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Grade 7 Math

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 Display a round clock. Ask: *How can we find the clock's area and circumference?*	**Circles Movie** Discover how to determine a circle's diameter, radius, and center, and use them to find its circumference and area.	**Make-a-Movie** Produce a home makeover show where the host finds the area and circumference of a circular rug with a radius of 6 feet.	**Challenge** Use critical thinking skills to show what you know about circles	**Pi** **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 Say: *Explain the relationship between*	**Angles Movie** Learn about supplementary and complementary angles.	**Play a Sorting Game** Use what you know about finding angle	**Quiz** What did you learn about angles?	**Geometry**

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 Find the volume of a rectangular prism.	**Volume of Prisms Movie** Discover how to find the volume of prisms.	**Make-a-Movie** Show how a character can calculate the volume of a tent—a triangular prism.	**Challenge** Use critical thinking to show what you know about prisms.	**Surface Area** **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 Show a map of your state. Ask: *How can something*	**Scale Drawing Movie** Learn to scale a drawing so you can create maps, grids, and buildings that are proportional.	**Make-a-Movie** Show the process for enlarging an image that is 4 centimeters tall by 10 centimeters wide	**Quiz** What did you learn about scale drawing?	**Map Skills** **Architecture**

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 What features do all right triangles have in common?	**Pythagorean Theorem Movie** Learn to use the Pythagorean theorem to find the measurements of a right triangle's hypotenuse and legs.	**Make-a-Movie** Produce a tutorial that uses an example to prove the Pythagorean theorem.	**Quiz** What did you learn about the Pythagorean theorem?	**Types of Triangles** **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 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?" Ask: *How can we write an equation that represents this problem?*	**Equations with Variables Movie** Learn about variables: the x, y, and z of simplifying and solving algebraic equations.	**Make a Concept Map** Diagram the process of isolating and solving for the variable in the equation 5y-13=12.	**Challenge** Use critical thinking to show what you know about solving equations with variables.	**Division** **Multiplication**

Essential Skill: Solve word problems using inequalities.

Warm Up	Build Background	Think and Do	Assess	Explore More Topics
Pre-Assessment What is the first step to solve for X in an inequality?	**Graphing and Solving Inequalities Movie** Discover how to graph and solve inequalities.	**Make a Concept Map** Show the process to find x in the inequality 4x - 3 < 17.	**Quiz** What did you learn about graphing and solving inequalities?	**Inequalities** **Graphing Linear Equations** **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 What is the key to solving for a variable in a two-step equation?	**Two-Step Equations Movie** Walk through the algebraic formula for solving two-step equations.	**Make a Concept Map** Sequence the steps to solve for z in the equation $16 = 5z + 1$.	**Challenge** Use critical thinking to show what you know about solving two-step equations.	**Equations with Variables** **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 Ask: *What is a linear equation, and what is it*	**Graphing Linear Equations Movie** Learn how to find trends and predict the	**Make a Concept Map** Identify the steps for finding at least two	**Quiz** What did you learn about graphing a linear equation?	**Slope and Intercept** **Graphing**

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 Ask: *When we ask about the absolute value of a number, what do we want to know?*	**Absolute Value Movie** Explore absolute value by using a numberline, determining the distance from zero, and deciding on positive or negative.	**Make-a-Movie** Explain why zero is so important to absolute value.	**Quiz** 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 Ask: *How do you find the*	**Factoring Movie** Find out what factors and multiplication have	**Play a Sorting Game** Sort numbers based on their common factors.	**Quiz** What did you learn about factoring?	**Prime Numbers** **Exponents**

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 Ask: *What is a rational number?*	**Rational and Irrational Numbers Movie** Discover the difference between rational and irrational numbers.	**Make a Concept Map** Contrast rational and irrational numbers.	**Quiz** What did you learn about rational and irrational numbers?	**Converting Fractions to Decimals** **Pi**

Essential Skill: Convert a mixed number into a fraction.

Warm Up	Build Background	Think and Do	Assess	Explore More Topics
Pre-Assessment What is the easiest way to convert a mixed number to a fraction?	**Mixed Numbers Movie** Learn how to convert fractions into mixed numbers, and back again.	**Make a Concept Map** Identify the steps for converting an improper fraction into a mixed number.	**Quiz** 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 Solve a proportion problem to determine the real world distance between two points on a map.	**Proportions Movie** Learn how to set up a proportion problem, and see how to use proportions in real-life situations.	**Make a Movie** Five tickets to a carnival cost $45. Explain how to set up a proportion to determine how much seven tickets will cost.	**Challenge** Use critical thinking to show what you know about proportions.	**Ratios** **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 Ask: *How can you use proportional relationships to convert a fraction to a percent?*	**Percents Movie** Learn to use proportion to figure out percentage.	**Primary Source** Analyze the map, then use what you learn to answer the accompanying questions.	**Challenge** Use critical thinking skills to show what you know about percents.	**Taxes** **Interest** **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 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** Learn how statistical studies take a sampling of large bodies of information and turn it into odds and probabilities.	**Primary Source Activity** Review the baseball statistics, and use them to answer the accompanying questions.	**Challenge** Use critical thinking to show what you know about statistics.	**Mean, Median, Mode, and Range** **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 Show a coin.	**Basic Probability Movie** Learn how to calculate	**Make a Concept Map** Use the concept map to help you determine the	**Challenge** 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 Show a deck of cards. Ask: *How can you determine the probability of drawing a card that is both red and a king?*	**Compound Events Movie** Explore the difference between mutually exclusive and inclusive events, and how they affect the likelihood of getting the desired outcome.	**Make-a-Movie** Explain how to find the probability of rolling a 5 or another odd number using a 6-sided die.	**Challenge** Use critical thinking to show what you know about compound events.	**Independent and Dependent Events** **Game Theory**