# KINDERGARTEN MATHEMATICS LEARNING GOALS

*Organized by month*

**October**
Count forward from 0 to 21.
Count back from 10 to 1.
Read the numbers 0 to 10.
Compare lengths, matching ends.
Recognize a penny and know its value.
Match one-to-one.

**November**
Count forward from 0 to 35.
Count back from 10 to 1.
Read the numbers 1 to 15.
Recognize and name a triangle, square, circle, and rectangle.
Recognize simple examples of symmetry.

**December**
Count forward from 0 to 50.
Count back from 12 to 0.
Understand each "teen" number as 10 + a digit.
Use concepts of greater and less to find a "mystery number." (Monster Squeeze Game)
Read and record amounts of pennies using the cents sign.
Generate, continue, and copy patterns.

**January**
Write the numbers from 0 to 10.
Count forward from 0 to 70.
Count back from 15 to 0.
Skip count with the group by 2's, 5's, and 10's.
Count with a calculator.
Explore using a variety of measuring tools.
Identify a dime and a nickel.
Participate in telling change-to-more (addition) number stories.
Discuss graph outcomes with the group.

**February**
Count forward from 0 to 90.
Count back from 15 to 0.
Count tally marks.
Count on, varying the starting point.
Identify a quarter.

## KINDERGARTEN MATHEMATICS LEARNING GOALS page 2

**March**
Count forward from 0 to 115.
Count back from 20 to 0.
Read time to the nearest hour on an analog clock.
Participate in telling change-to-less (subtraction) stories.
Make and continue three-art patterns.

**April**
Count forward from 0 to 115
Count back from 20 to 0.
Skip count by 2's, 5's, and 10's.
Write the numbers from 0 to 20.
Read 3-digit numbers.
Recognize and understand 1/2.
Estimate (on analog clocks) using the hour hand only.
Know the value of a penny, nickel, and dime; recognize a quarter.
Enjoy playing simple "What's My Rule?" games.

# FIRST GRADE MATHEMATICS LEARNING GOALS

*Organized by unit*

| | | |
|---|---|---|
| 1a | Count by 5's to 40 | (Developing) |
| 1b | Count by 2's to 40 | (Developing) |
| 1c | Write numbers from 1 to 20 | (Developing) |
| 1d | Compare pairs of numbers less than 16 | (Developing) |
| 1e | Write and count tallies | (Developing) |
| 1f | Count up and back by 1's, starting with any number up to and including 20 | (Secure) |
| 1g | Count up to 20 objects | (Secure) |
| | | |
| 2a | Calculate the values of various combinations of pennies and nickels | (Developing) |
| 2b | Find complements of 10 | (Developing) |
| 2c | Solve simple addition and subtraction number stories | (Developing) |
| 2d | Count up and back by 1's on the number grid | (Developing/Secure) |
| 2e | Tell time to the nearest hour | (Developing/Secure) |
| 2f | Exchange pennies for nickels | (Developing/Secure) |
| 2g | Count by 2's to 20; 5's to 50 | (Secure) |
| | | |
| 3a | Complete Frames-and-Arrows diagrams | (Beginning/Developing |
| 3b | Identify and complete patterns | (Developing) |
| 3c | Solve simple addition and subtraction problems by skip counting on the number line and the number grid | (Developing) |
| 3d | Identify numbers as even or odd | (Developing) |
| 3e | Know the values of pennies, nickels, and dimes, and calculate the value of combinations of these | (Developing) |
| 3f | Tell time to the nearest half-hour | (Developing) |
| 3g | Solve simple number stories | (Developing) |
| | | |
| 4a | Use standard units for measuring lengths | (Beginning/Developing) |
| 4b | Find simple sums and missing addends | (Developing) |
| 4c | Calculate the values of coin combinations | (Developing) |
| 4d | Solve simple number stories | (Developing) |
| 4e | Order and compare numbers to 22 | (Developing/Secure) |
| 4f | Tell time to the nearest half-hour | |
| | | |
| 5a | Find missing numbers and/or the missing rule in "What's My Rule?" problems | (Beginning) |
| 5b | Understand place value for longs and cubes | (Developing) |
| 5c | Compare numbers using less than/greater than | (Developing) |

## FIRST GRADE MATHEMATICS LEARNING GOALS page 2

| | | |
|---|---|---|
| 5d | Know +1, +0, doubles and sums of 10 addition facts | (Developing) |
| 5e | Solve simple number stories | (Developing) |
| 6a | Measure objects to the nearest centimeter | (Beginning) |
| 6b | Understand digital notation for time | (Beginning) |
| 6c | Learn simple addition facts | (Beginning/Developing) |
| 6d | Calculate the value of coin combinations - "P," "N," "D," and "Q" | (Beginning/Developing) |
| 6e | Find many names for a number | (Developing) |
| 7a | Identify 3-dimensional shapes and know their characteristics | (Beginning) |
| 7b | Identify symmetrical figures | (Beginning) |
| 7c | Sort and identify objects by attributes | (Beginning/Developing) |
| 7d | Identify polygons and know their characteristics | (Beginning/Developing) |
| 7e | Know addition facts | (Developing) |
| 8a | Make change for amounts less than $1 | (Beginning) |
| 8b | Identify fractional parts of regions and sets with a focus on unit fractions | (Beginning/Developing) |
| 8c | Count sets of quarters, dimes, nickels, and pennies | (Developing) |
| 8d | Solve number stories | (Developing) |
| 8e | Understand place value for 10's and 1's | (Developing/Secure) |
| 8f | Know addition facts for 11, 10, doubles and sums of ten | (Developing/Secure) |
| 9a | Solve 2-digit addition and subtraction problems | (Beginning) |
| 9b | Compare fractions less than 1 | (Beginning) |
| 9c | Find equivalent fractions | (Beginning) |
| 9d | Identify fractional parts of a region | (Beginning/Developing) |
| 9e | Identify and use patterns on the number grid | (Developing) |
| 10a | Make a line plot of a set of data and find the mode and median of a set of data | (Review) |
| 10b | Review telling time on an analog clock and writing times in digital notation; practice alternate ways of naming times; calculate elapsed times | (Review) |
| 10c | Review showing amounts of money with coins and solve number stories involving addition of 2-digit numbers | (Review) |

## FIRST GRADE MATHEMATICS LEARNING GOALS page 3

| | | |
|---|---|---|
| 10d | Solve comparison number stories and calculate amounts of change from purchases | (Review) |
| 10e | Review the names and some of the characteristics of polygons and the names of the basic 3-dimensional shapes | (Review) |
| 10f | Review temperature readings in degrees Fahrenheit and use the information on a map to find temperature differences | (Review) |
| 10g | Review place value through hundreds | (Review) |

## SECOND GRADE MATHEMATICS LEARNING GOALS

*Organized by unit*

| | | |
|---|---|---|
| 1a | Find values of coin and bill combinations | (Developing) |
| 1b | Know "easy" addition facts (sums to 10) | (Developing) |
| 1c | Identify place value for ones, tens, and hundreds | (Developing) |
| 1d | Complete number sequences; identify and use number patterns to solve problems | (Developing) |
| 1e | Find equivalent names for numbers | (Developing) |
| 1f | Compare numbers: write symbols for less than, greater than, equal to | (Developing) |
| 1g | Count by 2's, 5's, and 10's | (Secure) |
| 1h | Make tallies and give the total | (Secure) |

| | | |
|---|---|---|
| 2a | Know "harder" subtraction facts | (Developing) |
| 2b | Know "harder" addition facts | (Developing/Secure) |
| 2c | Know "easier" subtraction facts | (Developing/Secure) |
| 2d | Complete "What's My Rule?" tables | (Developing/Secure) |
| 2e | Solve simple subtraction number stories | (Developing/Secure) |
| 2f | Know "easier" addition facts | (Secure) |
| 2g | Construct fact families for addition and subtraction | (Secure) |
| 2h | Complete simple Frames-and-Arrows diagrams | (Secure) |
| 2i | Solve simple addition number stories | (Secure) |
| 2j | Find equivalent names for numbers | (Secure) |

| | | |
|---|---|---|
| 3a | Solve Frames-and-Arrows problems having two rules | (Developing) |
| 3b | Make change | (Developing) |
| 3c | Know more difficult subtraction facts | (Developing) |
| 3d | Tell time to 5-minutes intervals | (Developing/Secure) |
| 3e | Identify place value in 2-digit and 3-digit numbers | (Secure) |
| 3f | Show "P," "N," "D" and "Q" for given amount | (Secure) |
| 3g | Know all addition facts | (Secure) |
| 3h | Know easy subtraction facts | (Secure) |

| | | |
|---|---|---|
| 4a | Devise and use strategies for finding sums of 2-digit numbers | (Developing) |
| 4b | Devise and use strategies for finding differences of 2-digit numbers | (Developing) |
| 4c | Estimate approximate costs and sums | (Developing) |
| 4d | Read degrees Fahrenheit on a thermometer | (Developing) |
| 4e | Add and subtract multiples of 10 | (Secure) |

## SECOND GRADE MATHEMATICS LEARNING GOALS page 2

| | | |
|---|---|---|
| 5a | Identify 3-dimensional shapes, such as rectangular prisms, cylinders, pyramids, cones, and spheres | (Developing) |
| 5b | Identify symmetrical figures | (Developing) |
| 5c | Find common attributes of shapes | (Developing) |
| 5d | Identify parallel and nonparallel line segments | (Developing) |
| 5e | Draw line segments | (Developing/Secure) |
| 5f | Identify 2-dimensional shapes | (Secure) |
| | | |
| 6a | Solve stories about multiples of equal groups | (Beginning/Developing) |
| 6b | Solve equal-grouping and equal-sharing division problems | (Beginning/Developing) |
| 6c | Use the trade-first method to solve 2-digit subtraction problems | (Developing) |
| 6d | Make ballpark estimates of exact answers | (Developing) |
| 6e | Model multiplication problems with arrays | (Developing) |
| 6f | Add three 2-digit numbers mentally | (Developing) |
| 6g | Add and subtract with multiples of 10 | (Developing/Secure) |
| 6h | Solve addition and subtraction number stories | (Developing/Secure) |
| 6i | Add three 1-digit numbers mentally | (Secure) |
| | | |
| 7a | Find missing addends for any multiple of 10 | (Developing) |
| 7b | Find the median (middle value) of a data set | (Developing) |
| 7c | Add three 2-digit numbers mentally | (Developing) |
| 7d | Measure to the nearest inch | (Developing/Secure) |
| 7e | Measure to the nearest centimeter | (Developing/Secure) |
| 7f | Know complements of 10 | (Secure) |
| 7g | Count by 2's, 5's, and 10's and describe the patterns | (Secure) |
| 7h | Find missing addends for the next multiple of 10 | (Secure) |
| 7i | Solve number-grid puzzles | (Secure) |
| 7j | Plot data on a bar graph | (Secure) |
| | | |
| 8a | Compare fractions | (Beginning/Developing) |
| 8b | Understand fractions as names for equal parts of a region or set | (Developing) |
| 8c | Understand that the amount represented by a fraction depends on the size of the whole (ONE) | (Developing) |
| 8d | Shade a specified fractional part of a collection | (Developing) |
| 8e | Give the fraction name for the shaded part of a collection | (Developing) |
| 8f | Recognize equivalent fraction names | (Developing) |
| 8g | Shade a specified fractional part of a region | (Secure) |
| 8h | Give the fraction name for the shaded part of a region | (Secure) |

## SECOND GRADE MATHEMATICS LEARNING GOALS page 3

| | | |
|---|---|---|
| 9a | Identify equivalencies for mm, cm, dm, and m | (Beginning/Developing) |
| 9b | Measure to the nearest 1/2 inch | (Developing) |
| 9c | Measure to the nearest 1/2 centimeter | (Developing) |
| 9d | Use appropriate units for measurement and recognize sensible measurements | (Developing) |
| 9e | Find area concretely | (Developing) |
| 9f | Find perimeter concretely | (Developing) |
| 9g | Identify equivalencies for inches, feet, yards | (Developing/Secure) |
| 9h | Use a ruler, tape measure, and meter/yardstick correctly | (Secure) |
| 10a | Use parentheses in number models | (Beginning) |
| 10b | Solve money stories involving change | (Developing) |
| 10c | Estimate totals for "ballpark" check of exact answers | (Developing) |
| 10d | Know and express automatically the values of digits in 5-digit numbers | (Developing) |
| 10e | Read and write money amounts in decimal notation | (Secure) |
| 10f | Use equivalent coins to show money amounts in different ways | (Secure) |
| 10g | Use a calculator to compute money amounts | (Secure) |
| 10h | Know exchange values of U.S. coins | (Secure) |
| 10i | Know and express automatically the values of digits in 2-, 3-, and 4-digit numbers | (Secure) |
| 11a | Estimate and solve addition and subtraction number stories with dollars and cents | (Developing) |
| 11b | Solve 1-digit multiplication stories (multiples of equal groups) | (Developing) |
| 11c | Solve simple division stories (equal sharing and equal grouping) | (Developing) |
| 11d | Multiply numbers with 2,5, or 10 as a factor | (Developing) |
| 11e | Construct multiplication/division fact families | (Developing) |
| 11f | Make difference and ratio comparisons | (Developing) |
| 11g | Multiply numbers with 0 or 1 as a factor | (Secure) |
| 12a | Use alternate names for times of day | (Beginning) |
| 12b | Know "harder" multiplication facts | (Beginning) |
| 12c | Determine the mode of a data set | (Beginning) |
| 12d | Determine the median, maximum, minimum, and range of a data set | (Developing) |
| 12e | Construct multiplication/division fact families | (Developing/Secure) |
| 12f | Multiply numbers with 2, 5, and 10 a factor | (Developing/Secure) |
| 12g | Tell time to 5-minute intervals | (Secure) |
| 12h | Demonstrate calendar concepts and skills | (Secure) |
| 12i | Compare quantities from a bar graph | (Secure) |

# THIRD GRADE MATHEMATICS LEARNING GOALS

*Organized by unit*

| | | |
|---|---|---|
| 1a. | Identify and use number patterns to solve problems | Developing |
| 1b | Count by 10's and 100's | Secure |
| 1c | Apply place-value concepts in 4-digit numbers | Secure |
| 1d | Tell and show times to the nearest minute | Secure |
| 1e | Count combinations of bills and coins and write the total in dollars-and-cents notation | Secure |
| 1f | Find equivalent names for numbers | Secure |
| 1g | Know basic addition facts | Secure |
| | | |
| 2a | Estimate answers to multidigit addition and subtraction problems | Developing |
| 2b | Use basic facts to solve fact extensions | Secure |
| 2c | Complete "What's My Rule?" tables | Secure |
| 2d | Know basic addition and subtraction facts | Secure |
| 2e | Complete fact and number families | Secure |
| 2f | Solve addition and subtraction multidigit number stories | Secure |
| 2g | Add multidigit numbers | Secure |
| 2h | Subtract multidigit numbers | Secure |
| | | |
| 3a | Find the perimeter of a polygon | Developing |
| 3b | Find the area of a rectangular region divided into square units | Developing |
| 3c | Measure line segments to the nearest ¼ inch | Secure |
| 3d | Measure line segments to the nearest cm | Secure |
| | | |
| 4a | Solve number stories involving equal groups by using multiplication | Developing |
| 4b | Solve number stories involving equal sharing and equal grouping | Developing |
| 4c | Know multiplication facts having 3 or 4 as one factor and 2 through 7 as the other factor | Developing |
| 4d | Know multiplication facts having 2,5, or 10 as a factor | Secure |
| 4e | Complete multiplication/division fact families | Secure |
| 4f | Know multiplication facts having 0 or 1 as a factor | Secure |
| | | |
| 5a | Read, write, and compare 6- and 7-digit whole numbers | Beginning |
| 5b | Read and write 3-digit decimals | Beginning |
| 5c | Compare and order decimals | Developing |
| 5d | Identify place value in decimals | Developing |
| 5e | Read and write 1- and 2-digit decimals | Developing |

**THIRD GRADE MATHEMATICS LEARNING GOALS page 2**

| | | |
|---|---|---|
| 5f | Know multiplication facts from the first set of Fact Triangles | Secure |
| 5g | Read, write, and compare whole numbers up to 5 digits | Secure |
| 5h | Identify place value in whole numbers up to 5 digits | Secure |
| | | |
| 6a | Identify, draw, and name line segments, lines, and rays | Developing |
| 6b | Draw parallel and intersecting line segments, line, rays | Developing |
| 6c | Draw angles as records of rotations | Developing |
| 6e | (6d is a repeat skill) Identify right angles | Secure |
| 6f | Identify and name 2-D and 3-D shapes | Secure |
| 6g | Identify symmetric figures and draw lines of symmetry | Secure |
| | | |
| 7a | Understand function and placement of parentheses in number sentences | Beginning/developing |
| 7b | Make ballpark estimates for sums and products | Beg/dev |
| 7c | Recognize and know square products | Developing |
| 7d | Know multiplication facts from second set of Triangles | Developing |
| 7e | Solve extended multiplication facts to tens X tens | Developing |
| | | |
| 8a | Compare and order fractions | Beginning |
| 8b | Convert between mixed numbers and fractions | Beginning |
| 8c | Identify fractions on a number line | Beg/dev |
| 8d | Find equivalent fractions | Beg/dev |
| 8e | Solve fraction number stories | Beg/dev |
| 8f | Identify fractional parts of a set | Developing |
| 8g | Identify fractional parts of region | Developing |
| | | |
| 9a | Solve number stories involving positive and negative numbers | Beginning |
| 9b | Use the partial-products algorithm or the lattice method to multiply multidigit numbers by 1- or 2-digit numbers | Beg/dev |
| 9c | Find factors of a number | Beg/dev |
| 9d | Interpret remainders in division problems | Beg/dev |
| 9e | Solve extended multiplication facts to hundreds X hundreds | Developing |
| 9f | Solve number stories involving equal shares and equal groups | Developing |
| | | |
| 10a | Find the volume of rectangular prisms | Beg/dev |
| 10b | Find the mean of a data set | Beg/dev |
| 10c | Find the median of a data set | Developing |
| 10d | Measure in centimeters and inches | Developing |
| 10e | Know units of measure | Developing |
| 10f | Make a frequency table | Developing |

## THIRD GRADE MATHEMATICS LEARNING GOALS page 3

| | | |
|---|---|---|
| 10g | Know multiplication facts | Developing |
| 10h | Make a bar graph | Secure |
| | | |
| 11a | Understands and uses the language of probability | Beg/dev |
| 11b | Uses fractions to record probability of events | Beg/dev |
| 11c | Uses random draws to predict outcomes | Beg/dev |
| 11d | Collects and organizes data for use in predicting outcomes | Beg/dev |
| 11e | Understands area model of probability and solves simple spinner problems | Beg/dev |

# FOURTH GRADE MATHEMATICS LEARNING GOALS

*Organized by unit*

| | | |
|---|---|---|
| 1a | Use a compass and straightedge to construct geometric figures | Beginning |
| 1b | Identify properties of polygons | Developing |
| 1c | Classify quadrangles according to side and angle properties | Developing |
| 1d | Name, draw, and label line segments, lines, and rays | Secure |
| 1e | Name, draw, and label angles, triangles, and quadrangles | Secure |
| 1f | Identify and describe right angles and parallel lines and line segments | Secure |
| 1g | Solve addition and subtraction facts | Secure |
| | | |
| 2a | Display data with a line plot, bar graph, or tally chart | Developing |
| 2b | Use the statistical landmarks median, mode, and range | Developing |
| 2c | Use the statistical landmarks maximum and minimum | Secure |
| 2d | Have a successful strategy for subtracting multidigit numbers | Secure |
| 2e | Have a successful strategy for adding multidigit numbers | Secure |
| 2f | Read and write numerals to hundred-millions; give the value of the digits in numerals to hundred-millions | Secure |
| 2g | Give equivalent names for numbers | Secure |
| | | |
| 3a | Solve open sentences | Developing |
| 3b | Insert parentheses to make true number sentences; solve problems with parentheses | Developing |
| 3c | Determine whether number sentences are true or false | Developing |
| 3d | Use and explain strategies for solving addition and subtraction number stories | Developing |
| 3e | Use a map scale to estimate distances | Developing |
| 3f | Solve basic division facts | Developing |
| 3g | Solve basic multiplication facts | Secure |
| 3h | Understand the relationship between multiplication and division | Secure |
| | | |
| 4a | Express metric measures with decimals | Developing |
| 4b | Convert between metric measures | Developing |
| 4c | Read and write decimals to thousandths | Developing |
| 4d | Compare and order decimals | Developing |
| 4e | Draw and measure line segments to the nearest millimeter | Developing |
| 4f | Use personal references to estimate lengths in metric units | Developing |
| 4g | Solve 1- and 2- place decimal addition and subtraction problems and number stories | Developing |
| 4h | Draw and measure line segments to the nearest centimeter | Secure |
| 4i | Use dollars-and-cents notation | Secure |

## FOURTH GRADE MATHEMATICS LEARNING GOALS page 2

| | | |
|---|---|---|
| 5a | Use exponential notation to represent powers of 10 | Beginning |
| 5b | Solve extended multiplication facts | Developing |
| 5c | Make magnitude estimates for products of multidigit numbers | Developing |
| 5d | Solve multidigit multiplication problems | Developing |
| 5e | Round whole numbers to a given place | Developing |
| 5f | Read and write numbers to billions; name the values of digits in numerals to billions | Developing |
| 5g | Compare large number | Secure |
| 5h | Estimate sums | Secure |
| | | |
| 6a | Identify locations on Earth for which latitude and longitude are given; find latitude and longitude for given locations | Beginning |
| 6b | Have a successful strategy for solving whole-number division problems | Developing |
| 6c | Express the remainder of a whole-number division problem as a fraction and the answer as a mixed number | Developing |
| 6d | Interpret the remainder in division problems | Developing |
| 6e | Name and locate points specified by ordered number pairs on a coordinate grid | Developing |
| 6f | Identify acute, right, obtuse, straight, and reflex angles | Developing |
| 6g | Make turns and fractions of turns; relate turns and angles | Developing |
| 6h | Use a circular protractor and a half-circle protractor to measure and draw angles | Developing |
| 6i | Use and explain strategies for solving multiplication and division number stories | Developing |
| | | |
| 7a | Add and subtract fractions | Beginning |
| 7b | Rename fractions with denominators of 10 and 100 as decimals | Developing |
| 7c | Apply basic vocabulary and concepts associated with chance events | Developing |
| 7d | Compare and order fractions | Developing |
| 7e | Find fractions equivalent to a given fraction | Developing |
| 7f | Identify the whole for fractions | Secure |
| 7g | Identify fractional parts of a collection of objects | Secure |
| 7h | Identify fractional parts of regions | Secure |
| | | |
| 8a | Make and interpret scale drawings | Beginning |
| 8b | Use formulas to find areas of rectangles, parallelograms, and triangles | Developing |
| 8c | Find the perimeter of a polygon | Developing |
| 8d | Estimate the area of a figure by counting unit squares and fractions of unit squares inside the figure | Developing |

## FOURTH GRADE MATHEMATICS LEARNING GOALS page 3

| | | |
|---|---|---|
| 9a | Use an estimation strategy to divide decimals by whole numbers | Beginning |
| 9b | Use an estimation strategy to multiply decimals by whole numbers | Beginning |
| 9c | Find a percent or a fraction of a number | Developing |
| 9d | Give equivalencies between "easy" fractions (fourths, fifths, tenths), decimals, and percents | Developing |
| 9e | Give equivalencies between hundredths-fractions, decimals, and percents | Secure |
| 9f | Use a calculator to rename any fraction as a decimal or percent | Secure |
| | | |
| 10a | Add integers | Beginning |
| 10b | Rotate figures | Beginning |
| 10c | Translate figures | Developing |
| 10d | Use a transparent mirror to draw the reflection of a figure | Secure |
| 10e | Identify lines of symmetry, lines of reflection, reflected figures, and figures with line symmetry | Secure |
| | | |
| 11a | Use a formula to calculate the volume of rectangular prisms | Beginning |
| 11b | Subtract positive and negative integers | Beginning |
| 11c | Add positive and negative integers | Developing |
| 11d | Estimate the weight of objects in ounces or grams; weigh objects in ounces or grams | Developing |
| 11e | Solve cube-stacking volume problems | Developing |
| 11f | Describe properties of geometric solids | Developing |
| | | |
| 12a | Find unit rates | Developing |
| 12b | Calculate unit prices to determine which product in the "better buy" | Developing |
| 12c | Evaluate the reasonableness of rate data | Developing |
| 12d | Collect and compare rate data | Developing |
| 12e | Solve rate problems, using rate tables as necessary | Secure |

# FIFTH GRADE MATHEMATICS LEARNING GOALS

*Organized by unit*

| | | |
|---|---|---|
| 1a | Find the prime factorization of numbers | Beginning |
| 1b | Rename numbers written in exponential notation | Beginning/Developing |
| 1c | Use a divisibility test to determine if a number is divisible by another number | Developing/Secure |
| 1d | Identify prime and composite numbers | Developing/Secure |
| 1e | Understand how square numbers and their square roots are related | Developing/Secure |
| 1f | Draw arrays to model multiplication | Secure |
| 1g | Know basic multiplication facts | Secure |
| 1h | Identify even and odd numbers | Secure |
| 1i | List the factors of a number | Secure |
| | | |
| 2a | Write and solve open sentences for number stories | Beginning |
| 2b | Round numbers to designated places | Developing |
| 2c | Make magnitude estimates | Developing/Secure |
| 2d | Find the product of multidigit whole numbers and decimals | Developing/Secure |
| 2e | Know place value to billions | Developing/Secure |
| 2f | Find the sum and difference of multidigit whole numbers and decimals | Secure |
| 2g | Identify the maximum, minimum, median, mode, and mean for a data set | Secure |
| | | |
| 3a | Determine angle measures based on relationships between angles | Developing |
| 3b | Estimate the measure of an angle | Developing/Secure |
| 3c | Measure an angle to within 2 degrees | Developing/Secure |
| 3d | Identify types of angles | Developing/Secure |
| 3e | Identify types of triangles | Developing/Secure |
| 3f | Identify place value in numbers to billions | Secure |
| 3g | Know properties of polygons | Secure |
| 3h | Define and create tessellations | Secure |
| | | |
| 4a | Divide decimal numbers by whole numbers with no remainders | Beginning |
| 4b | Write and solve number sentences with variable for division number stories | Beginning |
| 4c | Find the quotient and remainder of a whole number divided by a 1-digit whole number | Developing |
| 4d | Find the quotient and remainder of a whole number divided by a 2-digit whole number | Developing |

**FIFTH GRADE MATHEMATICS LEARNING GOALS page 2**

| | | |
|---|---|---|
| 4e | Make magnitude estimates for quotients of whole and decimal numbers divided by whole numbers | Developing |
| 4f | Interpret the remainder in division number stories | Developing |
| 4g | Determine the value of a variable; use this value to complete a number sentence | Developing |
| 4h | Know place value to hundredths | Secure |
| | | |
| 5a | Add fractions with like denominators | Beginning/Developing |
| 5b | Order and compare fractions | Developing |
| 5c | Convert between fractions and percents | Developing |
| 5d | Draw a circle graph for a set of data | Developing |
| 5e | Measure pieces of a circle graph; interpret a circle graph | Developing |
| 5f | Convert between fractions and mixed numbers | Developing/Secure |
| 5g | Find equivalent fractions | Developing/Secure |
| | | |
| 6a | Construct stem-and-leaf plots | Beginning/Developing |
| 6b | Read and interpret stem-and-leaf plots | Beginning/Developing |
| 6c | Add and subtract fractions with common denominators | Developing |
| 6d | Add and subtract fractions with unlike denominators | Developing |
| 6e | Understand how sample size affects results | Developing |
| 6f | Find a common denominator | Developing |
| 6g | Convert among fractions, decimals, and percents | Developing/Secure |
| 6h | Find and use data landmarks | Secure |
| | | |
| 7a | Understand and apply scientific notation | Beginning/Developing |
| 7b | Understand and apply powers of 10 | Developing |
| 7c | Understand and apply order of operations to evaluate expressions and solve number sentences | Developing |
| 7d | Add and subtract positive and negative numbers | Developing |
| 7e | Understand and apply exponential notation | Developing/Secure |
| 7f | Identify number sentences; tell whether a number sentence is true or false | Developing/Secure |
| 7g | Understand and apply the use of parentheses in number sentences | Developing/Secure |
| 7h | Order and compare positive and negative numbers | Developing/Secure |
| | | |
| 8a | Use an algorithm to multiply mixed numbers | Beginning |
| 8b | Use an algorithm to multiply fractions | Developing |
| 8c | Use an algorithm to subtract mixed numbers with like denominators | Developing |
| 8d | Find a percent of a number | Developing |
| 8e | Use an algorithm to add mixed numbers | Developing/Secure |
| 8f | Order and compare fractions | Developing/Secure |
| 8g | Convert among fractions, decimals, and percents | Secure |
| 8h | Convert between fractions and mixed or whole numbers | Secure |

## FIFTH GRADE MATHEMATICS LEARNING GOALS page 3

| | | |
|---|---|---|
| 8i | Find common denominators | Secure |
| 9a | Plot ordered pairs on a four-quadrant coordinate grid | Developing |
| 9b | Understand the concept of volume of a figure | Developing |
| 9c | Use a formula to find the volume of prisms | Developing |
| 9d | Plot ordered pairs on a one-quadrant coordinate grid | Developing/Secure |
| 9e | Identify the base and height of triangles and parallelograms | Developing/Secure |
| 9f | Use a formula to find the area of triangles and parallelograms | Developing/Secure |
| 9g | Understand the concept of area of a figure | Secure |
| 9h | Use a formula to find the area of rectangles | Secure |
| 10a | Solve two-step pan-balance problems | Beginning |
| 10b | Write algebraic expressions to describe situations | Developing |
| 10c | Represent rate problems as formulas, graphs, and tables | Developing |
| 10d | Use formulas to find circumference and area of a circle | Developing |
| 10e | Distinguish between circumference and area of circle problems | Developing |
| 10f | Solve one-step pan-balance problems | Developing/Secure |
| 10g | Interpret mystery line plots and graphs | Developing/Secure |
| 11a | Understand the relationship between the volume of pyramids and prisms, and the volume of cones and cylinders | Beginning |
| 11b | Find the surface area of prisms | Beginning |
| 11c | Understand how to find the surface area of cylinders | Beginning |
| 11d | Understand the concept of capacity and how to calculate it | Beginning |
| 11e | Use formulas to find the volume of prisms and cylinders | Developing/Secure |
| 11f | Use formulas to find the area of polygons and circles | Secure |
| 11g | Know the properties of geometric solids | Secure |
| 12a | Use tree diagrams to find all possible ways a sequence of choices can be made | Beginning |
| 12b | Compute the probability of outcomes when choices are equally likely | Beginning |
| 12c | Use the Multiplication Counting Principle to find the total number of possible outcomes of a sequence of choices | Beginning/Developing |
| 12d | Find the greatest common factor of two numbers | Developing |
| 12e | Find the least common multiple of two numbers | Developing |
| 12f | Solve ratio and rate number stories | Developing/Secure |
| 12g | Find and identify factors of numbers | Secure |
| 12h | Find the prime factorizations of numbers | Secure |

# SIXTH GRADE MATHEMATICS LEARNING GOALS

*Organized by unit*

| | | |
|---|---|---|
| 1a | Interpret and construct step graphs | Beginning |
| 1b | Match mystery line plots with descriptions | Developing |
| 1c | Use a Percent Circle to interpret circle graphs | Dev/Secure |
| 1d | Find equivalent names for numbers | Secure |
| 1e | Identify statistical landmarks of data sets | Secure |
| 1f | Compute and understand the mean | Secure |
| 1g | Interpret and construct bar graphs | Secure |
| 1h | Interpret and construct broken-line graphs | Secure |
| | | |
| 2a | Translate between scientific notation and standard notation, with and without a calculator | Beginning |
| 2b | Estimate products and multiply decimals | Developing |
| 2c | Divide two whole numbers; give the answer to a specified number of decimal places | Developing |
| 2d | Estimate the quotient and divide a decimal by a whole number | Developing |
| 2e | Multiply by positive and negative powers of 10 | Developing |
| 2f | Interpret number-and-word notation for large numbers | Developing |
| 2g | Use exponential notation for large numbers | Secure |
| 2h | Use exponential notation for small numbers | Developing |
| 2i | Read, write, and compare numbers from thousandths to trillions | Secure |
| 2j | Add and subtract decimals | Secure |
| 2k | Estimate quotients and divide whole numbers | Secure |
| | | |
| 3a | Use variables to describe general patterns | Beginning |
| 3b | Use a spreadsheet | Developing |
| 3c | Interpret mystery graphs | Developing |
| 3d | Write algebraic expressions to represent situations | Developing |
| 3e | Evaluate algebraic expressions and formulas | Developing |
| 3f | Mentally add 1-digit positive and negative numbers | Secure |
| 3g | Represent rates with formulas, tables, and graphs | Secure |
| 3h | Convert between fractions and mixed numbers | Secure |
| 3i | Find the least common multiple of two numbers | Secure |
| 3j | Find the greatest common factor of two numbers | Secure |
| | | |
| 4a | Represent data with circle graphs | Developing |
| 4b | Multiply fractions and mixed numbers | Developing |
| 4c | Add and subtract mixed numbers having fractions with unlike denominators | Developing |

| | | |
|---|---|---|
| 4d | Subtract mixed numbers having fractions with like denominators | Developing |
| 4e | Find a percent of a number | Developing |
| 4f | Add mixed numbers having fractions with like denominators | Secure |
| 4g | Add and subtract fractions with like and unlike denominators | Secure |
| 4h | Compare and order fractions | Secure |
| 4i | Rename numbers expressed by fractions, mixed numbers, decimals, and percents | Secure |
| 4j | Write fractions and mixed numbers in simplest form | Secure |
| | | |
| 5a | Apply properties of supplementary angles and vertical angles | Developing |
| 5b | Apply properties of angles formed by two parallel lines and a transversal | Developing |
| 5c | Apply properties of angles of parallelograms | Developing |
| 5d | Calculate the degree measure of each sector in a circle graph; use a protractor to construct the graph | Developing |
| 5e | Use a compass and straightedge to construct geometric figures | Developing |
| 5f | Apply properties of sums of angle measures of triangles and quadrangles | Secure |
| 5g | Translate figures on a coordinate grid | Secure |
| 5h | Plot ordered number pairs in four quadrants; use ordered number pairs to name points in four quadrants | Secure |
| 5i | Draw or form a figure congruent to a given figure | Secure |
| 5j | Classify angles | Secure |
| 5k | Measure and draw angles using a protractor | Secure |
| | | |
| 6a | Solve and graph solutions for inequalities | Beginning |
| 6b | Solve equations | Developing |
| 6c | Use an algorithm to add, subtract, multiply, and divide fractions and mixed numbers | Developing |
| 6d | Find opposites and reciprocals of numbers | Dev/Secure |
| 6e | Add, subtract, multiply, and divide positive and negative numbers | Dev/Secure |
| 6f | Perform operations in the correct order | Dev/Secure |
| 6g | Identify number sentences as true or false | Dev/Secure |
| 6h | Compare and order positive and negative numbers | Secure |
| 6i | Understand and apply the identity property for multiplication | Secure |
| 6j | Understand and apply the commutative property for addition and multiplication | Secure |

| | | |
|---|---|---|
| 6k | Understand and apply the associative property for addition and multiplication | Secure |
| 7a | Understand and use probability tree diagrams to solve problems | Beginning |
| 7b | Construct and interpret Venn diagrams | Developing |
| 7c | Calculate probability in simple situations | Dev/Secure |
| 7d | Understand what constitutes a fair game | Dev/Secure |
| 7e | Understand and apply the concept of random numbers to probability situations | Dev/Secure |
| 7f | Solve “fraction-of-a-fraction” problems | Secure |
| 7g | Understand how increasing the number of trials affects experimental results | Secure |
| 8a | Write open proportions to model problems | Developing |
| 8b | Solve percent problems | Developing |
| 8c | Solve problems that involve a size-changing factor | Developing |
| 8d | Use cross multiplication to solve open proportions | Dev/Secure |
| 8e | Solve rate number stories | Dev/Secure |
| 8f | Solve ratio number stories | Dev/Secure |
| 8g | Estimate equivalent percents for fractions | Dev/Secure |
| 8h | Solve division problems that involve decimals | Dev/Secure |
| 8i | Use rate tables to solve problems | Secure |
| 9a | Simplify expressions and equations with parentheses | Developing |
| 9b | Apply the distributive property | Dev/Secure |
| 9c | Combine like terms to simplify expressions and equations | Dev/Secure |
| 9d | Solve equations | Dev/Secure |
| 9e | Write and identify equivalent expressions and equations | Dev/secure |
| 9f | Write and solve equations that represent problem situations | Dev/Secure |
| 9g | Use formulas to solve problems | Dev/Secure |
| 9h | Evaluate expressions and formulas | Secure |
| 10a | Identify and use notation for semiregular tessellations | Beginning |
| 10b | Identify figures that can tessellate | Developing |
| 10c | Create nonpolygonal, translation tessellations | Beginning |
| 10d | Explore rotation and point symmetry | Beginning |
| 10e | Explore cross sections of solids | Beginning |
| 10f | Perform topological transformations | Beginning |

# SEVENTH GRADE MATHEMATICS LEARNING GOALS

*Mastery Level*

1. Add/subtract/multiply/divide whole numbers, fractions, decimals without use of calculator.
2. Understand fractions and percents and relationship among fractions, decimals, percents.
3. Solve problems involving percents
4. Simplify expressions and solve equations following the order of operations.
5. Understand and apply the Pythagorean theorem, both looking for the hypotenuse and for a leg, in problem solving.
6. Find area and perimeter/circumference of circles, triangles, parallelograms, trapezoids, and complex figures combining these figures or parts of these figures.
7. Understand the concept of raising a number to a power and finding a root of a number, and use a calculator to do both of those operations.
8. Understand what a spreadsheet is and how to construct one on a computer
9. Convert different units of measurement, both within and between the metric and customary systems.
10. Use different units of measure to measure length, area and volume
11. Understand the rationale behind the use of scientific notation, rewrite numbers in scientific notation, and compute with numbers written in scientific notation.
12. Estimate, round, and decide whether an answer “makes sense” for a problem.
13. Apply previous knowledge to problem-solving.
14. Solve multi-step equations involving signed numbers and variables on both sides of the equation.
15. Use a protractor to measure angles, draw angles, and construct figures with the additional use of a ruler.
16. Use proportions to problem-solve.
17. Use dimensional analysis to problem-solve.
18. Understand ratios and use ratios and scales to solve certain types of problems.
19. Understand the relationship between mass, density, and volume, and solve problems involving the density of materials.
20. Understand what similar figures are, and use ratios and proportions to solve problems involving them.
21. Interpret and construct circle graphs, bar graphs, line graphs, scattergrams, pictographs, histograms, stem-and-leaf plots, and box-and-whisker plots.
22. Know the difference between measure of central tendency: median, mean, and mode.
23. Understand what matrices are, and add/subtract/multiply with them.
24. Understand what integers are, and add/subtract/multiply/divide with signed numbers without use of a calculator.
25. Understand what inequalities are, and graph them on a number line.
26. Understand the concept of absolute value and solve equations involving absolute value.
27. Graph points and lines on Cartesian coordinate systems.

# EIGHTH GRADE MATHEMATICS LEARNING GOALS

*Mastery Level*

1. Add/subtract/multiply/divide signed numbers (including fractions, decimals and whole numbers) without a calculator.
2. Simplify algebraic expressions by combining like terms.
3. Solve equations and inequalities, including ones that involve absolute value quantities, squared quantities, and quantities that involve finding the square root of a quantity.
4. Graph simple and compound inequalities.
5. Graph points and linear equations, including finding slopes and intercepts and writing equations from the graphs.
6. Add/Sub/Mult matrices and use scalar multiplication.
7. Identify geometric terms including parallel lines, perpendicular lines, adjacent angles, vertical angles, supplementary angles, and complementary angles.
8. Identify different and similar characteristics among the different types of quadrilaterals.
9. Understand rotation and reflection symmetry.
10. Perform rigid transformations on geometric figures: reflections, rotations and translations.
11. Understand and apply the encasement method for finding the area of a polygon.
12. Understand and evaluate functions.
13. Solve systems of equations using substitution.
14. Understand set theory and find unions, intersections, and subsets of sets.
15. Identify the differences and similarities among the different sets of real numbers.
16. Apply the Right Angle Property to solve geometry problems involving circles.
17. Understand and apply seven properties of real numbers (the associative properties, commutative properties, distributive properties, and the zero product property).
18. Understand and apply the distance and midpoint formulas.
19. Find volume and surface area of prism, pyramids, cones and spheres.
20. Solve a wide variety of word problems algebraically. (This is a major component of 8th grade math)