

7th Grade Math

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What is mathematics?

Mathematics is the study of the relationships among numbers, quantities, measurements, and spatial configurations. This study encompasses a broad understanding of number sense, operations, estimation, geometry, and data interpretation.

Why do we teach mathematics?

The purpose of teaching mathematics is to empower all students with the ability to formulate, analyze, and solve problems in order to excel in the real world.

How do we teach mathematics?

Mathematics is taught by using

- a challenging, cohesive, spiraled curriculum.
- a balanced procedural and conceptual approach.
- connections between mathematics and real-world applications.
- technology as a tool to enhance mathematical concepts.

What topics will be studied this year?

M7.1 Students will use powers and decimals to compute with and display numbers.

M7.1.3 Multiply by positive and negative powers of ten using mental math.

M7.1.4 Write and evaluate positive powers.

M7.1.5 When given large or small numbers, convert between scientific and decimal notation.

M7.1.6 Apply the order of operations with multiple grouping symbols when evaluating expressions.

M7.1.7 Compare rational numbers using inequality symbols.

M7.1.8 Apply the rate and ratio model for division when solving real life problems.

M7.2 Students will use variables to describe a set of numbers, write algebraic expressions, and compute with formulas.

M7.2.1 Translate mathematical vocabulary to algebraic symbols.

M7.2.2 Evaluate algebraic expressions using the Substitution Principle.

M7.2.3 Identify perfect squares from 1-144 and estimate the square root of non-perfect squares.

M7.2.4 When given two legs of a right triangle, apply the Pythagorean Theorem to find the hypotenuse of a right triangle.

M7.2.5 Graph inequalities on a number line in the form of:

$$x < a \text{ and } x \leq a \quad x > a \text{ and } x \geq a \quad a < x < b$$

M7.3 Students will represent numbers using fractions, decimals, and percents.

M7.3.1 Estimate rational numbers by rounding.

M7.3.2 Write and compare fractions by finding common denominators or by changing to a decimal.

M7.3.5 Add, subtract, multiply, and divide positive and negative fractions.

M7.3.6 Convert decimals to fractions and percents.

M7.3.7 Calculate percent of a number and apply the concept to real life situations such as: sales tax and % off.

M7.4 Students will classify geometric figures and apply properties of geometric concepts.

M7.4.1 Analyze properties of special quadrilaterals in order to classify them.

M7.4.3 Apply properties of parallel lines to classify linear pairs, corresponding angles, alternate interior angles, and alternate exterior angles.

M7.4.4 Apply properties of intersecting lines to identify vertical angles and linear pairs.

M7.4.5 Use the Triangle Sum Property to calculate the missing angle measure of a triangle.

M7.5 Students will identify and generalize patterns in order to solve problems with addition and subtraction.

M7.5.1 Identify patterns in addition that lead to the Commutative Property of Addition.

M7.5.2 Identify patterns in addition that lead to the Associative Property of Addition.

M7.5.3 Define absolute value and find absolute value of a number.

M7.5.4 Add/subtract integers and rational numbers.

M7.5.7 Apply properties of addition and subtraction to solve equations in the form:

$$x + a = b \quad x - a = b \quad a - x = b$$

M7.6 Students will graph linear equations on the coordinate plane.

M7.6.2 Use a table to graph:

$$x + y = a \quad \text{and} \quad y = x + a \quad (\text{using ordered pairs})$$

M7.6.3 Use a graphing calculator to graph:

$$x + y = a \quad (\text{using ordered pairs}) \quad y = x + a$$

M7.7 Students will apply properties of multiplication to geometric concepts. .

M7.7.1 Calculate the area of any right triangle.

M7.7.4 Apply the Distributive Property when simplifying algebraic expressions.

M7.7.5 Calculate the area of a trapezoid.

M7.7.6 Calculate the circumference of a circle.

M7.7.7 Calculate the area of a circle and a sector.

M7.8 Students will apply properties of multiplication to algebraic concepts and real life situations.

M7.8.1 Multiply integers and rational numbers.

M7.8.2 Identify patterns that lead to the Multiplication Property of Zero, and use variables to write the property.

M7.8.5 Identify patterns that lead to the Property of Reciprocals, and apply the property to equation solving.

M7.8.6 Apply properties of multiplication and division to solve equations in the form:

$$ax = b \quad ax = b \quad \text{when } a \text{ is negative}$$

M7.9 Students will apply division concepts such as rates, ratios, and proportions to real life situations.

M7.9.1 Divide integers and rational numbers.

M7.9.2 Calculate and simplify rates using the rate model for division.

M7.9.4 Apply the ratio model for division to solve real life problems.

M7.9.5 Use proportions to find the missing side of similar figures.

M7.10 Students will calculate surface area and volume of 3-dimensional figures.

M7.10.3 Calculate volume of a cylinder.

M7.10.4 Calculate the surface area of rectangular solids and apply the concept to real life situations.

M7.11 Students will interpret data when information is presented in a variety of formats.

What instructional strategies are used in class?

A combination of lecture with note-taking; math journaling; vocabulary study; charts; white board practice; daily warm-ups; exit slips

How will the students be assessed?

Forms of assessment include: tests- 40%, quizzes- 30%, homework- 10%, class work- -20%

What resources are used?

The student text is *University of Chicago School Mathematics Project: Transition Math* published by Scott Foresman

