

grade 7 math

Content, Standards, & Objectives

This document contains an ordered list of all of the topics from the scope and sequence of Thinkwell's Grade 7 Math, along with the learning objectives covered in each topic and the corresponding standards.

Although Thinkwell's Grade 7 Math was not designed as a common core curriculum, this document is provided for those customers whose state homeschool requirements include common core standard mapping information.

Example:

Topic's number and title → **3.1.3 Multiplying Decimals**

Learning Objectives:

Topic's learning objectives →

- multiplying decimals
- evaluating expressions involving multiplication of decimals

Topic's related standard from the Grade 7 Common Core State Standards for Mathematics → **Standards:**
→ 7.NS: 2; 7.NS: 2a

We suggest keeping this document handy. Please let us know if you have any questions about the content here. Email us at support@thinkwell.com.

1 Algebraic Reasoning

1.1 Patterns, Operations, and Properties

1.1.1 Numbers and Patterns

Learning Objectives:

- *identifying and extending number patterns*
- *identifying and extending geometric sequences*
- *using tables to identify and extend patterns*

1.1.2 Exponents

Learning Objectives:

- *evaluating powers*
- *expressing whole numbers as powers*
- *culinary application*

1.1.3 Applying Exponents: Scientific Notation

Learning Objectives:

- *multiplying by powers of ten*
- *writing numbers in scientific notation*
- *writing numbers in standard form*
- *comparing numbers in scientific notation*

1.1.4 Order of Operations

Learning Objectives:

- *using the order of operations*
- *using the order of operations with grouping symbols*
- *fiesta application*

1.1.5 Properties

Learning Objectives:

- *identifying properties of addition and multiplication*
- *using properties to simplify expressions*
- *using the distributive property to multiply mentally*

1.2 Algebraic Expressions and Equations

1.2.1 Variables and Algebraic Expressions

Learning Objectives:

- *evaluating algebraic expressions*
- *evaluating algebraic expressions involving order of operations*
- *evaluating algebraic expressions with two variables*

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1.2.2 Translate Words into Math

Learning Objectives:

- *translating verbal expressions into algebraic expressions*
- *translating real-world problems into algebraic expressions*

1.2.3 Simplifying Algebraic Expressions

Learning Objectives:

- *identifying like terms*
- *simplifying algebraic expressions*
- *geometry application*

Standards:

7.EE: 1; 7.EE: 2

1.2.4 Equations and Their Solutions

Learning Objectives:

- *determining whether a number is a solution of an equation*
- *writing an equation to determine whether a number is a solution*
- *deriving a real-world situation from an equation*

Standards:

7.EE: 4

1.2.5 Addition and Subtraction Equations

Learning Objectives:

- *solving an equation by addition*
- *solving an equation by subtraction*
- *finance application*

Standards:

7.EE: 4

1.2.6 Multiplication and Division Equations

Learning Objectives:

- *solving an equation by multiplication*
- *solving an equation by division*
- *health application*

Standards:

7.EE: 4



2 Integers and Rational Numbers

2.1 Integers

2.1.1 Integers

Learning Objectives:

- *graphing integers*
- *comparing integers using a number line*
- *ordering integers using a number line*
- *finding absolute value*

Standards:

7.NS: 1b

2.1.2 Adding Integers

Learning Objectives:

- *modeling integer addition*
- *adding integers using absolute values*
- *evaluating expressions with integers*
- *business application*

Standards:

7.NS: 1; 7.NS: 1a; 7.NS: 1b

2.1.3 Subtracting Integers

Learning Objectives:

- *modeling integer subtraction*
- *subtracting integers by adding the opposite*
- *evaluating expressions with integers*
- *geography application*

Standards:

7.NS: 1; 7.NS: 1a; 7.NS: 1c

2.1.4 Multiplying and Dividing Integers

Learning Objectives:

- *multiplying integers using repeated addition*
- *multiplying integers*
- *dividing integers*
- *travel application*

Standards:

7.NS: 1; 7.NS: 2b

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2.1.5 Solving Equations Containing Integers

Learning Objectives:

- *solving addition and subtraction equations*
- *solving multiplication and division equations*
- *business application*

Standards:

7.NS: 2; 7.NS: 3; 7.EE: 4

2.2 Factors and Multiples

2.2.1 Prime Factorization

Learning Objectives:

- *identifying prime and composite numbers*
- *using a factor tree to find prime factorization*
- *using a step diagram to find prime factorization*

2.2.2 Greatest Common Factor

Learning Objectives:

- *using a list to find the gcf*
- *using prime factorization to find the gcf*
- *problem-solving application*

2.2.3 Least Common Multiple

Learning Objectives:

- *using a list to find the lcm*
- *using prime factorization to find the lcm*
- *recreation application*

2.3 Rational Numbers

2.3.1 Equivalent Fractions and Mixed Numbers

Learning Objectives:

- *finding equivalent fractions*
- *writing fractions in simplest form*
- *determining whether fractions are equivalent*
- *converting between improper fractions and mixed numbers*



2.3.2 Equivalent Fractions and Decimals

Learning Objectives:

- *writing fractions as decimals*
- *writing fractions as terminating and repeating decimals*
- *writing decimals as fractions*
- *dog-training application*

Standards:

7.NS: 2d

2.3.3 Comparing and Ordering Rational Numbers

Learning Objectives:

- *comparing fractions*
- *comparing decimals*
- *ordering fractions and decimals*

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3 Operations with Rational Numbers

3.1 Operations with Decimals

3.1.1 Rounding and Estimating Decimals

Learning Objectives:

- *rounding monetary values*
- *rounding decimals*
- *rounding decimals to estimate sums*

3.1.2 Adding and Subtracting Decimals

Learning Objectives:

- *adding and subtracting decimals*
- *using a number line to add decimals*
- *evaluating expressions with decimals*

Standards:

7.NS: 1; 7.NS: 1b

3.1.3 Multiplying Decimals

Learning Objectives:

- *multiplying decimals*
- *evaluating expressions involving multiplication of decimals*

Standards:

7.NS: 2; 7.NS: 2a

3.1.4 Dividing Decimals by Whole Numbers

Learning Objectives:

- *dividing decimals by whole numbers*
- *rounding a decimal quotient*
- *problem-solving application*

Standards:

7.NS: 2; 7.NS: 2b; 7.NS: 2d; 7.NS: 3

3.1.5 Dividing Decimals

Learning Objectives:

- *dividing decimals*
- *evaluating expressions with fractions and decimals*
- *evaluating expressions involving division of decimals*

Standards:

7.NS: 2; 7.NS: 2a

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3.2 Operations with Fractions

3.2.1 Estimating Fraction Sums and Differences

Learning Objectives:

- *estimating fractions*
- *sports application*

Standards:

7.NS: 1

3.2.2 Multiplying Fractions and Mixed Numbers

Learning Objectives:

- *multiplying fractions*
- *problem-solving application*
- *multiplying a fraction and a mixed number by an integer*
- *multiplying mixed numbers*

Standards:

7.RP: 1; 7.NS: 2; 7.NS: 2a; 7.NS: 2c

3.2.3 Dividing Fractions and Mixed Numbers

Learning Objectives:

- *introduction to dividing with fractions*
- *problem-solving application*
- *evaluating expressions with division of fractions and mixed numbers*

Standards:

7.NS: 2; 7.NS: 2a; 7.NS: 2b; 7.NS: 3

3.2.4 Adding and Subtracting Fractions and Mixed Numbers

Learning Objectives:

- *adding and subtracting fractions with like denominators*
- *adding and subtracting fractions with unlike denominators*
- *evaluating expressions with fractions*

Standards:

7.NS: 1; 7.NS: 1b; 7.NS: 1c; 7.NS: 3

3.2.5 Solving Equations with Rational Numbers

Learning Objectives:

- *solving equations with decimals*
- *solving equations with fractions*
- *solving word problems using equations*

Standards:

7.NS: 1; 7.NS: 2; 7.NS: 3; 7.EE: 4

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4 Proportional Relationships

4.1 Ratios, Rates, and Proportions

4.1.1 Ratios

Learning Objectives:

- *writing ratios*
- *writing ratios in simplest form*
- *comparing ratios*

Standards:

7.RP: 2

4.1.2 Rates

Learning Objectives:

- *finding unit rates*
- *finding average speed*
- *consumer math application*

Standards:

7.RP: 1; 7.RP: 2; 7.RP: 2a; 7.RP: 2b

4.1.3 Identifying and Writing Proportions

Learning Objectives:

- *comparing ratios in simplest form*
- *comparing ratios using a common denominator*
- *finding equivalent ratios and writing proportions*

Standards:

7.RP: 2; 7.RP: 2a

4.1.4 Solving Proportions

Learning Objectives:

- *solving proportions using cross products*
- *problem-solving application*

Standards:

7.RP: 2; 7.EE: 4

4.2 Measurement

4.2.1 Customary Measurement

Learning Objectives:

- *choosing the appropriate customary unit*
- *converting customary units*
- *adding or subtracting mixed units of measure*

Standards:

7.RP: 2; 7.NS: 3; 7.EE: 3; 7.EE: 4

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4.2.2 Metric Measurements

Learning Objectives:

- *introduction to the metric system*
- *converting metric units*
- *using unit conversion to make comparisons*

Standards:

7.RP: 2; 7.NS: 3; 7.EE: 3; 7.EE: 4

4.2.3 Dimensional Analysis

Learning Objectives:

- *using conversion factors to solve problems*
- *converting between metric and customary units*
- *sports application*

Standards:

7.RP: 2; 7.NS: 2a; 7.NS: 2c; 7.EE: 3; 7.EE: 4

4.2.4 Similar Figures and Proportions

Learning Objectives:

- *determining whether two triangles are similar*
- *determining whether two four-sided figures are similar*

Standards:

7.RP: 2; 7.RP: 2b; 7.EE: 4

4.2.5 Using Similar Figures

Learning Objectives:

- *finding unknown measures in similar figures*
- *measurement application*
- *estimating with indirect measurement*

Standards:

7.RP: 2; 7.EE: 4

4.2.6 Scale Drawings and Scale Models

Learning Objectives:

- *finding a scale factor*
- *using scale factors to find unknown lengths*
- *measurement application*

Standards:

7.RP: 1; 7.RP: 2; 7.RP: 2b; 7.EE: 4; 7.G: 1



5 Graphs and Functions

5.1 Functions, Tables, and Graphs

5.1.1 The Coordinate Plane

Learning Objectives:

- *identifying quadrants on a coordinate plane*
- *plotting points on a coordinate plane*
- *identifying points on a coordinate plane*

5.1.2 Tables and Graphs

Learning Objectives:

- *identifying ordered pairs from a table of values*
- *graphing ordered pairs from a table of values*
- *education application*

Standards:

7.RP: 2b; 7.RP: 2d

5.1.3 Interpreting Graphs

Learning Objectives:

- *relating graphs to situations*
- *problem-solving application*

5.1.4 Functions, Tables, and Graphs

Learning Objectives:

- *completing a function table*
- *graphing functions using ordered pairs*

5.1.5 Find the Pattern in Sequences

Learning Objectives:

- *identifying patterns in sequences*
- *identifying functions in sequences*
- *using functions to extend sequences*

Standards:

7.RP: 2; 7.RP: 2b; 7.RP: 2c; 7.EE: 4

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5.2 Linear Functions

5.2.1 Graphing Linear Functions

Learning Objectives:

- *graphing linear functions*

Standards:

7.RP: 2; 7.RP: 2b; 7.RP: 2c; 7.EE: 4

5.2.2 Slopes and Rates of Change

Learning Objectives:

- *identifying the slope of a line*
- *using slope and a point to graph a line*
- *identifying rates of change in graphs*
- *using rates of change to solve problems*

Standards:

7.RP: 2; 7.RP: 2b; 7.RP: 2d

5.2.3 Slope-Intercept Form

Learning Objectives:

- *finding x- and y-intercepts*
- *graphing by using slope and y-intercept*
- *writing an equation in slope-intercept form*
- *using slope-intercept form*

Standards:

7.RP: 2b; 7.RP: 2d

5.2.4 Direct Variation

Learning Objectives:

- *identifying a direct variation from an equation*
- *identifying a direct variation from a table*
- *identifying a direct variation from a graph*
- *recreation application*

Standards:

7.RP: 2; 7.RP: 2a; 7.RP: 2b; 7.RP: 2c; 7.RP: 2d; 7.NS: 2b

5.2.5 Inverse Variation

Learning Objectives:

- *identifying an inverse variation*
- *geometry application*
- *identifying a graph of an inverse variation*

Standards:

7.RP: 2; 7.RP: 2a; 7.RP: 2b

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6 Percents

6.1 Proportions and Percents

6.1.1 Percents

Learning Objectives:

- *modeling percents*
- *writing percents as fractions*
- *life science application*
- *writing percents as decimals*
- *biology application*

6.1.2 Percents, Decimals, and Fractions

Learning Objectives:

- *writing decimals as percents*
- *writing fractions as percents*
- *drama application*

Standards:

7.NS: 2d

6.1.3 Estimating with Percents

Learning Objectives:

- *estimating with percents*
- *problem-solving application*
- *manufacturing application*

Standards:

7.EE: 3

6.1.4 Finding Percents

Learning Objectives:

- *finding the percent one number is of another*
- *community application*
- *finding the percent of a number*

Standards:

7.RP: 3; 7.NS: 2; 7.NS: 3; 7.EE: 3; 7.EE: 4

6.2 Applying Percents

6.2.1 Finding a Number When the Percent is Known

Learning Objectives:

- *finding a number when the percent is known*
- *architecture application*
- *recreation application*

Standards:

7.RP: 3; 7.EE: 4

6.2.2 Percent Increase and Decrease

Learning Objectives:

- *finding percent increase or decrease*
- *business application*
- *finding discounts and markups*

Standards:

7.RP: 3; 7.NS: 2; 7.NS: 3; 7.EE: 3; 7.EE: 4

6.2.3 Simple Interest

Learning Objectives:

- *finding interest and total payment on a loan*
- *determining the amount of investment time*
- *computing total savings*
- *finding the rate of interest*

Standards:

7.RP: 3; 7.NS: 2; 7.NS: 3; 7.EE: 3; 7.EE: 4

7 Data

7.1 Organizing and Displaying Data

7.1.1 Frequency Tables, Stem-and-Leaf Plots, and Line Plots

Learning Objectives:

- *organizing and interpreting data in a frequency table*
- *organizing and interpreting data in a stem-and leaf plot*
- *organizing and interpreting data in a line plot*

7.1.2 Mean, Median, Mode, and Range

Learning Objectives:

- *finding the mean, median, mode, and range of a data set*
- *choosing the best measure to describe a set of data*
- *exploring the effects of outliers on measures of central tendency*

7.1.3 Bar Graphs and Histograms

Learning Objectives:

- *interpreting a bar graph*
- *making a double-bar graph*
- *making a histogram*

7.1.4 Reading and Interpreting Circle Graphs

Learning Objectives:

- *life science application*
- *interpreting circle graphs*
- *choosing an appropriate graph*

7.1.5 Box-and-Whisker Plots

Learning Objectives:

- *making a box-and-whisker plot*
- *comparing box-and-whisker plots*

Standards:

7.SP: 3



7.2 Representing and Analyzing Data

7.2.1 Line Graphs

Learning Objectives:

- *making a line graph*
- *using a line graph to estimate data*
- *making a double-line graph*

7.2.2 Choosing an Appropriate Display

Learning Objectives:

- *choosing an appropriate display*
- *identifying the most appropriate display*

7.2.3 Populations and Samples

Learning Objectives:

- *analyzing sample methods*
- *identifying potentially biased samples*
- *verifying claims based on statistical data*

Standards:

7.RP: 3; 7.SP: 1; 7.SP: 2; 7.EE: 4

7.2.4 Scatter Plots

Learning Objectives:

- *making a scatter plot*
- *determining relationships between two sets of data*

7.2.5 Misleading Graphs

Learning Objectives:

- *social studies application*
- *analyzing misleading graphs*

8 Geometric Figures

8.1 Lines and Angles

8.1.1 Points, Lines, and Planes

Learning Objectives:

- *identifying points, lines, and planes*
- *identifying line segments and rays*

8.1.2 Angles and Their Relationships

Learning Objectives:

- *identifying and classifying angles*
- *finding the supplement and the complement of angles*
- *finding the measure of vertical angles*
- *applying angle relationships*

Standards:

7.G: 5

8.1.3 Geometric Relationships

Learning Objectives:

- *identifying lines in space*

8.2 Circles and Polygons

8.2.1 Classifying Polygons

Learning Objectives:

- *identifying parts of circles*

8.2.2 Classifying Triangles

Learning Objectives:

- *identifying polygons*
- *classifying polygons*
- *identifying and classifying regular polygons*

8.2.3 Classifying Quadrilaterals

Learning Objectives:

- *classifying triangles*
- *identifying triangles*



8.2.4 Angles in Polygons

Learning Objectives:

- *classifying quadrilaterals*
- *drawing quadrilaterals*

Standards:

7.EE: 4

8.3 Transformations

8.3.1 Congruent Figures

Learning Objectives:

- *identifying congruent figures*
- *identifying congruent triangles*
- *using congruence to find missing measures*

8.3.2 Translations, Reflections, and Rotations

Learning Objectives:

- *identifying types of transformations*
- *graphing translations on a coordinate plane*
- *graphing reflections on a coordinate plane*
- *graphing rotations on a coordinate plane*

8.3.3 Dilations

Learning Objectives:

- *identifying dilations*
- *using a dilation to enlarge a figure*
- *using a dilation to reduce a figure*

Standards:

7.RP: 2; 7.RP: 2a; 7.NS: 2; 7.G: 1

8.3.4 Symmetry

Learning Objectives:

- *identifying line symmetry*
- *social studies application*
- *identifying rotational symmetry*

9 Measurement: Two-Dimensional Figures

9.1 Perimeter, Circumference, and Area

9.1.1 Accuracy and Precision

Learning Objectives:

- *judging precision of measurements*
- *identifying significant digits*
- *using significant digits in addition or subtraction*
- *using significant digits in multiplication or division*

Standards:

7.NS: 1; 7.NS: 2

9.1.2 Perimeter and Circumference

Learning Objectives:

- *finding the perimeter of a polygon*
- *using properties of a rectangle to find perimeter*
- *finding the circumference of a circle*
- *design application*

Standards:

7.NS: 2; 7.G: 4; 7.EE: 4

9.1.3 Area of Parallelograms

Learning Objectives:

- *finding the perimeter of a polygon*
- *finding the length or width of a rectangle*
- *finding the area of a parallelogram*
- *home improvement application*

Standards:

7.NS: 2; 7.G: 6; 7.EE: 3; 7.EE: 4

9.1.4 Area of Triangles and Trapezoids

Learning Objectives:

- *finding the area of a triangle*
- *finding the area of a trapezoid*
- *architecture application*

Standards:

7.NS: 2; 7.G: 6

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9.1.5 Area of Circles

Learning Objectives:

- *finding the area of a circle*
- *social studies application*
- *measurement application*

Standards:

7.NS: 2; 7.G: 4; 7.EE: 3

9.1.6 Area of Irregular Figures

Learning Objectives:

- *estimating the area of an irregular figure*
- *finding the area of a composite figure*
- *problem-solving application*

Standards:

7.NS: 2; 7.G: 4; 7.G: 6; 7.EE: 3

9.2 Square Roots and the Pythagorean Theorem

9.2.1 Squares and Square Roots

Learning Objectives:

- *finding squares of numbers*
- *finding square roots of perfect squares*
- *estimating square roots*
- *recreation application*

Standards:

7.EE: 4

9.2.2 The Pythagorean Theorem

Learning Objectives:

- *calculating the length of a side of a right triangle*
- *problem-solving application*

Standards:

7.EE: 4

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10 Measurement: Three-Dimensional Figures

10.1 Volume

10.1.1 Introduction to Three-Dimensional Figures

Learning Objectives:

- *naming prisms and pyramids*
- *classifying three-dimensional figures*

10.1.2 Volume of Prisms and Cylinders

Learning Objectives:

- *using cubes to find the volume of a rectangular prism*
- *using a formula to find the volume of a prism*
- *using a formula to find the volume of a cylinder*
- *finding the volume of a composite figure*

Standards:

7.NS: 2; 7.G: 3; 7.G: 6; 7.EE: 3

10.1.3 Volume of Pyramids and Cones

Learning Objectives:

- *finding the volume of a rectangular pyramid*
- *finding the volume of a cone*

Standards:

7.NS: 2; 7.G: 6

10.2 Surface Area

10.2.1 Surface Area of Prisms and Cylinders

Learning Objectives:

- *finding the surface area of a prism*
- *finding the surface area of a cylinder*
- *problem-solving application*

Standards:

7.NS: 2; 7.G: 6; 7.EE: 3

10.2.2 Surface Area of Pyramids and Cones

Learning Objectives:

- *finding the surface area of a pyramid*
- *finding the surface area of a cone*

Standards:

7.NS: 2; 7.G: 6

10.2.3 Changing Dimensions

Learning Objectives:

- *finding the surface area of a similar figure*
- *finding volume using similar figures*
- *problem-solving application*

Standards:

7.NS: 2; 7.G: 1; 7.G: 6; 7.EE: 3