read and write the vocabulary of estimation and rounding by rounding positive integers less than 1,000 to the nearest 10 or 100.
STANDARD  3.NBT.2.  Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Correlated Lessons:
Methods of Addition Page 58 Objective 04: Reason about numbers by developing and refining methods of addition for two whole numbers less than 1,000.

Methods of Addition Page 58 Objective 05: Use informal pencil-and-paper procedures to support, record, or explain addition using the adjusting method, short-column method, and partitioning method.

Methods of Subtraction Page 63 Objective 06: Use pencil-and-paper methods to support, record, or explain subtraction using the adjusting method, partitioning method, and short-column method for subtraction of two whole numbers less than 1,000.

Methods of Subtraction Page 63 Objective 07: Practice regrouping and expanded notation to solve subtraction problems.

STANDARD  3.NF.1.  Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.

Correlated Lessons:
Comparing Fractions Page 118 Objective 21: Compare and order commonly used fractions using the symbols <, =, and >.

Comparing and Ordering Fractions Page 123 Objective 22: Recognize and name unit fractions, simple equivalence of fractions, and the position of fractions on a number line.
Finding Fractions of Shapes Page 105 Objective 18:
Find simple fractions of shapes.

Finding Fractions of Shapes Page 105 Objective 19:
Identify two fractions with a total of one.

Fractions as a Part of a Set Page 111 Objective 20:
Name and recognize fractions as parts of a whole,
parts of a group, and fractional parts of a set.

STANDARD 3.NF.2.
Understand a fraction as a number on the number line;
represent fractions on a number line diagram.

EXPECTATION 3.NF.2.a.
Represent a fraction 1/b on a number line diagram by
defining the interval from 0 to 1 as the whole and
partitioning it into b equal parts. Recognize that each
part has size 1/b and that the endpoint of the part based
at 0 locates the number 1/b on the number line.

Correlated Lessons:
Comparing and Ordering Fractions Page 123
Objective 22: Recognize and name unit fractions,
simple equivalence of fractions, and the position of
fractions on a number line.

EXPECTATION 3.NF.2.b.
Represent a fraction a/b on a number line diagram by
marking off a lengths 1/b from 0. Recognize that the
resulting interval has size a/b and that its endpoint
locates the number a/b on the number line.

Correlated Lessons:
Comparing and Ordering Fractions Page 123
Objective 22: Recognize and name unit fractions,
simple equivalence of fractions, and the position of
fractions on a number line.

STANDARD 3.NF.3.
Explain equivalence of fractions in special cases, and
compare fractions by reasoning about their size.

EXPECTATION 3.NF.3.a.
Understand two fractions as equivalent (equal) if they
are the same size, or the same point on a number line.

Correlated Lessons:
Comparing and Ordering Fractions Page 123
Objective 22: Recognize and name unit fractions,
simple equivalence of fractions, and the position of
fractions on a number line.

EXPECTATION 3.NF.3.b. Recognize and generate simple equivalent fractions, e.g., \(1/2 = 2/4, 4/6 = 2/3\). Explain why the fractions are equivalent, e.g., by using a visual fraction model.

Correlated Lessons:
Comparing and Ordering Fractions Page 123
Objective 22: Recognize and name unit fractions, simple equivalence of fractions, and the position of fractions on a number line.

EXPECTATION 3.NF.3.c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form \(3 = 3/1\); recognize that \(6/1 = 6\); locate \(4/4\) and 1 at the same point of a number line diagram.

Correlated Lessons:
Comparing Fractions Page 118 Objective 21: Compare and order commonly used fractions using the symbols \(<, =, and >.\)

Comparing and Ordering Fractions Page 123
Objective 22: Recognize and name unit fractions, simple equivalence of fractions, and the position of fractions on a number line.

Finding Fractions of Shapes Page 105 Objective 18: Find simple fractions of shapes.

Finding Fractions of Shapes Page 105 Objective 19: Identify two fractions with a total of one.

Fractions as a Part of a Set Page 111 Objective 20: Name and recognize fractions as parts of a whole, parts of a group, and fractional parts of a set.

EXPECTATION 3.NF.3.d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols \(>, =, or <\), and justify the conclusions, e.g., by using a visual fraction model.
Correlated Lessons:
Comparing Fractions Page 118 Objective 21: Compare and order commonly used fractions using the symbols <, =, and >.

STRAND / DOMAIN NY.CC.3.MD. Measurement and Data
CATEGORY / CLUSTER
STANDARD 3.MD.1. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Correlated Lessons:
Exploring Time and Temperature Page 160 Objective 28: Use, read, and write vocabulary related to time to read the time from a digital clock and an analog clock to the nearest minute.

STANDARD 3.MD.2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

Correlated Lessons:
Measuring Capacity Page 148 Objective 27: Use vocabulary related to capacity to read a scale to the nearest marked division.

STANDARD 3.MD.3. Represent and interpret data.
Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

Correlated Lessons:
Creating and Analyzing Bar Graphs Page 201
Objective 37: Choose an appropriate scale to represent a set of data on a bar graph.

Creating and Analyzing Bar Graphs; Collecting and Using Data; Interpreting Data Page 201, 208, 213
Objective 36: Solve a problem and create a bar graph by conducting a survey, collecting, organizing, representing, and interpreting data.

Creating and Analyzing Pictographs; Interpreting Data Page 195, 213 Objective 35: Collect, represent, discuss, and predict from data represented in pictographs and frequency tables.

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<tr>
<th>CATEGORY / CLUSTER</th>
<th>STANDARD</th>
<th>EXPECTATION</th>
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<tbody>
<tr>
<td>Geometric measurement: understand concepts of area and relate area to multiplication and to addition.</td>
<td>3.MD.7.</td>
<td>Relate area to the operations of multiplication and addition.</td>
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<tr>
<td>Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.</td>
<td>3.MD.7.b.</td>
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</tbody>
</table>

Correlated Lessons:
More Multiplication Page 81 Objective 11: Recognize and understand the multiplication tables for 3 and 5 by using arrays and the commutative property of multiplication.

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<tr>
<td>Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.</td>
<td>3.MD.8.</td>
</tr>
<tr>
<td>Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.</td>
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Correlated Lessons:
Finding Perimeter Page 141 Objective 26: Find the
perimeter of a polygon with integer sides.

Geometry
Reason with shapes and their attributes.

Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.

Correlated Lessons:
Comparing and Ordering Fractions Page 123
Objective 22: Recognize and name unit fractions, simple equivalence of fractions, and the position of fractions on a number line.

Finding Fractions of Shapes Page 105 Objective 18: Find simple fractions of shapes.

Finding Fractions of Shapes Page 105 Objective 19: Identify two fractions with a total of one.

Fractions as a Part of a Set Page 111 Objective 20: Name and recognize fractions as parts of a whole, parts of a group, and fractional parts of a set.
Standards Correlated to Targeted Mathematics Intervention Level 4 11130

New York State P-12 Common Core Learning Standards

Grade 4
Mathematics

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<th>Operations and Algebraic Thinking</th>
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<tbody>
<tr>
<td>CATEGORY / CLUSTER</td>
<td>4.OA.2.</td>
<td>Use the four operations with whole numbers to solve problems.</td>
</tr>
<tr>
<td>STANDARD</td>
<td>4.OA.2.</td>
<td>Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.</td>
</tr>
</tbody>
</table>

Correlated Lessons:
Practicing Division; Division Word Problems Page 63, 70 Objective 05: Practice dividing two-digit by one-digit numbers with and without remainders.

| STANDARD                         | 4.OA.3.      | Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. |

Correlated Lessons:
Algebraic Models; Algebraic Thinking and Equations Page 123, 130 Objective 014: Create diagrams/models to turn problem-solving situations into expressions and equations using variables for the unknown.

Practicing Division; Division Word Problems Page 63, 70 Objective 05: Practice dividing two-digit by
one-digit numbers with and without remainders.

Generate and analyze patterns.

Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.

Correlated Lessons:
Number Patterns Page 118 Objective 013: Students describe relationships and patterns between sets of data using graphic organizers such as lists, tables, charts, and diagrams.

Shape Patterns; Recognizing Number Sequences Page 105, 111 Objective 011: Recognize, explain, generalize, extend, and predict number patterns and relationships.

Generalize place value understanding for multi-digit whole numbers.

Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Correlated Lessons:
Place Value and Ordering Numbers Page 45 Objective 01: Use place value to sort numbers into ascending order.

Place Value and Ordering Numbers Page 45 Objective 02: Read and write numbers with six digits or fewer.

Use place value understanding and properties of
operations to perform multi-digit arithmetic.

Fluently add and subtract multi-digit whole numbers using the standard algorithm.

Correlated Lessons:

Methods of Addition; Adding and Subtracting Fractions; Adding and Subtracting Decimals Page 51, 88, 93 Objective 03: Use algorithms for addition (including short-column addition) of multidigit numbers, including decimals and fractions.

Methods of Subtraction; Adding and Subtracting Fractions; Adding and Subtracting Decimals Page 58, 88, 93 Objective 04: Use multiple algorithms to subtract multidigit numbers, including decimals and fractions.

Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Correlated Lessons:

Practicing Division; Division Word Problems Page 63, 70 Objective 05: Practice dividing two-digit by one-digit numbers with and without remainders.

Number and Operations--Fractions

Extend understanding of fraction equivalence and ordering.

Explain why a fraction a/b is equivalent to a fraction (n x a)/(n x b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

Correlated Lessons:

Equivalent Fractions Page 81 Objective 08:
Recognize the equivalence of simple fractions.

**STANDARD 4.NF.2.** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Correlated Lessons:
**Equivalent Fractions Page 81 Objective 09:** Recognize whether fractions are greater than or less than 1/2.

**CATEGORY / CLUSTER**

**STANDARD 4.NF.3.** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

**EXPECTATION 4.NF.3.a.** Understand a fraction a/b with a > 1 as a sum of fractions 1/b.

Correlated Lessons:
**Methods of Addition; Adding and Subtracting Fractions; Adding and Subtracting Decimals Page 51, 88, 93 Objective 03:** Use algorithms for addition (including short-column addition) of multidigit numbers, including decimals and fractions.

**Methods of Subtraction; Adding and Subtracting Fractions; Adding and Subtracting Decimals Page 58, 88, 93 Objective 04:** Use multiple algorithms to subtract multidigit numbers, including decimals and fractions.

**STANDARD 4.NF.4.** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

**EXPECTATION 4.NF.4.a.** Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).
Correlated Lessons:
**Equivalent Fractions Page 81 Objective 08:** Recognize the equivalence of simple fractions.

**Equivalent Fractions Page 81 Objective 09:** Recognize whether fractions are greater than or less than 1/2.

**CATEGORY / CLUSTER**

**STANDARD** 4.NF.7.

Understand decimal notation for fractions, and compare decimal fractions.

**STANDARD** 4.MD.2.

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

**STANDARD** 4.MD.3.

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example,
find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Correlated Lessons:
Perimeter and Area Page 141 Objective 017: Identify lengths and find the perimeter and area of a polygon.

CATEGORY / CLUSTER
STANDARD 4.MD.5.

Expectation 4.MD.5.a.
An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

Correlated Lessons:
Naming Angles Page 171 Objective 021: Identify acute, right, and obtuse angles.


Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

Correlated Lessons:
Identifying Parallel and Perpendicular Lines Page 178 Objective 022: Identify parallel and perpendicular lines.

Namings Angles Page 171 Objective 021: Identify acute, right, and obtuse angles.

Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
Correlated Lessons:
Symmetry Page 190 Objective 026: Use the term symmetry and draw an axis of symmetry.
Standards Correlated to **Targeted Mathematics Intervention Level 5 11131**

**New York State P-12 Common Core Learning Standards**

**Grade 5**

**Mathematics**

**STRAND / DOMAIN** NY.CC.5.NBT. Number and Operations in Base Ten

**CATEGORY / CLUSTER** Understand the place value system.

**STANDARD** 5.NBT.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

Correlated Lessons:
- **Identifying Place Value Page 45 Objective 01:** Identify the place value and read and write numbers with seven digits or less.

**STANDARD** 5.NBT.3. Read, write, and compare decimals to thousandths.

**EXPECTATION** 5.NBT.3.b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Correlated Lessons:
- **Addition and Subtraction Using Money; Ordering Decimals Page 63, 70 Objective 05:** Order decimals and add and subtract decimals using various amounts of money.

**CATEGORY / CLUSTER** Perform operations with multi-digit whole numbers and with decimals to hundredths.

**STANDARD** 5.NBT.5. Fluently multiply multi-digit whole numbers using the standard algorithm.

Correlated Lessons:
- **Using Multiplication Facts for Complex Problems Page 51 Objective 02:** Select an appropriate strategy
for solving multiplication problems.

**Using Multiplication Facts for Complex Problems**

**Page 51 Objective 03:** Apply the distributive property to multiplication problems.

**STANDARD 5.NBT.7.**

Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Correlated Lessons: **Addition and Subtraction Using Money; Ordering Decimals Page 63, 70 Objective 05:** Order decimals and add and subtract decimals using various amounts of money.

**Mental Strategies for Multiplication and Division of Decimals Page 75 Objective 07:** Multiply, double, and halve decimals with one or two decimal places.

**STRAND / DOMAIN NY.CC.5.MD.**

**CATEGORY / CLUSTER**

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

**STANDARD 5.MD.4.**

Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

Correlated Lessons: **Calculating Volumes Page 153 Objective 22:** Know and use formulas for finding the volume of cubes, rectangular prisms, and cylinders and use correct units, including with real-world problems.

**STANDARD 5.MD.5.**

Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

**EXPECTATION 5.MD.5.a.**

Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base.
Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

Correlated Lessons:
*Calculating Volumes Page 153 Objective 22: Know and use formulas for finding the volume of cubes, rectangular prisms, and cylinders and use correct units, including with real-world problems.*

**EXPECTATION 5.MD.5.b.**

Apply the formulas \( V = l \times w \times h \) and \( V = b \times h \) for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

Correlated Lessons:
*Calculating Volumes Page 153 Objective 22: Know and use formulas for finding the volume of cubes, rectangular prisms, and cylinders and use correct units, including with real-world problems.*

**STRAND / DOMAIN NY.CC.5.G.**

**CATEGORY / CLUSTER**

Graph points on the coordinate plane to solve real-world and mathematical problems.

**STANDARD 5.G.1.**

Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

Correlated Lessons:
*Coordinate Grids; Identifying Parallel and Perpendicular Lines Page 160, 165 Objective 23: Plot and read coordinates on a grid.*

**STANDARD 5.G.2.**

Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the
context of the situation.

Correlated Lessons:
*Coordinate Grids; Identifying Parallel and Perpendicular Lines Page 160, 165*
Objective 23: Plot and read coordinates on a grid.
Standards Correlated to **Targeted Mathematics Intervention Level 6 11132**

**New York State P-12 Common Core Learning Standards**

**Grade 6**

**Mathematics**

**STRAND / DOMAIN** NY.CC.6.RP. **Ratios and Proportional Relationships**

**CATEGORY / CLUSTER**

**STANDARD** 6.RP.3.

**EXPECTATION** 6.RP.3.a.

- Understand ratio concepts and use ratio reasoning to solve problems.
- Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

**Correlated Lessons:**

- *Ratios and Proportions Page 130 Objective 17: Solve proportions using equivalent fractions.*

**STRAND / DOMAIN** NY.CC.6.NS. **The Number System**

**CATEGORY / CLUSTER**

**STANDARD** 6.NS.1.

- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for \((2/3) \div (3/4)\) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that \((2/3) \div (3/4) = 8/9\) because 3/4 of 8/9 is 2/3. (In general, \((a/b) \div (c/d) = ad/bc\).) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2
Correlated Lessons:

**Multiplying Fractions and Decimals; Dividing Fractions and Decimals** Page 70, 75 Objective 07: Multiply and divide simple fractions and decimals.

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<th>CATEGORY / CLUSTER</th>
<th>STANDARD</th>
<th>EXPECTATION</th>
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<tbody>
<tr>
<td><strong>Compute fluently with multi-digit numbers and find common factors and multiples.</strong></td>
<td>6.NS.3.</td>
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<tr>
<td>Correlated Lessons:</td>
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<tr>
<td><strong>Adding and Subtracting Decimals</strong> Page 63 Objective 05: Add and subtract decimal numbers with up to three digits.</td>
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<td><strong>Multiplying Fractions and Decimals</strong> Page 70 Objective 06: Draw fractional representations of multiplication problems involving fractions and decimals.</td>
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<tr>
<td><strong>Multiplying Fractions and Decimals; Dividing Fractions and Decimals</strong> Page 70, 75 Objective 07: Multiply and divide simple fractions and decimals.</td>
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<tr>
<td><strong>Apply and extend previous understandings of numbers to the system of rational numbers.</strong></td>
<td>6.NS.6.</td>
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<tr>
<td>Correlated Lessons:</td>
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<tr>
<td><strong>Grid Coordinates</strong> Page 148 Objective 20: Read grid coordinates and plot coordinates on a grid.</td>
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<tr>
<td><strong>Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a</strong></td>
<td>6.NS.6.c.</td>
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</tbody>
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square mi?
Correlated Lessons:
Grid Coordinates Page 148 Objective 20: Read grid coordinates and plot coordinates on a grid.

STANDARD 6.NS.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

STANDARD / DOMAIN NY.CC.6.EE. Expressions and Equations
CATEGORY / CLUSTER Apply and extend previous understandings of arithmetic to algebraic expressions.
STANDARD 6.EE.1. Write and evaluate numerical expressions involving whole-number exponents.

Correlated Lessons:
Exponents; Evaluating Expressions with Substitution Page 81, 88 Objective 08: Understand exponents as repeated multiplication, and solve problems with exponents.

STANDARD 6.EE.2. Write, read, and evaluate expressions in which letters stand for numbers.
EXPECTATION 6.EE.2.a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as 5 - y.

Correlated Lessons:
Writing Algebraic Expressions Page 100 Objective 12: Describe and find relationships and patterns using words, tables, symbols, variables, expressions, or equations.

EXPECTATION 6.EE.2.c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the
conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.

Correlated Lessons:

**Evaluating Expressions with Substitution Page 88**

Objective 09: Use substitution to evaluate algebraic expressions.

**STANDARD 6.EE.3.** Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3 (2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6 (4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.

Correlated Lessons:

**Simplifying Expressions Page 93 Objective 11:** Combine like terms to simplify algebraic expressions.

**CATEGORY / CLUSTER**

**REASON ABOUT AND SOLVE ONE-VARIABLE EQUATIONS AND INEQUALITIES.**

**STANDARD 6.EE.5.** Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Correlated Lessons:

**One-Step Linear Equations; Two-Step Linear Equations; Real-World Algebra Page 105, 111, 118**

Objective 13: Understand that to solve problems you have to do the same thing on both sides of the equal sign.

Objective 14: Solve simple linear equations, including real-world problems.

**STANDARD 6.EE.6.** Use variables to represent numbers and write expressions
when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

Correlated Lessons:
Writing Algebraic Expressions Page 100 Objective 12: Describe and find relationships and patterns using words, tables, symbols, variables, expressions, or equations.

STANDARD 6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form \( x + p = q \) and \( px = q \) for cases in which \( p, q \) and \( x \) are all nonnegative rational numbers.

Correlated Lessons:
One-Step Linear Equations; Two-Step Linear Equations; Real-World Algebra Page 105, 111, 118 Objective 14: Solve simple linear equations, including real-world problems.

STANDARD / DOMAIN NY.CC.6.G. Geometry
CATEGORY / CLUSTER

Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

Correlated Lessons:
Calculating Perimeter and Area of Triangles Page 160 Objective 22: Calculate perimeter and area of various types of triangles.

Comparing Perimeter and Area of Rectangles Page 153 Objective 21: Develop understanding of perimeter and area, and use literal formulas for rectangles.

STANDARD 6.G.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying
the edge lengths of the prism. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

Correlated Lessons:
**Volume Page 165 Objective 23: Use a volume formula of a rectangular prism given its dimensions.**

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**STRAND / DOMAIN** NY.CC.6.SP.
**Statistics and Probability**

**CATEGORY / CLUSTER** Develop understanding of statistical variability.

**STANDARD** 6.SP.3.

Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

Correlated Lessons:
**Mean, Mode, Median, and Range Page 195 Objective 29: Find the mode, median, mean, and range of a set of data.**

**CATEGORY / CLUSTER** Summarize and describe distributions.

**STANDARD** 6.SP.4.

Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

Correlated Lessons:
**Bar Graphs Page 201 Objective 30: Draw a bar graph to solve given problems, and read and interpret the information.**

**Line Graphs Page 213 Objective 32: Collect and organize data on a line graph, and interpret the meaning of data in terms of the situation depicted by the graph.**

**STANDARD** 6.SP.5.

Summarize numerical data sets in relation to their context, such as by:

**EXPECTATION** 6.SP.5.c.

Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data
were gathered.

Correlated Lessons:
Mean, Mode, Median, and Range Page 195 Objective 29: Find the mode, median, mean, and range of a set of data.
Standards Correlated to **Targeted Mathematics Intervention Level 7**

**New York State P-12 Common Core Learning Standards**

**Grade 7**

**Mathematics**

<table>
<thead>
<tr>
<th>STRAND / DOMAIN</th>
<th>NY.CC.7.RP.</th>
<th>Ratios and Proportional Relationships</th>
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</thead>
<tbody>
<tr>
<td>CATEGORY / CLUSTER</td>
<td>7.RP.1.</td>
<td>Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.</td>
</tr>
</tbody>
</table>

**Correlated Lessons:**

- Lines on a Coordinate Plane; Graphing Algebraic Patterns on a Coordinate Plane Page 123, 130
- Objective 17: Recognize that unit rate is the slope of a linear equation but not all equations are linear.

<table>
<thead>
<tr>
<th>STANDARD</th>
<th>7.RP.2.</th>
<th>Recognize and represent proportional relationships between quantities.</th>
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<tbody>
<tr>
<td>EXPECTATION</td>
<td>7.RP.2.c.</td>
<td>Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.</td>
</tr>
</tbody>
</table>

**Correlated Lessons:**

- Ordering Rational and Irrational Numbers; Multiplying and Dividing Rational Numbers Page 58, 70
- Objective 05: Find and compare ratios such as unit price.
- Solving One-Step Linear Equations; Solving Multistep Linear Equations Page 88, 93 Objective 12: Determine
and solve equations given problem situations.

STRAND / DOMAIN NY.CC.7.NS. The Number System

CATEGORY / CLUSTER
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

STANDARD 7.NS.1.
Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

EXPECTATION 7.NS.1.b.
Understand \( p + q \) as the number located a distance \(|q|\) from \( p \), in the positive or negative direction depending on whether \( q \) is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

Correlated Lessons:
Adding and Subtracting Rational Numbers;
Multiplying and Dividing Rational Numbers Page 63, 70 Objective 06: Add, subtract, multiply, and divide positive and negative rational numbers.

EXPECTATION 7.NS.1.c.
Understand subtraction of rational numbers as adding the additive inverse, \( p - q = p + (-q) \). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

Correlated Lessons:
Adding and Subtracting Rational Numbers;
Multiplying and Dividing Rational Numbers Page 63, 70 Objective 06: Add, subtract, multiply, and divide positive and negative rational numbers.

EXPECTATION 7.NS.1.d.
Apply properties of operations as strategies to add and subtract rational numbers.

Correlated Lessons:
Adding and Subtracting Rational Numbers;
Multiplying and Dividing Rational Numbers Page 63, 70 Objective 06: Add, subtract, multiply, and divide positive and negative rational numbers.
STANDARD 7.NS.2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

EXPECTATION 7.NS.2.a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

Correlated Lessons:
Adding and Subtracting Rational Numbers; Multiplying and Dividing Rational Numbers Page 63, 70 Objective 06: Add, subtract, multiply, and divide positive and negative rational numbers.

EXPECTATION 7.NS.2.c. Apply properties of operations as strategies to multiply and divide rational numbers.

Correlated Lessons:
Adding and Subtracting Rational Numbers; Multiplying and Dividing Rational Numbers Page 63, 70 Objective 06: Add, subtract, multiply, and divide positive and negative rational numbers.

STANDARD 7.NS.3. Solve real-world and mathematical problems involving the four operations with rational numbers.

Correlated Lessons:
Multiplying and Dividing Rational Numbers; Solving One-Step Linear Inequalities; Solving Multistep Linear Inequalities Page 70, 100, 105 Objective 07: Use percents in problem situations.

STRAND / DOMAIN NY.CC.7.EE. Expressions and Equations

CATEGORY / CLUSTER

STANDARD 7.EE.3. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

STANDARD 7.EE.3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of
answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

Correlated Lessons:
Adding and Subtracting Rational Numbers; 
Multiplying and Dividing Rational Numbers Page 63, 70 Objective 06: Add, subtract, multiply, and divide positive and negative rational numbers.

Rational and Irrational Numbers; Ordering Rational and Irrational Numbers Page 51, 58 Objective 03: Graph rational numbers on a number line, and write rational numbers in equivalent forms.
Standards Correlated to Targeted Mathematics Intervention Level 8 11134

New York State P-12 Common Core Learning Standards

Grade 8

Mathematics

<table>
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<tr>
<th>STRAND / DOMAIN</th>
<th>NY.CC.8.NS. The Number System</th>
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<tbody>
<tr>
<td>CATEGORY / CLUSTER</td>
<td>Know that there are numbers that are not rational, and approximate them by rational numbers.</td>
</tr>
<tr>
<td>STANDARD 8.NS.1.</td>
<td>Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.</td>
</tr>
</tbody>
</table>

Correlated Lessons:
- Identifying, Comparing, and Ordering Rational and Irrational Numbers Page 51 Objective 03: Classify numbers as integer, rational, or irrational.

<table>
<thead>
<tr>
<th>STRAND / DOMAIN</th>
<th>NY.CC.8.EE. Expressions and Equations</th>
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<tbody>
<tr>
<td>CATEGORY / CLUSTER</td>
<td>Work with radicals and integer exponents.</td>
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<tr>
<td>STANDARD 8.EE.3.</td>
<td>Use numbers expressed in the form of a single digit times a whole-number power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger.</td>
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</table>

Correlated Lessons:
- Working with Exponents and Scientific Notation Page 45 Objective 02: Write a whole number or decimal in scientific notation.
STANDARD 8.EE.4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Correlated Lessons:
Working with Exponents and Scientific Notation Page 45 Objective 02: Write a whole number or decimal in scientific notation.

CATEGORY / CLUSTER

STANDARD 8.EE.5. Understand the connections between proportional relationships, lines, and linear equations.

Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Correlated Lessons:
Generating Multiple Representations of Linear Equations Page 130 Objective 16: Understand how to represent the same situation both algebraically and graphically.

Graphing Linear Equations; Interpreting Linear Equation Graphs Page 118, 123 Objective 15: Graph linear equations and interpret the graphs.

STANDARD 8.EE.6. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

Correlated Lessons:
Finding the Slope of a Line Page 135 Objective 17: Graph linear functions, noting that the vertical change per unit of horizontal change is always the same.
CLUSTER

simultaneous linear equations.

STANDARD 8.EE.7.

Solve linear equations in one variable.

EXPECTATION 8.EE.7.a.

Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form \( x = a, \ a = a, \) or \( a = b \) results (where \( a \) and \( b \) are different numbers).

Correlated Lessons:
Solving Single and Multistep Linear Equations Page 81 Objective 10: Solve single-step and multistep equations.

EXPECTATION 8.EE.7.b.

Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Correlated Lessons:
Solving Single and Multistep Linear Equations Page 81 Objective 10: Solve single-step and multistep equations.

STANDARD 8.EE.8.

Analyze and solve pairs of simultaneous linear equations.

EXPECTATION 8.EE.8.a.

Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

Correlated Lessons:
Solving Systems of Equations Page 93 Objective 12: Solve systems of linear equations with two variables using substitution or with graphs.

EXPECTATION 8.EE.8.b.

Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, \( 3x + 2y = 5 \) and \( 3x + 2y = 6 \) have no solution because \( 3x + 2y \) cannot simultaneously be 5 and 6.

Correlated Lessons:
Solving Systems of Equations Page 93 Objective 12: Solve systems of linear equations with two variables
### Functions

**Strand / Domain**
NY.CC.8.F.

**Category / Cluster**
Functions

**Standard**
8.F.3.

Interpret the equation \( y = mx + b \) as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function \( A = s^2 \) giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.

**Correlated Lessons:**
- Graphing a Line in Slope-Intercept Form (\( y = mx + b \))
- Page 141 Objective 18: Write linear equations and express them in slope-intercept form.

**Use functions to model relationships between quantities.**

**Strand / Domain**
NY.CC.8.G.

**Category / Cluster**
Geometry

**Standard**
8.F.4.

Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two \((x, y)\) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

**Correlated Lessons:**
- Graphing Linear Equations; Interpreting Linear Equation Graphs Page 118, 123 Objective 15: Graph linear equations and interpret the graphs.

**Graphing a Line in Slope-Intercept Form (\( y = mx + b \))**
- Page 141 Objective 18: Write linear equations and express them in slope-intercept form.

**Translating Descriptions into Expressions;**
- Translating Descriptions into Equations Page 105, 111 Objective 14: Translate descriptions into algebraic expressions, equations, and inequalities.
Understand congruence and similarity using physical models, transparencies, or geometry software. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

Correlated Lessons:
- Working with Reflections, Rotations, Transformations, and Dilations Page 153 Objective 20: Plot simple figures on coordinate graphs and determine how those images reflect, rotate, translate, and dilate.

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.

Correlated Lessons:
- Determining Angle Measures When Parallel Lines Are Cut by a Transversal Page 165 Objective 22: Calculate the missing angle measurements when given two parallel lines cut by a transversal.
- Determining Missing Angles in Triangles and Quadrilaterals Page 171 Objective 23: Use an equation to determine the missing angle in a triangle and quadrilateral.

Understand and apply the Pythagorean Theorem.

Explain a proof of the Pythagorean Theorem and its converse.

Correlated Lessons:
- Applying the Pythagorean Theorem Page 178 Objective 24: Know and understand the Pythagorean theorem and its converse, and use it to find the length of the missing side of a right triangle and the lengths of other line segments.
STANDARD 8.G.7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

Correlated Lessons:
Applying the Pythagorean Theorem Page 178
Objective 24: Know and understand the Pythagorean theorem and its converse, and use it to find the length of the missing side of a right triangle and the lengths of other line segments.

STRAND / DOMAIN NY.CC.8.SP. Statistics and Probability
CATEGORY / CLUSTER Investigate patterns of association in bivariate data.
STANDARD 8.SP.1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

Correlated Lessons:
Generating and Interpreting Scatter Plots and Lines of Best Fit Page 208 Objective 29: Plot the values of quantities whose ratios are always the same and fit a line to the plot.

STANDARD 8.SP.2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

Correlated Lessons:
Generating and Interpreting Scatter Plots and Lines of Best Fit Page 208 Objective 29: Plot the values of quantities whose ratios are always the same and fit a line to the plot.