

GRADE 7 Syllabus

Number theory

- Odd numbers
- Whole numbers
- Natural numbers
- Prime numbers
- Composite numbers
- Divisible rules
- Factors
- Prime Factorization
- Highest Common Factor (H.C.F.)
- Multiples
- Lowest Common Multiples (L.C.M.)
- H.C.F and L.C.M. word problems

Integers

- Understanding Integers
- Representing integers on a Number Line
- Comparing and ordering integers
- Finding Absolute Value

Operations with integers

- Integer addition and subtraction rules
- Adding and subtracting integers
- Adding and subtracting involving absolute value
- Solving integer word problems
- Integer multiplication and division rules
- Multiplying and dividing integer
- Solving word problems involving directed numbers

Order of operation

- Simplifying expressions using the 4 steps in the order of operations
- Understanding the need for an agreed upon order in which to perform operations and apply the standard order of operation to a variety of expressions

Decimals

- Compare and order decimals
- Decimal number lines
- Round decimals

Operations with decimals

- Add and subtract decimals
- Add and subtract decimals: word problems
- Multiply decimals
- Multiply decimals and whole numbers: word problems

Divide decimals

Divide decimals by whole numbers: word problems

Estimate sums, differences, and products of decimals

Add, subtract, multiply, and divide decimals: word problems

Multi-step inequalities with decimals

Maps with decimal distances

Evaluate numerical expressions involving decimals

Fractions and mixed numbers

Understanding fractions: word problems

Equivalent fractions

Write fractions in lowest terms

Fractions: word problems with graphs and tables

Least common denominator

Compare and order fractions

Compare fractions: word problems

Convert between mixed numbers and improper fractions

Compare mixed numbers and improper fractions

Round mixed numbers

Operations with fractions

Add and subtract fractions

Add and subtract fractions: word problems

Add and subtract mixed numbers

Add and subtract mixed numbers: word problems

Inequalities with addition and subtraction of fractions and mixed numbers

Estimate sums and differences of mixed numbers

Multiply fractions and whole numbers

Multiply two fractions using models

Multiply fractions

Multiply mixed numbers

Multiply fractions and mixed numbers: word problems

Divide fractions

Divide mixed numbers

Divide fractions and mixed numbers: word problems

Estimate products and quotients of fractions and mixed numbers

Add, subtract, multiply, and divide fractions and mixed numbers: word problems

Maps with fractional distances

Evaluate numerical expressions involving fractions

Rational numbers

Convert between decimals and fractions or mixed numbers

Identify rational numbers

Absolute value of rational numbers

Compare rational numbers

Put rational numbers in order

Add and subtract rational numbers

Apply addition and subtraction rules

Multiply and divide rational numbers

Apply multiplication and division rules

Exponents and square roots

Understanding exponents

Evaluate exponents

Solve equations with variable exponents

Exponents with negative bases

Exponents with decimal and fractional bases

Understanding negative exponents

Evaluate negative exponents

Evaluate numerical expressions involving exponents

Square roots of perfect squares

Estimate square roots

Ratios, rates, and proportions

Understanding ratios

Identify equivalent ratios

Write an equivalent ratio

Equivalent ratios: word problems

Unit rates

Compare ratios: word problems

Scale drawings: word problems

Do the ratios form a proportion?

Do the ratios form a proportion: word problems

Solve proportions

Solve proportions: word problems

Estimate population size using proportions

Rate of change

Constant rate of change

Proportional relationships

Find the constant of proportionality from a table

Write equations for proportional relationships from tables

Identify proportional relationships by graphing

Find the constant of proportionality from a graph

Write equations for proportional relationships from graphs

Identify proportional relationships

Interpret graphs of proportional relationships

Write and solve equations for proportional relationships

Percents

What percentage is illustrated?

Convert between percents, fractions, and decimals

Compare percents to fractions and decimals

Estimate percents of numbers

Percents of numbers and money amounts

Percents of numbers: word problems

Solve percent equations

Solve percent equations: word problems

Percent of change

Percent of change: word problems

Consumer math

Add, subtract, multiply, and divide money amounts: word problems

Price lists

Unit prices

Unit prices with unit conversions

Unit prices: find the total price

Percent of a number: tax, discount, and more

Find the percent: tax, discount, and more

Sale prices: find the original price

Multi-step problems with percents

Estimate tips

Simple interest

Compound interest

Problem solving and estimation

Estimate to solve word problems

Multi-step word problems

Guess-and-check word problems

Use Venn diagrams to solve problems

Find the number of each type of coin

Elapsed time word problems

Units of measurement

Estimate customary measurements

Estimate metric measurements

Compare and convert customary units

Mixed customary units

Compare and convert metric units

Convert between customary and metric systems

Precision

Celsius and Fahrenheit temperatures

Coordinate plane

Coordinate plane review

Quadrants and axes

Follow directions on a coordinate plane

Distance between two points

Number sequences

Identify arithmetic and geometric sequences

Arithmetic sequences

Geometric sequences

Number sequences: mixed review

Number sequences: word problems

Evaluate variable expressions for number sequences

Write variable expressions for arithmetic sequences

Expressions and properties

Write variable expressions

Write variable expressions: word problems

Evaluate linear expressions

Evaluate multi-variable expressions

Evaluate absolute value expressions

Evaluate nonlinear expressions

Identify terms and coefficients

Sort factors of expressions

Properties of addition and multiplication

Multiply using the distributive property

Solve equations using properties

Write equivalent expressions using properties

Add and subtract like terms

Add, subtract, and multiply linear expressions

Factors of linear expressions

Identify equivalent linear expressions

One-variable equations

Which x satisfies an equation?

Write an equation from words

Model and solve equations using algebra tiles

Write and solve equations that represent diagrams

Solve one-step equations

Solve two-step equations

Solve equations: word problems

Solve equations involving like terms

Solve equations: complete the solution

One-variable inequalities

Solutions to inequalities

Graph inequalities on number lines

Write inequalities from number lines

Solve one-step inequalities

Graph solutions to one-step inequalities

Solve two-step inequalities

Graph solutions to two-step inequalities

Two-variable equations

Does (x, y) satisfy the equation?

Identify independent and dependent variables

Find a value using two-variable equations

Solve word problems involving two-variable equations

Complete a table for a two-variable relationship

Write a two-variable equation

Identify the graph of an equation

Graph a two-variable equation

Interpret a graph: word problems

Write an equation from a graph using a table

Linear functions

Find the slope from a graph

Find the slope from two points

Find a missing coordinate using slope

Find the slope from an equation

Graph a line using slope

Write a linear function

Identify linear and nonlinear functions

Two-dimensional figures

Identify and classify polygons

Name, measure, and classify angles

Classify triangles

Identify trapezoids

Classify quadrilaterals

Graph triangles and quadrilaterals

Find missing angles in triangles

Find missing angles in quadrilaterals

Interior angles of polygons

Lines, line segments, and rays

Parallel, perpendicular, and intersecting lines

Identify complementary, supplementary, vertical, adjacent, and congruent angles

Find measures of complementary, supplementary, vertical, and adjacent angles

Transversal of parallel lines

Find lengths and measures of bisected line segments and angles

Parts of a circle

Transformations and congruence

Symmetry

Identify reflections, rotations, and translations

Translations: graph the image

Translations: find the coordinates

Reflections: graph the image

Reflections: find the coordinates

Rotations: graph the image

Rotations: find the coordinates

Similar and congruent figures

Congruence statements and corresponding parts

Side lengths and angle measures of congruent figures

Side lengths and angle measures of similar figures

Similar figures and indirect measurement

Geometric measurement

Perimeter

Area of rectangles and parallelograms

Area of triangles and trapezoids

Area and perimeter: word problems

Circles: calculate area, circumference, radius, and diameter

Circles: word problems

Volume

Surface area

Perimeter, area, and volume: changes in scale

Semicircles: calculate area, perimeter, radius, and diameter

Quarter circles: calculate area, perimeter, and radius

Area of compound figures with triangles, semicircles, and quarter circles

Area between two shapes

Data and graphs

Interpret tables

Interpret line plots

Create line plots

Create and interpret line plots with fractions

Interpret stem-and-leaf plots

Interpret bar graphs

Create bar graphs

Interpret histograms

Create histograms

Create frequency charts

Interpret circle graphs

Circle graphs and central angles

Interpret line graphs

Create line graphs

Interpret box-and-whisker plots

Scatter plots

Choose the best type of graph

Statistics

Calculate mean, median, mode, and range

Interpret charts and graphs to find mean, median, mode, and range

Mean, median, mode, and range: find the missing number

Changes in mean, median, mode, and range

Calculate mean absolute deviation

Identify representative, random, and biased samples

Probability

Probability of simple events

Probability of opposite, mutually exclusive, and overlapping events

Experimental probability

Make predictions