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# Geometry

## Essential Skill: Know the formulas for the area and circumference of a circle and use them to solve problems.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Display a round clock. Ask: *How can we find the clock's area and circumference?* | **Circles Movie**<br>Discover how to determine a circle's diameter, radius, and center, and use them to find its circumference and area. | **Make-a-Movie**<br>Produce a home makeover show where the host finds the area and circumference of a circular rug with a radius of 6 feet. | **Challenge**<br>Use critical thinking skills to show what you know about circles | **Pi**<br><br>**Volume of Cylinders** |

## Essential Skill: Solve problems involving angle measures.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Say: *Explain the relationship between* | **Angles Movie**<br>Learn about supplementary and complementary angles. | **Play a Sorting Game**<br>Use what you know about finding angle | **Quiz**<br>What did you learn about angles? | **Geometry** |

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|---|---|---|---|---|
| *complementary and supplementary angles.* | | measurements to sort angles. | | |

## Essential Skill: Solve mathematical problems involving area and volume for two and three-dimensional figures.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment**<br>Find the volume of a rectangular prism. | **Volume of Prisms Movie**<br>Discover how to find the volume of prisms. | **Make-a-Movie**<br>Show how a character can calculate the volume of a tent—a triangular prism. | **Challenge**<br>Use critical thinking to show what you know about prisms. | **Surface Area**<br><br>**Area of Polygons** |

## Essential Skill: Solve problems involving scale drawings of geometric figures.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Show a map of your state.<br>Ask: *How can something* | **Scale Drawing Movie**<br>Learn to scale a drawing so you can create maps, grids, and buildings that are proportional. | **Make-a-Movie**<br>Show the process for enlarging an image that is 4 centimeters tall by 10 centimeters wide | **Quiz**<br>What did you learn about scale drawing? | **Map Skills**<br><br>**Architecture** |

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|---|---|---|---|---|
| *this small accurately represent something as big as our state?* | | onto a billboard that is 3 meters tall by 8 meters wide. | | |

**Essential Skill: Solve problems using the Pythagorean theorem.**

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment**<br>What features do all right triangles have in common? | **Pythagorean Theorem Movie**<br>Learn to use the Pythagorean theorem to find the measurements of a right triangle's hypotenuse and legs. | **Make-a-Movie**<br>Produce a tutorial that uses an example to prove the Pythagorean theorem. | **Quiz**<br>What did you learn about the Pythagorean theorem? | **Types of Triangles**<br><br>**Angles** |

## Expressions and Equations

**Essential Skill: Understand that a number can be substituted for a variable to evaluate an expression.**

| Warm Up | Build Background | Think and Do | Assess | Explore More |
|---|---|---|---|---|

| | | | | Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Display this problem: "Chris needs an extension cord to set up his new video game. How many 2-meter cords will he need to reach 7 meters?"<br>Ask: *How can we write an equation that represents this problem?* | **Equations with Variables Movie**<br>Learn about variables: the x, y, and z of simplifying and solving algebraic equations. | **Make a Concept Map**<br>Diagram the process of isolating and solving for the variable in the equation 5y-13=12. | **Challenge**<br>Use critical thinking to show what you know about solving equations with variables. | **Division**<br><br>**Multiplication** |

## Essential Skill: Solve word problems using inequalities.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment**<br>What is the first step to solve for X in an inequality? | **Graphing and Solving Inequalities Movie**<br>Discover how to graph and solve inequalities. | **Make a Concept Map**<br>Show the process to find x in the inequality 4x - 3 < 17. | **Quiz**<br>What did you learn about graphing and solving inequalities? | **Inequalities**<br><br>**Graphing Linear Equations**<br><br>**Coordinate Plane** |

**Essential Skill: Solve multi-step, real-life and mathematical problems posed with positive and negative rational numbers in any form.**

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment**<br>What is the key to solving for a variable in a two-step equation? | **Two-Step Equations Movie**<br>Walk through the algebraic formula for solving two-step equations. | **Make a Concept Map**<br>Sequence the steps to solve for z in the equation 16 = 5z + 1. | **Challenge**<br>Use critical thinking to show what you know about solving two-step equations. | **Equations with Variables**<br><br>**Distance, Rate, and Time** |

## The Number System

**Essential Skill: Graph an equation on the coordinate system.**

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Ask: *What is a linear equation, and what is it* | **Graphing Linear Equations Movie**<br>Learn how to find trends and predict the | **Make a Concept Map**<br>Identify the steps for finding at least two | **Quiz**<br>What did you learn about graphing a linear equation? | **Slope and Intercept**<br><br>**Graphing** |

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|---|---|---|---|---|
| *used for?* | future by graphing linear equations. | coordinates for the linear equation 14 + 5x = 26. | | **Inequalities** |

## Essential Skill: Evaluate absolute values.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Ask: *When we ask about the absolute value of a number, what do we want to know?* | **Absolute Value Movie**<br>Explore absolute value by using a numberline, determining the distance from zero, and deciding on positive or negative. | **Make-a-Movie**<br>Explain why zero is so important to absolute value. | **Quiz**<br>What did you learn about absolute value numbers? | **Adding and Subtracting Integers** |

## Essential Skill: Find common factors.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Ask: *How do you find the* | **Factoring Movie**<br>Find out what factors and multiplication have | **Play a Sorting Game**<br>Sort numbers based on their common factors. | **Quiz**<br>What did you learn about factoring? | **Prime Numbers**<br><br>**Exponents** |

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|---|---|---|---|---|
| *Greatest Common Factor of two numbers?* | to do with breaking down prime numbers into smaller pieces. | | | |

## Essential Skill: Distinguish between a rational and an irrational number.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Ask: *What is a rational number?* | **Rational and Irrational Numbers Movie**<br>Discover the difference between rational and irrational numbers. | **Make a Concept Map**<br>Contrast rational and irrational numbers. | **Quiz**<br>What did you learn about rational and irrational numbers? | **Converting Fractions to Decimals**<br><br>**Pi** |

## Essential Skill: Convert a mixed number into a fraction.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment**<br>What is the easiest way to convert a mixed number to a fraction? | **Mixed Numbers Movie**<br>Learn how to convert fractions into mixed numbers, and back again. | **Make a Concept Map**<br>Identify the steps for converting an improper fraction into a mixed number. | **Quiz**<br>What did you learn about converting mixed numbers into fractions? | **Division** |

# Ratios and Proportions

## Essential Skill: Recognize proportional relationships between quantities.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment**<br>Solve a proportion problem to determine the real world distance between two points on a map. | **Proportions Movie**<br>Learn how to set up a proportion problem, and see how to use proportions in real-life situations. | **Make a Movie**<br>Five tickets to a carnival cost $45. Explain how to set up a proportion to determine how much seven tickets will cost. | **Challenge**<br>Use critical thinking to show what you know about proportions. | **Ratios**<br><br>**Percents** |

## Essential Skill: Use proportional relationships to solve percent problems.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Ask: *How can you use proportional relationships to convert a fraction to a percent?* | **Percents Movie**<br>Learn to use proportion to figure out percentage. | **Primary Source**<br>Analyze the map, then use what you learn to answer the accompanying questions. | **Challenge**<br>Use critical thinking skills to show what you know about percents. | **Taxes**<br><br>**Interest**<br><br>**Proportions** |

# Statistics and Probability

## Essential Skill: Understand that statistics can be used to gain information about a population by examining a sample of the population.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Show an ad that makes a statistical claim (e.g., "99% of dentists agree"). Ask: *Where does that number come from, and what does it mean?* | **Statistics Movie**<br>Learn how statistical studies take a sampling of large bodies of information and turn it into odds and probabilities. | **Primary Source Activity**<br>Review the baseball statistics, and use them to answer the accompanying questions. | **Challenge**<br>Use critical thinking to show what you know about statistics. | **Mean, Median, Mode, and Range**<br><br>**Basic Probability** |

## Essential Skill: Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Show a coin. | **Basic Probability Movie**<br>Learn how to calculate | **Make a Concept Map**<br>Use the concept map to help you determine the | **Challenge**<br>Use critical thinking to show what you | **Compound Events** |

| | | | | |
|---|---|---|---|---|
| Ask: *If I flip this three times, what are the chances that I will get three heads in a row?* | and express basic probability. | probability of picking a green shirt out of a bag containing two green shirts, three red shirts, and four white shirts. | know about probability. | |

## Essential Skill: Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

| Warm Up | Build Background | Think and Do | Assess | Explore More Topics |
|---|---|---|---|---|
| **Pre-Assessment: Class Discussion**<br>Show a deck of cards.<br>Ask: *How can you determine the probability of drawing a card that is both red and a king?* | **Compound Events Movie**<br>Explore the difference between mutually exclusive and inclusive events, and how they affect the likelihood of getting the desired outcome. | **Make-a-Movie**<br>Explain how to find the probability of rolling a 5 or another odd number using a 6-sided die. | **Challenge**<br>Use critical thinking to show what you know about compound events. | **Independent and Dependent Events**<br><br>**Game Theory** |