6th Grade Math

Mathematics

Grade(s) 6th, Duration 1 Year, 1 Credit
Required Course

Course Overview

During the 6th grade year, students will learn about numbers, number operations, probability, rates, ratios, equivalent expressions, equations and inequalities, geometry and measurement and data. After acquiring these skills, the students will apply that knowledge to solve everyday problems related to the topics.

Scope And Sequence

Timeframe	Unit	Instructional Topics
5 Week(s)	Numbers	1. Integers 2. Factors and Multiples 3. Rational Numbers
5 Week(s)	Number Operations	1. Operations with Fractions 2. Operations with Decimals
6 Week(s)	Proportionality: Ratios and Rates	1. Representing Ratios and Rates 2. Applying Ratios and Rates 3. Percents
3 Week(s)	Measurement and Data	1. Displaying, Analyzing, and Summarizing Data
4 Week(s)	Equivalent Expressions	1. Generating Equivalent Numerical Expressions 2. Generating Equivalent Algebraic Expressions
5 Week(s)	Equations and Inequalities	1. Equations and Relationships 2. Relationships in Two Variables
5 Week(s)	Relationships in Geometry	1. Area and Polygons 2. Distance and Area in the Coordinate Plane 3. Surface Area and Volume of Solids

Course Details

Unit: Numbers

Duration: 5 Week(s)

Unit Description

The students will be basic knowledge of what an integer and rational numbers are. They will use the knowledge to find factors and multiples of given numbers.

Academic Vocabulary

equal, greater than, less than, negative sign, number line, plus sign, symbol, whole number,area, distributive property, factor, multiple, product, absolute value, decimal, dividend, divisor, fraction, integers, opposites, positive numbers, negative numbers

Summative Assessment

Unit Test

Materials and Resources (optional)

Textbook/ TPT

Topic: Integers

Duration: 9 Day(s)

Topic Description (short)

The student will be able to identify an integer and its opposite and use this to find the absolute value of a number.

Learning Targets

The students will be able to identify an integer and its opposite
Assessment: Lesson 1.1
The students will be able to compare and order integers.
The students will be able to find and use absolute value.
Assessment: Lesson 1.2

Learning Targets linked to Priority Standard = ✙

Topic: Factors and Multiples

Duration: 8 Day(s)

Topic Description (short)

The students will be able to use the GCF to solve everyday problems. The students will be able to use the LCM to solve everyday problems.

Learning Targets

The students will be able use the GCF of two numbers
Assessment: Lesson 2.1
The students will be able to find and use the LCM of two whole numbers

Assessment: Lesson 2.2

Learning Targets linked to Priority Standard = ✙

Topic: Rational Numbers **Duration:** 6 Day(s)

Topic Description (short)
The students will be able to classify rational numbers. They will also be able to find the opposites and absolute value of the rational numbers.

Learning Targets
The student will be able to classify rational numbers
Assessment: Lesson 3.1

Learning Targets linked to Priority Standard = ✙

Unit: Number Operations **Duration:** 5 Week(s)

Unit Description
The students gain knowledge of fractions and decimals. They will use this knowledge to solve problems with rational numbers.

Academic Vocabulary
denominator, fraction, numerator, width, length, greatest common factor GCF, least common multiple LCM, decimal, fraction bar, quotient, rational number

Summative Assessment
Unit Test

Materials and Resources (optional)
Big Ideas Textbook / TPT

Topic: Operations with Fractions **Duration:** 14 Day(s)

Topic Description (short)
The students will be able to use the GCF and LCM to solve fraction problems. They will learn to divide fractions and what the reciprocal of a fraction.

Learning Targets
The students will be able to use the GCF and the LCM when adding, subtracting, and multiplying fractions.
Assessment: Lesson 4.1
The students will be able to divide fractions.
Assessment: Lesson 4.2
The students will be able to divide mixed numbers
Assessment: Lesson 4.3
The students will be able to solve word problems containing more than one fraction operation
Assessment: Lesson 4.4

Learning Targets linked to Priority Standard = ✙

Topic: Operations with Decimals **Duration:** 11 Day(s)

Topic Description (short)
The students will be able to solve all the operations with decimals. They will be able to solve word problems with all the operations.

Learning Targets
The students will be able to divide multi digit whole numbers
Assessment: Lesson 5.1
The students will be able to add and subtract decimals
Assessment: Lesson 5.2
The students will be able to multiply decimals
Assessment: Lesson 5.3
The students will be able to divide decimals
Assessment: Lesson 5.4
The students will be able to solve problems involving multiplication and division of fractions and decimals
Assessment: Lesson 5.5

Learning Targets linked to Priority Standard = ✙

Unit: Proportionality: Ratios and Rates **Duration:** 6 Week(s)

Unit Description
The students will gain knowledge on how to write ratios and rates. They will use this knowledge to solve problems with rates, ratios, and percents.

Academic Vocabulary

colon, fraction bar, quantity, term, equivalent ratios, factor, graph, pattern, point rate, ratio, unit rate, unit, equivalent fractions, simplest form, ratio

Summative Assessment

Unit Test

Materials and Resources (optional)

Big Ideas / TPT

Topic: Representing Ratios and Rates **Duration:** 9 Day(s)

Topic Description (short)

The students will learn what a ratio and rate is. They will use rates and ratios to compare and solve problems.

Learning Targets

The students will be able to use ratios to compare two quantities
Assessment: Lesson 6.1
The students will be able to use rates to compare quantities
Assessment: Lesson 6.2
The students will use rates and ratios to make comparisons and predictions.
Assessment: Lessons 6.3

Learning Targets linked to Priority Standard =

Topic: Applying Ratios and Rates **Duration:** 11 Day(s)

Topic Description (short)

The students will be able to use rates and ratios to solve proportion problems. They will also convert units of measure using rates and ratios.

Learning Targets

The students will be able to represent real world problems involving ratios and rates with tables and graphs.+
Assessment: Lesson 7.1
The students will be able to solve problems with proportions.
Assessment: Lesson 7.2
The students will be able to use ratios and proportions to convert measurements
Assessment: Lesson 7.4

Learning Targets linked to Priority Standard =

Topic: Percents **Duration:** 10 Day(s)

Topic Description (short)

The students will be able to find the percent from a rate. They will be able to solve percent problems.

Learning Targets

The students will write a ratio as a percent
Assessment: Lesson 8.1
The students will be able to write equivalent fractions, decimals and percents
Assessment: Lesson 8.2
The students will be able to use percents to solve problems
Assessment: Lesson 8.3

Learning Targets linked to Priority Standard =

Unit: Measurement and Data

Duration: 3 Week(s)

Unit Description

The students will learn and statistical data. They will be able to find the mean, median, mode, and range of a list of numbers. They will create histograms, dot dots, box and whisker, and stem and leaf plots with the list.

Academic Vocabulary

average, data, survey, box plot, histogram, interquartile range, lower quartile, mean, median, measure of spread, mode, range, statistical questions, upper quartile

Summative Assessment

Unit Test

Materials and Resources (optional)

Big Ideas / TPT

Topic: Displaying, Analyzing, and Summarizing Data **Duration:** 15 Day(s)

Topic Description (short)

The students will be able to find the mean, median, mode, and range of a set of data. They will be able to disply data using a histogram, box

plot, dot plot, and stem and leaf plot.

Learning Targets
histogram
box plot
dot plot
stem and leaf plot.

Formative Assessment
Lesson 16.1-16.5

Learning Targets
The students will be able to use measures of center to describe a data set
Assessment: Lesson 16.1
The students will be able to determine and use the mean absolute deviation of a set of data points
Assessment: Lesson 16.2
The students will be able to use a box plot and measure of spread to describe a data set
Assessment: Lesson 16.3
The students will be able to summarize and display numeric data
Assessment: Lesson 16.4
The students will be able to display data in a histogram
Assessment: Lesson 16.5

Learning Targets linked to Priority Standard = ✙

Unit: Equivalent Expressions

Duration: 4 Week(s)

Unit Description
The student will learn how to write and solve algebraic problems. They will use this basic knowledge to solve more complex algebra problems.

Academic Vocabulary
factor, factor tree, numerical expressions, operations, repeated multiplication, base, exponent, order of operations

Summative Assessment
Unit test

Materials and Resources (optional)
Big Ideas / TPT

Topic: Generating Equivalent Numerical Expressions

Duration: 9 Day(s)

Topic Description (short)
The students will learn how to write a number using an exponent. The will solve order of operations questions with exponents.

Learning Targets
The students will be able to use an exponent to represent a number
Assessment: Lesson 9.1
The students will write the prime factorization of a number
Assessment: Lesson 9.2
The students will use order of operations to simplify expressions with exponents
Assessment: Lesson 9.3

Learning Targets linked to Priority Standard = ✙

Topic: Generating Equivalent Algebraic Expressions

Duration: 8 Day(s)

Topic Description (short)
The students will be able to model and write algebraic expressions. They will be able to solve algebraic expressions using the order of operations.

Learning Targets
The student will able to write algebraic expressions and use models to decide to decide if expressions are equivalent
Assessment: Lesson 10.1
The students will be able to use the order of operations to evaluate algebraic expressions
Assessment: Lesson 10.2
The students will be able to identify and write equivalent expressions
Assessment: Lesson 10.3

Learning Targets linked to Priority Standard = ✙

Unit: Equations and Inequalities

Duration: 5 Week(s)

Unit Description
The students will learn the concept of inequalities and how to graph them. They will use this knowledge to solve and graph one and two-step inequalities.

Academic Vocabulary
algebraic expression, coefficient, constant, equivalent expressions, evaluating, like terms, term, variable, coefficient, constant, equation, scale

Topic: Equations and Relationships **Duration:** 12 Day(s)

Topic Description (short)
The students will be able to write equations and inequalities. The will be able to solve equations with adding, subtracting, multiplying, and dividing.

Learning Targets
The students will be able to write equations and determine whether a number is a solution of an equation
Assessment: Lesson 11.1
The student will be able to solve equations that contain adding and subtracting
Assessment: Lesson 11.2
The students will be able to solve equations that contain multiplication and division
Assessment: Lesson 11.3
The students will be able to use inequalities to represent real world problems
Assessment: Lesson 11.4

Learning Targets linked to Priority Standard = ✣

Topic: Relationships in Two Variables **Duration:** 8 Day(s)

Topic Description (short)
The students will be able to name points on a coordinate plane. They will be able to read the coordinate plane, graphs, and tables to represent algebra.

Learning Targets
The students will be able to locate and name points in the coordinate plane
Assessment: Lesson 12.1
The students will be able to identify independent and dependent quantities from tables and graphs
Assessment: Lesson 12.2
The students will be able to use verbal descriptions, tables, and graphs to represent algebra
Assessment: Lesson 12.4
The students will be able to use an equation to show a relationship between two variables
Assessment: Lesson 12.3

Learning Targets linked to Priority Standard = ✣

Unit: Relationships in Geometry **Duration:** 5 Week(s)

Unit Description
The students will learn the difference and formulas for area, volume and surface area. They will use this knowledge to solve complex geometry problems.

Academic Vocabulary
hexagon, polygon, quadrilateral, rectangular prism, regular polygon, right triangle, triangle, absolute value, area, axis, coordinate plane, perimeter

Topic: Area and Polygons **Duration:** 11 Day(s)

Topic Description (short)
The students will be able find the area of polygons using a formula. The student will be able to use equations to solve area problems.

Learning Targets
parallelograms
rhombuses
trapezoids
triangle
equation
polygon

Formative Assessment
Lesson 13.1-13.4

Learning Targets
The students will be able to find the areas of parallelograms, rhombuses, and trapezoids
Assessment: Lesson 13.1

The students will be able to find the area of a triangle
Assessment: Lesson 13.2
The students will be able to use equations to solve problems about area of rectangles and parallelograms
Assessment: Lesson 13.3
The students will be able to find the area of a polygon by breaking into simpler shapes
Assessment: Lesson 13.4

Learning Targets linked to Priority Standard = ✙

Topic: Distance and Area in the Coordinate Plane **Duration:** 8 Day(s)

Topic Description (short)
The students will understand the concept of distance between two points on a coordinate plane. The students can solve problems by drawing coordinate polygons on the coordinate plane.

Learning Targets
absolute value
coordinates
polygons

Formative Assessment
lesson 14.1-14.2

Learning Targets
The students will be able to use absolute value to find the distance between two [points with the same x or y coordinates
Assessment: Lesson 14.1
The students will be able to solve problems by drawing polygons in the coordinate plane
Assessment: Lesson 14.2

Learning Targets linked to Priority Standard = ✙

Topic: Surface Area and Volume of Solids **Duration:** 9 Day(s)

Topic Description (short)
The students will be able to find the area, volume, and surface area of a polygons and prisms. The will be able to solve algebraic equations with volume.

Learning Targets
surface area
rectangular prism

Formative Assessment
Lesson 15.1-15.2

Learning Targets
The students will be able to use nets to find the surface areas
Assessment: Lesson 15.1
The students will be able to find the volume of a rectangular prism
Assessment: Lesson 15.2

Learning Targets linked to Priority Standard = ✙