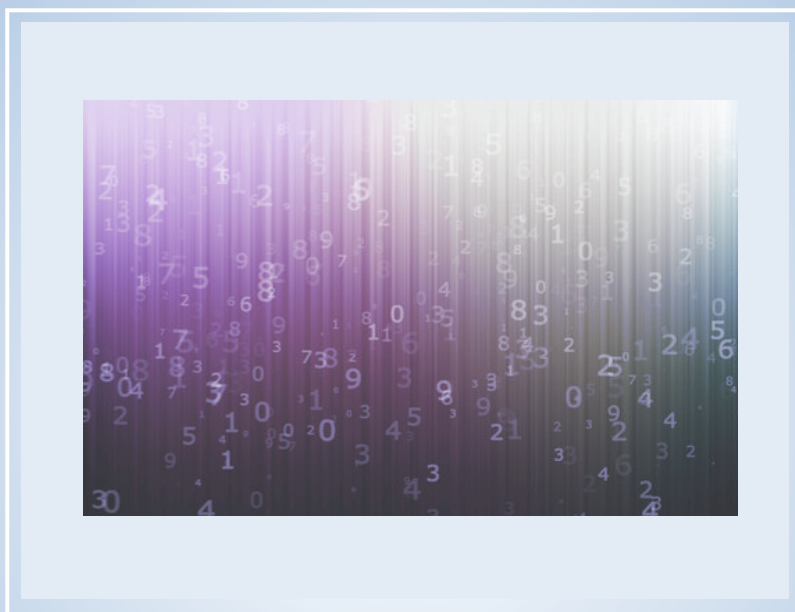


# MATH SEQUENCE



FOR ELEMENTARY & MIDDLE SCHOOL



## BEST HOMESCHOOL RESOURCES

### Elementary

Grade 1	2
Grade 2	5
Grade 3	8
Grade 4	11

### Middle

Grade 5	15
Grade 6	19
Grade 7	<i>Coming</i>
Grade 8	<i>Coming</i>

**Disclaimer.** This is only one suggested sequence. If you use a math curriculum, you will likely find its Scope & Sequence to be somewhat different from the sequence outlined here. If you're using a reputable curriculum, you can rest assured that most (if not all) of the material laid out herein will be covered at some point during the Elementary & Middle School years.

## GRADE 1

### NUMBERS

- Recognize, write, count, compare, and order numbers from 0–120.
- Use ordinal numbers to describe position (first through tenth). This skill can be practiced by lining up a series of toys or other manipulatives.
- Compare sets of objects. Given two sets, determine whether one has more, fewer, or an equal number of objects compared to the other. Use counting to determine how many more or fewer objects, and use symbols ( $<$ ,  $>$ ,  $=$ ) to compare quantities.
- Understand place value. Learn that a 2-digit number represents 10s and 1s, and that a “ten” can be thought of as a bundle of ten 1s. Use base-ten blocks and place value cards to help illustrate these concepts.
- Given a number from 1–100, use an understanding of place value to figure out which numbers are 1 more, 1 less, 10 more, and 10 less.
- With an understanding of place value, try writing any number up to 100 in standard (63) or expanded ( $60 + 3$ ) notation. Place value cards are useful here.
- Practice skip counting. Count to 100 by 2s, 5s, or 10s. Count by 10s from any single-digit number (4, 14, 24...); number lines and hundred charts are helpful tools.
- Practice extending simple number patterns: 1, 4, 7, 10...
- Reasonably estimate sets of objects within 100.

**Go to:** <https://www.besthomeschoolresources.com/numbers>

### ADDITION & SUBTRACTION

- Understand addition and subtraction and how they relate to one another. Use manipulatives and number lines to add and subtract numbers.
- Learn the addition facts within 20 ( $0 + 0$  to  $10 + 10$ ) and the corresponding subtraction facts. Focus on achieving mastery of addition and subtraction facts within 10. Flash cards and games can be a fun way to master math facts.
- Practice adding 1-digit numbers by mentally making a 10. For example, recognize that  $7 + 5 \rightarrow 7 + 3 + 2 \rightarrow 10 + 2 \rightarrow 12$ . Ten-frame cards are useful here.
- Practice subtracting a 1-digit number by mentally subtracting from 10. For example, recognize that  $14 - 7 \rightarrow 14 - 4 - 3 \rightarrow 10 - 3 \rightarrow 7$ . Ten-frame cards come in handy.
- Find the sum of three 1-digit numbers:  $4 + 3 + 7$
- Solve for an unknown in any part of an addition or subtraction equation:  $7 - ? = 4$
- Understand the commutative property of addition:  $3 + 5 = 5 + 3$
- Understand the associative property of addition:  $4 + 3 + 7 = 4 + 10$
- Add any two numbers within 100. Use an understanding of place value, along with drawings or concrete models (unit blocks, Cuisenaire rods) to solve these problems. See how it is sometimes necessary to regroup (compose a 10) when adding.
- Subtract any multiple of ten from another multiple of ten:  $90 - 40$
- Solve simple one-step word problems involving adding and subtracting within 20. Students may use drawings or objects (counters) to visualize these problems.

**Go to:** <https://www.besthomeschoolresources.com/addition-subtraction>

## GRADE 1

<b>MULTIPLICATION &amp; DIVISION</b>	<ul style="list-style-type: none"> <li>▪ Understand the concepts of doubling, multiplication, and division. Picture books can be a fun way to introduce these ideas.</li> <li>▪ Use repeated addition (<math>4 + 4 + 4 = 12</math>) and visual arrays (for example, a <math>4 \times 3</math> grid) to solve simple multiplication problems within 40.</li> <li>▪ Explore the concept of division by sharing and grouping objects. For example, try evenly dividing 12 toys among 2, 3, 4, or 6 children.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/multiplication-division">https://www.besthomeschoolresources.com/multiplication-division</a></p>
<b>FRACTIONS</b>	<ul style="list-style-type: none"> <li>▪ Understand the concept of fractions. Read picture books that illustrate the concept.</li> <li>▪ Recognize and name <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, and <math>\frac{1}{4}</math> of a whole.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/fractions">https://www.besthomeschoolresources.com/fractions</a></p>
<b>MONEY</b>	<ul style="list-style-type: none"> <li>▪ Learn the basics of money. Identify coins and bills and know their values; use the ¢ and \$ symbols. Have fun with this unit – read some picture books about money; set up a store or restaurant using play money.</li> <li>▪ Match one coin or bill of one denomination to an equivalent set of another denomination: 5 pennies = 1 nickel</li> <li>▪ Practice counting up simple combinations of coins (up to 100¢) and bills (up to \$100).</li> <li>▪ Add and subtract money in dollars or in cents and solve simple 1-step word problems involving money in the same unit.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/money">https://www.besthomeschoolresources.com/money</a></p>
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>▪ Practice measuring length using both standard (inches, feet, centimeters) and nonstandard (toy cars, Legos) units. There are lots of ways to have fun with a unit on measurement. Try estimating and then measuring your height in toy cars, pinecones, and inches. Read some of the recommended picture books for more ideas.</li> <li>▪ Find the relative lengths of three different objects.</li> <li>▪ Compare the weights of two objects using a balance scale; measure weight in pounds and in nonstandard units. For example, use a balance to figure out the weight of a teddy bear in pennies and in ounces.</li> <li>▪ Measure capacity in cups, quarts, and gallons. Practice estimating the capacity of a container. For example, try to guess how many cups of water will fill an empty milk jug then test your estimate.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/measurement">https://www.besthomeschoolresources.com/measurement</a></p>
<b>TIME</b>	<ul style="list-style-type: none"> <li>▪ Learn to tell time to the hour and half-hour using an analog or digital clock. Practice telling time using a play clock.</li> <li>▪ Estimate reasonable time intervals and relate time to events throughout the day.</li> <li>▪ Read some of the recommended picture books about telling time and units of time.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/time">https://www.besthomeschoolresources.com/time</a></p>

## GRADE 1

### DATA ANALYSIS

- Create and interpret picture graphs, bar graphs, and tally charts. There are many ways to practice data analysis at home. For example, divide up your blocks by color and make a bar graph to represent the relative number of each colored block. Watch the bird feeder and make a tally chart for each type of bird you see. Poll family and friends on their favorite desserts and represent the results in a picture graph.

**Go to:** <https://www.besthomeschoolresources.com/data-analysis>

### GEOMETRY

- Learn left and right; give and follow directions about location. Have fun practicing this skill – take turns hiding a treat and giving directions to find the hidden object.
- Describe objects in space by their proximity, position, and location.
- Identify and categorize common 2-D shapes (square, circle, triangle, rectangle); identify corners and sides. Determine if a shape is open or closed. Create a composite shape by combining 2-D shapes.
- Identify and categorize common 3-D shapes (sphere, cube, cone). Describe the faces of 3-D objects. For example, understand that squares make up the six faces of a cube. Determine whether a solid object can stack, roll, or slide. Create a composite shape by combining solids.
- Categorize shapes according to their shape, size, color, or orientation. Create and extend repeating patterns involving colors and shapes. These patterns can be made with objects or on paper.

**Go to:** <https://www.besthomeschoolresources.com/elem-geometry>

## GRADE 2

### NUMBERS

- Extend the concept of place value to include numbers up to 1000. Understand that a “hundred” is a bundle of ten “tens” and learn how 3-digit numbers are composed of combinations of “hundreds,” “tens,” and “ones.” Learn that in a multi-digit number, a digit in one place (for example the “hundreds” place) represents ten times what it would represent in the place to the right (for example the “tens” place). Use Cuisenaire rods, base-ten blocks, and place value charts to help illustrate these ideas.
- With an understanding of place value, practice reading and writing numbers up to 1000 in standard (263) or expanded ( $200 + 60 + 3$ ) notation.
- Compare any two numbers within 1000 using  $<$ ,  $>$ , and  $=$
- Practice different forms of counting. Count forward and backward from any number within 1000; count forward by 2s, 3s, 4s, 5s, 10s, 50s or 100s; extend regular number patterns within 1,000 (100, 300, 500...). A number line, hundred chart, or set of unit blocks can be helpful tools.
- Identify even and odd numbers; determine whether a set of up to 20 objects has an odd or even number of members.

**Go to:** <https://www.besthomeschoolresources.com/numbers>

### ADDITION & SUBTRACTION

- Achieve timed mastery (2 seconds) of addition and subtraction facts within 20. Brief, daily flash card drills and timed worksheet ‘races’ are effective ways to help your child achieve arithmetic fact mastery.
- On paper, add and subtract any two numbers within 1000, with or without regrouping. Understand that it is sometimes necessary to compose a ten or hundred (to regroup) when adding numbers and to decompose a ten or hundred when subtracting numbers. Use concrete models (unit blocks, Cuisenaire rods, place value charts) to work through these problems.
- Mentally add or subtract 1, 10, or 100 from any number within 1000.
- Practice mentally subtracting any number from 100.
- Add up to four 2-digit numbers:  $43 + 32 + 27 + 16$
- Add up to three 3-digit numbers within 1000:  $125 + 214 + 457$
- Learn strategies to mentally add or subtract a number close to 100. For example, to add  $42 + 98$ , mentally add  $42 + 100$  then subtract 2 from the sum:  $42 + 100 - 2 = 140$
- Solve simple one-step word problems involving addition and subtraction within 100.

**Go to:** <https://www.besthomeschoolresources.com/addition-subtraction>

## GRADE 2

### MULTIPLICATION & DIVISION

- Understand multiplication and division and how they relate to one another. Understand the terms product and quotient.
- Develop an understanding of the relationship between multiplication and rectangular arrays. Depict a multiplication product as a rectangular array ( $3 \times 6 = 18$  is represented as a  $3 \times 6$  rectangle). Conversely, partition a rectangle into rows and columns of squares, then count to find the total number.
- Commit to memory the multiplication and division facts for 2s, 3s, 4s, 5s, and 10s. There are several ways to help your child achieve mastery of these facts. Point out the patterns in the multiplication tables. Provide daily multiplication fact practice using flash cards, timed worksheets, or online math drill websites.
- Solve for the unknown in a multiplication or division equation:  $7 \times ? = 28$
- Understand that some numbers are not evenly divisible by others, and that some division problems therefore leave a remainder. Practice using repeat subtraction to divide one number by another and find the remainder. Use drawings, number counters, or other objects to illustrate this concept.
- Solve simple one-step word problems using multiplication and division.

**Go to:** <https://www.besthomeschoolresources.com/multiplication-division>

### FRACTIONS

- Recognize, write, name, and draw fractions of a whole. Fraction circles are a useful manipulative. You can also demonstrate fractions of a whole by dividing a pie (or pizza or bar of chocolate) into equal pieces and discussing how you would use fractions to represent one piece, two pieces, or the entire pie. Picture books are a good resource for explaining the concept of fractions of a whole.
- Recognize, name, and find the value of fractions of a set. For example, if 7 out of 12 blocks are blue, understand that  $7/12$  of the blocks are blue. Again, toys and food make good manipulatives for a study of fractions of a set (what fraction of a bag of M&Ms is red?)
- Represent a fraction using a bar model and locate a fraction on the number line.
- Find the fraction with the same denominator that will make a whole with a given fraction: For example, given  $1/3$ , recognize that  $2/3$  must be added to make one whole. Use fraction circles or other objects to visualize these problems.
- Recognize fractions that are equal to one: for example,  $2/2$  or  $5/5$
- Solve simple word problems involving fractions of a set.

**Go to:** <https://www.besthomeschoolresources.com/fractions>

### MONEY

- Count combinations of coins and bills to \$10. Convert between dollars and cents.
- Use decimal notation to write, add, and subtract money within \$10. Solve simple word problems involving counting, adding, subtracting, and making change.
- Practice mentally adding and subtracting money in dollars and cents when cents are multiples of 5 or close to \$1. Have fun setting up a store and using pretend money to practice counting, adding up totals, and making change.

**Go to:** <https://www.besthomeschoolresources.com/money>

## GRADE 2

<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>▪ Practice measuring and estimating length (meters, centimeters, yards, feet, and inches), weight (kilograms, grams, ounces, and pounds), capacity (liters, cups, pints, quarts, half-gallons, and gallons), and temperature (°F).</li> <li>▪ Use a ruler or yardstick to measure the lengths of two objects; use subtraction to determine how much longer one object is than the other.</li> <li>▪ Use addition and subtraction to solve simple word problems involving length, weight, or capacity (in the same unit).</li> <li>▪ Discuss the differences between the US and metric systems of measurement.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/measurement">https://www.besthomeschoolresources.com/measurement</a></p>
<b>TIME</b>	<ul style="list-style-type: none"> <li>▪ Tell time to the nearest 5 minutes using an analog clock. Understand am and pm.</li> <li>▪ Estimate reasonable time intervals. For example, about how long does it take to eat breakfast? to get dressed? to walk to the library? to drive to Grandma’s house?</li> <li>▪ Given a beginning and end time, be able to determine how much time has passed.</li> <li>▪ Learn units of time and understand the relationships between the units: seconds, minutes, hours, days, weeks, months, years.</li> <li>▪ Use a calendar to determine the date.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/time">https://www.besthomeschoolresources.com/time</a></p>
<b>DATA ANALYSIS</b>	<ul style="list-style-type: none"> <li>▪ Continue to collect, organize, and analyze data using tables, bar graphs, and tally charts. Practice creating a scaled axis when representing large amounts of data.</li> <li>▪ Practice repeatedly measuring the lengths of objects to the nearest whole unit and plotting the data on a line plot.</li> <li>▪ Practice interpreting sets of data. For example, learn how to find the range and mode (the most frequently occurring result) of a data set.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/data-analysis">https://www.besthomeschoolresources.com/data-analysis</a></p>
<b>GEOMETRY</b>	<ul style="list-style-type: none"> <li>▪ Identify flat and curved surfaces and straight lines and curves.</li> <li>▪ Identify semicircles, quarter circles, triangles, quadrilaterals, pentagons, and hexagons. Find these shapes within a given figure.</li> <li>▪ Identify cubes, prisms, cylinders, cones, and spheres.</li> <li>▪ Recognize and draw a shape with specified properties; use a ruler to draw a straight line of a given length.</li> <li>▪ Understand an angle as a certain amount of turning.</li> <li>▪ Create and extend repeating patterns involving combinations of shapes, size, and orientation.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/elem-geometry">https://www.besthomeschoolresources.com/elem-geometry</a></p>

## GRADE 3

### NUMBERS

- Extend the concept of place value to include numbers up to 10,000. Read, write, count, compare, and order numbers to 10,000.
- With an understanding of place value, practice reading and writing numbers up to 10,000 in standard (4263) or expanded ( $4000 + 200 + 60 + 3$ ) notation.
- Practice different forms of counting. Count forward and backward to 10,000 by 1s, 10s, 100s, and 1000s; extend regular number patterns within 10,000 (1000, 1500, 2000...); extend regular patterns involving multiplication (6, 12, 18, 24...).
- Learn how to round numbers. Practice rounding to the nearest 10, 100, or 1000.
- Identify odd and even numbers within 10,000.

**Go to:** <https://www.besthomeschoolresources.com/numbers>

### ADDITION & SUBTRACTION

- Add and subtract any two numbers within 10,000 with or without regrouping.
- Mentally subtract any number from 1000.
- Learn strategies to mentally add or subtract a number close to 100 or 1000. To add  $432 + 999$ , mentally add  $432 + 1000$  then subtract 1 from the sum ( $432 + 1000 - 1 = 1431$ ). Learn strategies to add or subtract a number close to a multiple of 100 (398).
- Mentally add and subtract any 2-digit numbers. Try mentally adding and subtracting three- and four-digit numbers with easy calculations (for example,  $342 + 121$ ).
- Use estimation to determine whether a calculated result is reasonable.
- Solve two-step word problems using addition and subtraction.

**Go to:** <https://www.besthomeschoolresources.com/addition-subtraction>

### MULTIPLICATION & DIVISION

- Understand the terms product, quotient, and remainder.
- Commit to memory the multiplication and division facts for 6s, 7s, 8s, and 9s. Point out the patterns in the multiplication tables and provide daily multiplication fact practice using flash cards, timed worksheets, or online math drill websites.
- Understand the properties of 0 and 1 in multiplication and division. Understand that a number cannot be divided by 0.
- Multiply any number within 1,000 by a 1-digit number:  $326 \times 9$
- Divide any number within 1,000 by a 1-digit number:  $425 \div 3$
- Mentally multiply 10s, 100s and 1000s by a 1-digit number:  $600 \times 4$
- Mentally divide 10s, 100s and 1000s by a 1-digit number:  $600 \div 4$
- Use estimation to determine whether a calculated result is reasonable; check division problems using multiplication.
- Solve two-step word problems involving multiplying and dividing. Write equations for multiplication word problems that use a letter to stand in for the unknown.
- Use the area model to reveal the distributive property of multiplication; check out the PhET simulation on the website for a concrete demonstration of this concept.

**Go to:** <https://www.besthomeschoolresources.com/multiplication-division>



## GRADE 3

### FRACTIONS

- Compare and order fractions with the same denominator ( $3/4 > 1/4$ ) or the same numerator ( $3/4 > 3/8$ ). Fraction circles and fraction towers are useful tools.
- Recognize and name equivalent fractions using number lines and diagrams.
- Find equivalent fractions and the simplest form of a fraction:  $4/8 = 1/2$
- Understand that a whole number can also be expressed as a fraction:  $4 = 4/1$
- Compare and order related fractions (where one denominator is a multiple of the other) with denominators up to 12. For example:  $1/2 > 3/8$
- Add and subtract like fractions (when the sum is  $\leq 1$ ):  $3/8 + 2/8 = 5/8$
- Find the fraction of a set where the answer is a whole number.

**Go to:** <https://www.besthomeschoolresources.com/fractions>

### MONEY

- Use decimal notation to add and subtract money within \$100.
- Multiply and divide money amounts by a whole number:  $\$4.20 \times 3$
- Find coin amounts as a fraction of a dollar: 1 quarter =  $1/4$  of \$1.00
- Solve two-step word problems involving money in decimal notation.

**Go to:** <https://www.besthomeschoolresources.com/money>

### MEASUREMENT

- Practice measuring and/or estimating length (miles, kilometers, meters, centimeters, yards, feet, and inches), weight (kilograms, grams, ounces, and pounds), and capacity (milliliters, liters, cups, pints, quarts, half-gallons, and gallons) in compound units. For example: measure 4 feet 3 inches
- Use multiplication to convert between units within a measurement system (metric or US). For example:  $2L \times 1000 mL/L = 2000 mL$
- Use addition and subtraction to solve simple word problems involving length, weight, or capacity (in the same unit).
- Add and subtract length, weight, and capacity measurements in compound units (i.e. feet and inches)
- Find the fraction of a set for measurement: 3 inches =  $1/4$  of a foot
- Solve word problems involving length, weight, and capacity.

**Go to:** <https://www.besthomeschoolresources.com/measurement>

### TIME

- Tell time to the minute using an analog clock
- Convert between units of time (hours, minutes, seconds): 3 hours = 180 minutes
- Find the duration of a time interval in hours and minutes and solve corresponding word problems. For example, from 10:00 am to 11:45 am = 1 hour 45 minutes
- Use a number line to solve word problems involving addition and subtraction of time in minutes.

**Go to:** <https://www.besthomeschoolresources.com/time>

## GRADE 3

### DATA ANALYSIS

- Collect, organize, and analyze data using line plots. Make a line plot to display a data set of measurements in fractions. Solve problems involving addition or subtraction of fractions using information provided in the line plots.
- Determine whether an event is certain, likely, unlikely, or impossible.
- Record possible outcomes for a simple event (such as rolling a dice); track the outcome when the event is repeated multiple times and use these results to predict future outcomes.

**Go to:** <https://www.besthomeschoolresources.com/data-analysis>

### GEOMETRY

- Understand the terms polygon, quadrilateral, octagon, perimeter, and area.
- Categorize quadrilaterals. Identify and draw rhombuses, rectangles, and squares. Draw quadrilaterals that do not fit into these categories.
- Find the perimeter of a polygon; find an unknown side of a polygon given the perimeter and lengths of the other sides.
- Find the area of a shape by covering it with unit squares or by counting squares
- Understand, visualize, and use common units of area (square inch, square centimeter, square meter, square foot).
- Derive and apply the formula for the area of a rectangle:  $\text{area} = \text{base} \times \text{height}$
- Find the area of simple composite shapes made up of rectangles and solve related word problems.
- Explore the relationship between the shape of a rectangle and its area and perimeter; construct rectangles with the same area and different perimeters (and vice versa)
- Count unit cubes in 2-D representations of 3-D solids; find the volume of solids by counting cubic units
- Identify common 3-D shapes within compound shapes
- Identify intersecting and parallel lines
- Identify right angles and determine whether a given angle is smaller or greater than a right angle.

**Go to:** <https://www.besthomeschoolresources.com/elem-geometry>

## GRADE 4

### NUMBERS

- Extend the concept of place value to include numbers up to 1,000,000. Place value charts can be helpful for this.
- With an understanding of place value, read and write numbers up to 1,000,000 in standard (54,263) or expanded ( $50,000 + 4000 + 200 + 60 + 3$ ) notation.
- Use place value to compare any two numbers within 1,000,000 using  $<$ ,  $>$ , and  $=$
- Practice rounding numbers within 1,000,000 to any place.
- Explore number patterns. Generate number or shape patterns that follow a given rule, then identify features of the pattern that aren't evident in the rule itself. Create and extend regular number patterns within 1,000,000 (1000, 1500, 2000...).
- Learn about negative numbers. Locate numbers less than zero on a number line and practice comparing and ordering negative numbers.
- Recognize and extend number patterns involving negative numbers (5, 2, -1, -4...)

**Go to:** <https://www.besthomeschoolresources.com/numbers>

### ADDITION & SUBTRACTION

- Continue to practice adding and subtracting numbers with and without regrouping.
- Learn strategies to mentally add or subtract a number close to a multiple of 1000. For example, to add  $432 + 3999$ , mentally add  $432 + 4000$  and then subtract 1 from the sum ( $432 + 4000 - 1 = 4431$ ).
- Understand that an estimate can sometimes be sufficient for a specific problem.

**Go to:** <https://www.besthomeschoolresources.com/addition-subtraction>

### MULTIPLICATION & DIVISION

- Understand the terms factors, multiples, composite numbers, and prime numbers. Recognize that a whole number is a multiple of its factors.
- Multiply any number within 10,000 by a 1- or 2-digit number:  $4326 \times 64$
- Illustrate multiplication and division problems using arrays and area models.
- In multiplying a number by a power of ten (10, 100, 1000...), understand the pattern in the number of zeros in the product.
- Learn strategies to mentally multiply by 99 or 25. For example, to multiply  $4 \times 99$ , mentally multiply  $4 \times 100$  then subtract 4 from the product ( $4 \times 100 - 4 = 96$ ).
- Divide any number within 10,000 by a 1-digit number:  $6425 \div 6$
- Solve multi-step word problems involving all four operations. Write equations for word problems that use a letter to stand in for the unknown quantity. Assess the reasonableness of the answers using mental computation and estimation.
- Identify composite and prime numbers within 100. A hundred chart is a useful tool.
- Find all factors of any number to 100; find common factors of two numbers.
- Determine whether a whole number is a multiple of a given 1-digit number. It is helpful to learn and use the divisibility rules for 2, 3, 5, 6, 9, and 10.
- Find common multiples of any two whole numbers within 100.

**Go to:** <https://www.besthomeschoolresources.com/multiplication-division>

## GRADE 4

### FRACTIONS

- Work with mixed numbers and improper fractions. Practice interconverting between mixed numbers and improper fractions and locating both on a number line.
- Compare two unlike fractions using  $>$ ,  $<$ , and  $=$
- Compare a fraction to a benchmark fraction such as  $1/2$ . For example, say whether a given fraction is  $>$ ,  $<$ , or  $= 1/2$ .
- Determine the least common multiple and greatest common divisor of two whole numbers; use these to solve problems involving fractions.
- Understand the relationship between division and fractions; fraction can be thought of as division of the numerator by the denominator:  $3/4 = 3 \div 4$
- Express a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100.
- Add and subtract like, related, and unlike fractions.
- Add and subtract two mixed numbers with like and unlike fractions
- Multiply a fraction by a whole number:  $2/3 \times 5 = 10/3$
- Relate fraction equivalence to multiplying by a fractional equivalent of 1. For example,  $2/3 \times 2/2 = 4/6$ ; therefore  $2/3 = 4/6$
- Solve two-step word problems involving addition, subtraction, and multiplication of fractions using visual fraction models or equations.

**Go to:** <https://www.besthomeschoolresources.com/fractions>

### MONEY

- Solve money-based word problems using the four operations (including problems that involve simple fractions or decimals).

**Go to:** <https://www.besthomeschoolresources.com/money>

### DECIMALS

- Read, write, compare, order, and locate on a number line any decimal to the tenths, hundredths, and thousandths place. Recognize that, in a multi-digit number, a digit in one place represents ten times what it represents in the place to its right and  $1/10$  of what it represents to the left.
- Convert between decimals and fractions with denominators of 10, 100, or 1000.
- Compare and order a mixed list containing both decimals and fractions.
- Round decimal numbers to the nearest whole number or to 1 decimal place.
- Add and subtract decimals to the hundredths using concrete models or drawings.
- Mentally add and subtract tenths and from a decimal or whole number.
- Multiply and divide decimals of up to 2 decimal places by a 1-digit whole number
- Find the quotient of a division problem correct to 1 decimal place
- Solve two-step word problems involving decimals; use estimation to verify the reasonableness of the calculated result.

**Go to:** <https://www.besthomeschoolresources.com/decimals>

## GRADE 4

<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>▪ Multiply and divide length, weight, and capacity in compound units.</li> <li>▪ Solve measurement-based word problems using the four operations.</li> <li>▪ Use fractions to convert between measurements within the same system (US or metric).</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/measurement">https://www.besthomeschoolresources.com/measurement</a></p>
<b>TIME</b>	<ul style="list-style-type: none"> <li>▪ Solve time-based word problems using the four operations (including problems that involve simple fractions or decimals).</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/time">https://www.besthomeschoolresources.com/time</a></p>
<b>DATA ANALYSIS</b>	<ul style="list-style-type: none"> <li>▪ Solve word problems using data presented in bar graphs and tables.</li> <li>▪ Collect, organize, and analyze data using line graphs and coordinate graphs.</li> <li>▪ Identify the median and mode of a set of data.</li> <li>▪ Represent all possible outcomes for simple probability experiments and express possible outcomes verbally, numerically, and as fractions.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/data-analysis">https://www.besthomeschoolresources.com/data-analysis</a></p>
<b>GEOMETRY</b>	<ul style="list-style-type: none"> <li>▪ Find the area, perimeter, and unknown sides of a rectangle; use the area and perimeter formulas to solve real-world mathematical problems.</li> <li>▪ Learn how volume can be measured with unit cubes.</li> <li>▪ Visualize the relative sizes of a cubic meter, centimeter, inch, foot, and yard.</li> <li>▪ Derive and apply the formula for volume of a rectangular prism: <math>V = l \times w \times h</math></li> <li>▪ Find the radius and diameter of a circle</li> <li>▪ Understand an angle as a shape formed when two rays share an endpoint; understand that angles are measured with reference to degree of turning around a circle (<math>1^\circ = 1/360</math> of a circle). Relate <math>90^\circ</math>, <math>180^\circ</math>, <math>270^\circ</math>, and <math>360^\circ</math> with quarter, half, three-quarter, and whole turns, respectively.</li> <li>▪ Measure and draw angles using a protractor. Identify acute, obtuse, and right angles. Understand that the measure of an angle that has been divided into parts is equal to the sum of the measures of the parts.</li> <li>▪ Identify and draw perpendicular and parallel lines, line segments, rays, and points.</li> <li>▪ Recognize figures with line or rotational symmetry; identify and draw lines of symmetry. Complete the drawing of a symmetric figure given a line of symmetry.</li> <li>▪ Recognize and name parallelograms, trapezoids, right triangles, isosceles triangles, scalene triangles, and equilateral triangles. Identify congruent figures.</li> <li>▪ Recognize rectangular and triangular prisms and pyramids; given a solid, draw the net (and vice versa).</li> <li>▪ Recognize and create tessellations</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/geom-geometry">https://www.besthomeschoolresources.com/geom-geometry</a></p>

## GRADE 4

### PRE-ALGEBRA

- State and use the order of operations (PEMDAS)
- Carry out combined operations involving the 4 operations, including parentheses
- Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
- Learn about the coordinate plane. Identify the x-axis and y-axis, the four quadrants, and the origin. Practice plotting ordered pairs (x,y) in the first quadrant.
- Solve problems involving simple linear functions. Write the equation and graph the resulting ordered pairs on the grid. For example, plot ordered pairs that meet the requirement  $y = 2x + 1$ .
- Generate numerical patterns using two given rules. Identify relationships between corresponding terms, create ordered pairs, and plot the ordered pairs on the coordinate grid.
- Find the length of a horizontal or vertical line segment on the coordinate grid.

**Go to:** <https://www.besthomeschoolresources.com/pre-algebra>

## GRADE 5

### NUMBERS

- Extend the concept of place value to include numbers up to 1 trillion.
- With an understanding of place value, read and write numbers up to 1 trillion in standard (54,263) or expanded ( $50,000 + 4000 + 200 + 60 + 3$ ) notation.
- Use place value to compare any two numbers within 1 trillion using  $<$ ,  $>$ , and  $=$
- Practice rounding numbers within 1,000,000 to any place.

**Go to:** <https://www.besthomeschoolresources.com/numbers>

### ADDITION & SUBTRACTION

- Continue to practice adding and subtracting very large numbers.
- Learn how to add and subtract positive and negative integers.
- Solve multistep word problems that use all four arithmetic operations.

**Go to:** <https://www.besthomeschoolresources.com/addition-subtraction>

### MULTIPLICATION & DIVISION

- Multiply any two multi-digit numbers:  $4326 \times 9234$
- Divide a 4-digit number by a 2-digit number to find a quotient with or without remainders. Illustrate this process using rectangular arrays or area models.
- Mentally multiply or divide a number by 10s, 100s, and 1000s.
- Learn strategies to mentally multiply by a number one less than a multiple of 10 or 100. For example, to multiply  $4 \times 49$ , mentally multiply  $4 \times 50$  then subtract 4 from the product ( $4 \times 50 - 4 = 196$ ).
- Solve increasingly complex multi-step word problems involving all four operations – addition, subtraction, multiplication, and division. Write equations for word problems that use a letter to stand in for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation.
- Find the greatest common factor (GCF) of two numbers within 200.
- Find the lowest common multiple (LCM) of two numbers within 10.
- Use whole number exponents to denote powers of 10. For example,  $1000 = 10^3$
- Determine the prime factors of any number within 100 and write the number as a product of its prime numbers using exponents. For example,  $36 = 2^2 \times 3^2$

**Go to:** <https://www.besthomeschoolresources.com/multiplication-division>

## GRADE 5

### FRACTIONS

- Add and subtract any two fractions, including mixed numbers:  $4\frac{2}{3} - 2\frac{1}{2}$
- Compare a fraction to a benchmark fraction, such as  $\frac{1}{2}$ . Use benchmark fractions to estimate and assess answers involving addition and subtraction of fractions.
- Find the fraction ( $\frac{3}{4}$ ) of a set (12) by interpreting  $\frac{3}{4} \times 12$  as  $3 \times 12 \div 4$
- Multiply a fraction by another fraction or by a whole number.
- Use visual models to interpret the product of two fractions.
- Understand why multiplying  $x$  by a fraction  $>1$  results in a product greater than  $x$  and why multiplying  $x$  by a fraction  $<1$  results in a product smaller than  $x$ .
- Find the area of a rectangle with fractional side lengths by tiling it with unit squares of fractions. Show that area is the same as would be found by simply multiplying the side lengths. Represent the product of two fractions as a rectangular area.
- Divide a fraction by a whole number:  $\frac{2}{3} \div 4$
- Divide a whole number by a fraction:  $4 \div \frac{3}{4}$
- Divide a fraction by a fraction:  $\frac{2}{3} \div \frac{1}{2}$
- Use visual fraction models and equations to solve multi-step word problems involving addition, subtraction, and multiplication of fractions and mixed numbers and division of a proper fraction by a whole number.

**Go to:** <https://www.besthomeschoolresources.com/fractions>

### DECIMALS

- Round decimal numbers to any place.
- Multiply and divide decimals to the hundredths place using concrete models or drawings.
- Understand patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of ten. For example, multiplication of a decimal by  $10^2$  (100) moves the decimal point 2 places to the right.
- Solve multi-step word problems involving decimals; use estimation to verify the reasonableness of the calculated result.

**Go to:** <https://www.besthomeschoolresources.com/decimals>

### RATIOS & PERCENT

- Use ratios to compare two or three quantities
- Find equivalent ratios; simplify ratios; use ratios to solve multistep word problems
- Understand rate (miles per hour) as the measure of one quantity (miles) per unit value of another (hour); solve multistep word problems involving average and rate.
- Understand and use percent.
- Convert between decimals, fractions, and percent.
- Calculate percentage of a quantity; solve problems involving discounts, interest, and percent increase and decrease.

**Go to:** <https://www.besthomeschoolresources.com/ratios-percent>



## GRADE 5

<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>▪ Use decimals to convert between measurements within the same measuring system (metric or US).</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/measurement">https://www.besthomeschoolresources.com/measurement</a></p>
<b>DATA ANALYSIS</b>	<ul style="list-style-type: none"> <li>▪ Calculate the average; find the total amount given the average (mean) and number of items.</li> <li>▪ Find and compare mean (average), median, and mode for a given set of data.</li> <li>▪ Collect, organize, and display data in pie charts and histograms.</li> <li>▪ Make a line plot to display a data set of measurements in fractions. Use operations on fractions to solve problems involving information in the line plot (for example, finding the average).</li> <li>▪ Solve word problems using data presented in bar graphs and tables.</li> <li>▪ Collect, organize, and analyze data using line graphs and coordinate graphs.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/data-analysis">https://www.besthomeschoolresources.com/data-analysis</a></p>
<b>GEOMETRY</b>	<ul style="list-style-type: none"> <li>▪ Derive and apply the formula for area of a triangle: <math>\text{area} = \frac{1}{2} \times \text{base} \times \text{height}</math></li> <li>▪ Derive and apply the formula for area of a parallelogram: <math>\text{area} = \text{base} \times \text{height}</math></li> <li>▪ Find the area of a compound shape made of quadrilaterals</li> <li>▪ Find the surface area of a rectangular prism</li> <li>▪ Derive and apply the formula for volume of a rectangular prism: <math>V = \text{base} \times \text{height}</math></li> <li>▪ Find the volume of a compound solid made of rectangular prisms.</li> <li>▪ Recognize that <math>1 \text{ L} = 1000 \text{ mL} = 1000 \text{ cm}^3</math></li> <li>▪ Solve multistep word problems involving volume.</li> <li>▪ Identify and name angles on a straight line, angles at a point, and vertically opposite angles. Recognize that angles on a straight line add to <math>180^\circ</math>, that angles around a point add to <math>360^\circ</math>, and that vertically opposite angles are equal. Use this understanding to find unknown angles.</li> <li>▪ Find unknown angles involving the properties of parallelograms, rhombuses, and trapezoids.</li> <li>▪ Recognize that the angle sum of a triangle is <math>180^\circ</math>. Find unknown angles using angle properties of isosceles, equilateral, and right triangles.</li> <li>▪ Draw squares, rectangles, parallelograms, and triangles given dimensions (side, angle, length).</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/geom-geometry">https://www.besthomeschoolresources.com/geom-geometry</a></p>

## GRADE 5

### PRE-ALGEBRA

- Practice using the order of operations to solve more complex expressions.
- Create and evaluate expressions using nested parentheses:  $4 \times [5 - (2 + 2)]$
- Write and evaluate simple algebraic expressions in one variable using substitution.
- Use the distributive property in expressions with variables:  $4(x + 2) = 4x + 8$
- Simplify algebraic expressions in one variable:  $4x - 2x = 2x$
- Continue to work with the coordinate plane. Identify the x-axis and y-axis, the four quadrants, and the origin. Practice plotting ordered pairs (x,y) in the first quadrant.
- Write a simple equation involving related changes in quantities ( $y = 2x + 1$ ). Solve for the dependent variable (y) when given the independent variable (x). For example, solve for y when  $x = 3$ .
- Solve problems involving simple linear functions. Write the equation and graph the resulting ordered pairs on the grid. For example, plot ordered pairs that meet the requirement  $y = 2x + 1$ .

**Go to:** <https://www.besthomeschoolresources.com/pre-algebra>

## GRADE 6

<b>NUMBERS</b>	<ul style="list-style-type: none"> <li>▪ Understand that positive and negative can be used to describe quantities having opposite directions or values (temperature above or below zero, for example). Use positive and negative numbers in these real-world contexts.</li> <li>▪ Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line. Recognize that the opposite of the opposite of a number is the number itself. 0 is its own opposite.</li> <li>▪ Understand that the absolute value of a number is its distance from zero (or its magnitude). Apply this understanding to real-world problems.</li> <li>▪ Understand that a rational number as a point on the number line.</li> <li>▪ Interpret statements of inequality as statements about the relative position of two quantities on the number line. Apply this interpretation to real-world problems.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/numbers">https://www.besthomeschoolresources.com/numbers</a></p>
<b>MULTIPLICATION &amp; DIVISION</b>	<ul style="list-style-type: none"> <li>▪ Fluently divide multi-digit numbers.</li> <li>▪ Use the distributive property to express a sum of two numbers who share a common factor as a multiple of a sum of two numbers without a common factor. For example, <math>8 + 12 = 4(2 + 3)</math></li> <li>▪ Learn the rules for multiplying and dividing positive and negative integers.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/multiplication-division">https://www.besthomeschoolresources.com/multiplication-division</a></p>
<b>FRACTIONS</b>	<ul style="list-style-type: none"> <li>▪ Solve word problems involving division of fractions by fractions. Use fractional models and equations to represent the problems.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/fractions">https://www.besthomeschoolresources.com/fractions</a></p>
<b>DECIMALS</b>	<ul style="list-style-type: none"> <li>▪ Fluently add, subtract, multiply, and divide multi-digit decimals.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/decimals">https://www.besthomeschoolresources.com/decimals</a></p>
<b>RATIOS &amp; PERCENT</b>	<ul style="list-style-type: none"> <li>▪ Relate ratios to fractions and to proportions.</li> <li>▪ Understand the concept of unit rate. If 20 shirts cost \$200, the unit rate (the cost of one shirt) is \$10.</li> <li>▪ Solve ratio and rate problems, including those that involve unit pricing and constant and changing speed.</li> <li>▪ Use ratio and rate to solve real-world problems. Create tables of equivalent ratios and plot pairs of values on the coordinate plane. Use tables to compare ratios.</li> <li>▪ Find the percent of a quantity as a fractional rate per 100. For example, 20% of <math>x</math> is <math>20/100</math> of <math>x</math>; solve problems that involve finding the whole (<math>x</math>) given the part and a percent.</li> <li>▪ Use an understanding of ratios and knowledge of conversion factors to convert between measurement units.</li> </ul> <p><b>Go to:</b> <a href="https://www.besthomeschoolresources.com/ratios-percents">https://www.besthomeschoolresources.com/ratios-percents</a></p>

## GRADE 6

### DATA ANALYSIS

- Develop an understanding of statistical variability. Understand that a statistical question is one that anticipates variability in the data related to the question.
- Recognize that a set of data collected to answer a statistical question has a distribution that can be described in terms of its center, spread, and overall shape. Understand how to interpret spread and center.
- Find the range of a set of data.
- Understand how outliers may affect the measure of the center.
- Discuss ways of selecting a sample from a population and understand which methods make the sample most representative of the population.
- Identify claims based on statistical data and evaluate the validity of those claims.
- Use data to estimate the probability of future events; represent probability as a ratio, proportion, decimal, or percent.
- Find the probability of disjoint events; understand that the theoretical probability of disjoint events is the sum of the two individual probabilities.
- Find the probability of combined events; understand that the theoretical probability of combined events is the product of the two probabilities.
- Display numerical data through dot plots, histograms, and box plots.
- Summarize numerical data sets by reporting the number of observations, describing the nature of the attribute under investigation and how it was measured, and giving quantitative measures of center and variability.

**Go to:** <https://www.besthomeschoolresources.com/data-analysis>

### GEOMETRY

- Find the area of a triangle, special quadrilateral, or other polygon. Recognize that it is sometimes possible to evaluate the area of a polygon by treating it as a composite of rectangles and triangles. Construct quadrilaterals with specified angles and sides.
- Find the volume of a triangular prism, a cylinder, and a composite figure composed of prisms and cylinders.
- Derive and apply the formula for the circumference of a circle:  $2\pi r$
- Derive and apply the formula for the area of a circle:  $\pi r^2$
- Represent 3-D figures using nets made of rectangles and triangles. Use these nets to find the surface area of these figures. Apply these techniques to real-world problems.
- Identify angles as vertical, adjacent, complementary, or supplementary.

**Go to:** <https://www.besthomeschoolresources.com/elem-geometry>

## GRADE 6

### PRE-ALGEBRA

- Place ordered pairs on the coordinate plane in all four quadrants. Recognize that negative and positive signs in the x- and y- coordinates correspond to different quadrants of the coordinate plane. Solve real-world problems involving graphing points in the coordinate plane.
- Draw polygons in the coordinate plane given coordinates for the vertices. Use these coordinates to find the length of a side (when the side is a horizontal or vertical line).
- Write and evaluate numerical expressions involving whole-number exponents.
- Write and evaluate numerical expressions in which letters stand for numbers. Use mathematical terms (sum, term, product, factor, quotient) to describe expressions.
- Apply algebraic order of operations and commutative, associative, and distributive properties to simplify and evaluate expressions involving positive and negative integers.
- Solve simple algebraic formulas and equations in one variable.
- Understand that, in real-world problems, there can be a constraint on the x-value. Write inequalities to represent this constraint; for example,  $x < 20$ .
- Use variables to represent two quantities that change in relationship with one another. Write and analyze equations that represent one quantity in terms of the other. Analyze such relationships using graphs and tables.

**Go to:** <https://www.besthomeschoolresources.com/pre-algebra>