

Family Learning Guide: Mathematics

Marking Period 2: 11/2/20-1/29/21



Welcome to the Family Learning Guide!



Dear Families,

Thank you for reading this Family Learning Guide. We are excited to work with you as partners during these challenging times to ensure that all our students receive an excellent education.

As reflected in our district's strategic plan – The District Model of Excellence or DME – we are working hard every day to provide all our students with the resources that they need to thrive.

We have developed this resource to support student learning – especially at-home learning – and we are excited to work with you and develop more tools and resources to support your children in their learning.

Please reach out with any questions or concerns and suggestions on how to make this guide more useful in the future.

Your partners at Hartford Public Schools



Mario Carullo

Director of Mathematics

(860) 695-8685

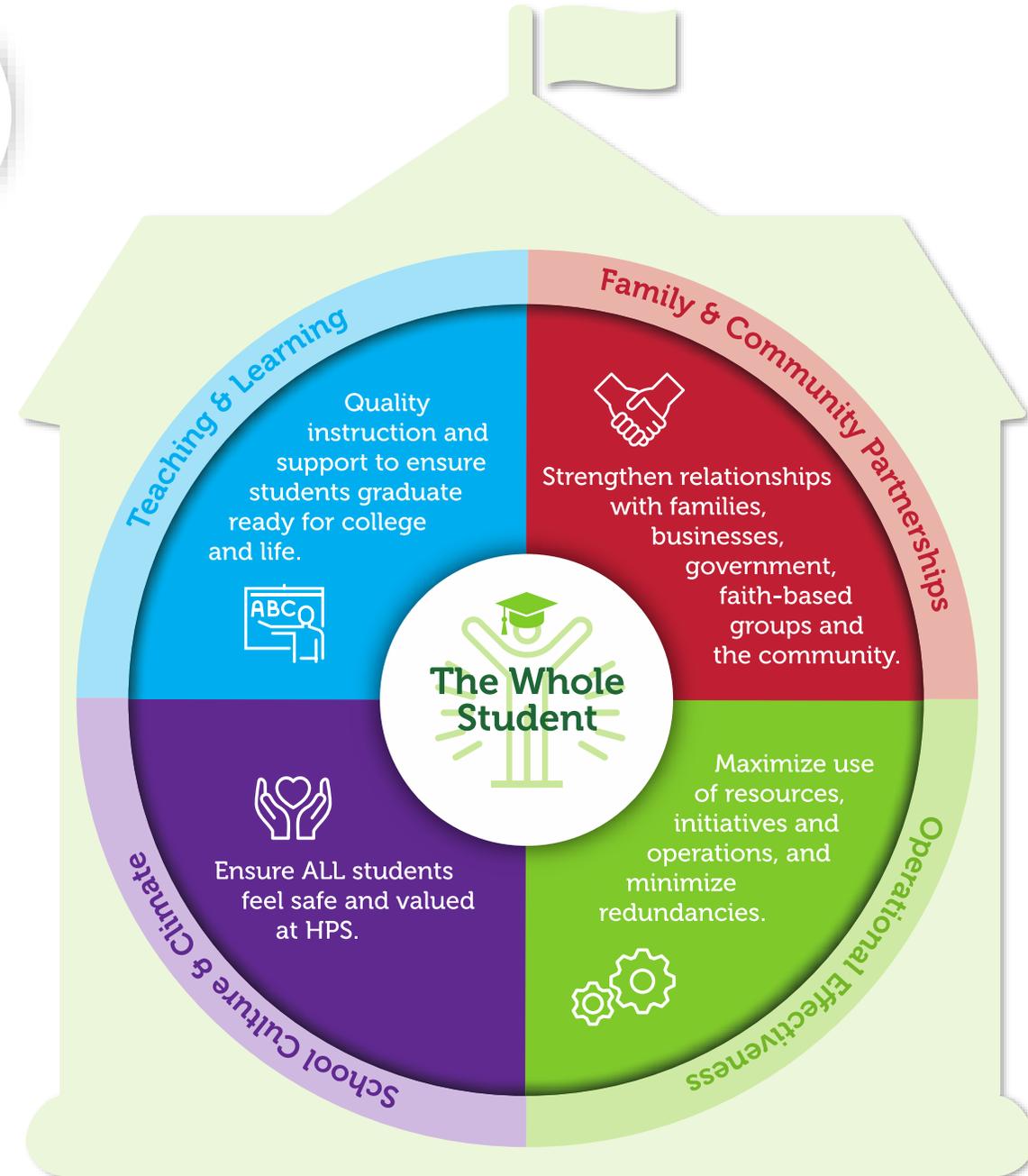
carum001@hartfordschools.org

We are committed to excellence and equity for all our students.



The District Model of Excellence is our roadmap for providing every child in Hartford with access to a high-quality public school.

We are committed to **excellence** and **equity** for all our students. This means that we cannot and will not allow the pandemic to interrupt high quality instruction for our students.



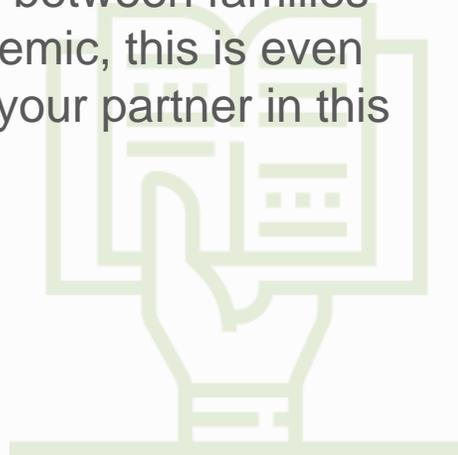
Introducing the Family Learning Guide



WHAT IS A FAMILY LEARNING GUIDE?

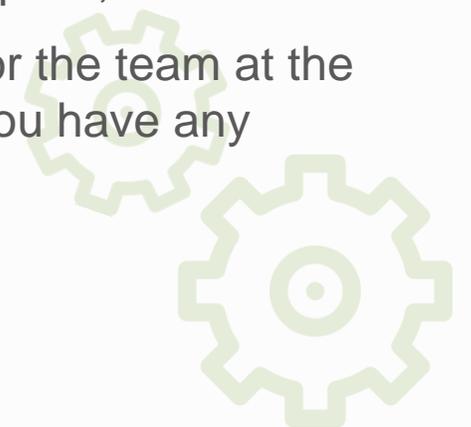
This is a resource developed by the team at Hartford Public Schools to provide you – our families – with an advance look at what your children will be learning in the coming weeks.

Learning requires partnership between families and schools. During the pandemic, this is even more true and we want to be your partner in this challenging time.



HOW SHOULD YOU USE IT?

1. Review the sample learning objectives so that you can reinforce them at home;
2. Review the resources to support at-home learning so that you can make sure your children have the right supplies;
3. Reach out to your school or the team at the Hartford Public schools if you have any questions!





MATHEMATICS FAMILY LEARNING GUIDE

What are the marking period dates for this Family Learning Guide?

11/2/2020 through 1/29/2021

What are the specific units covered in this Family Learning Guide?

1. Kindergarten Mathematics
2. Grade 1 Mathematics
3. Grade 2 Mathematics
4. Grade 3 Mathematics
5. Grade 4 Mathematics
6. Grade 5 Mathematics
7. Grade 6 Mathematics
8. Grade 7 Mathematics
9. Grade 8 Mathematics
10. Algebra I (Grade 9)
11. Algebra II (Grade 10)
12. Geometry & Data (Grade 11)



Family Learning Guide Quarter 2:

[Kindergarten Mathematics](#)



Unit Topic(s): Comparison of Numbers to 10 (*Module 3 Topics E-G*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?	HOW WILL WE TEACH YOUR CHILDREN?
<ul style="list-style-type: none">I can compare groups of objects using the words “greater than”, “less than”, or “equal to” by matching and counting.I can compare two numbers between 1 and 10 when they are written as numerals.	<p>You can expect to see your child doing the following:</p> <ul style="list-style-type: none">Draw lines matching items in one group with items in another to determine whether there are enough.Draw more items to make the number of items in each group the same.Color and compare different numbers of objects arranged in two lines. Tell which number of objects is more or less than the other number of objects.Count to compare two groups of objects that are scattered about. Tell which group has more or fewer objects.Draw a set of objects that has 1 more, 1 less, or the same number as the given set.Count and compare sets of objects arranged in two lines. Tell which set has more or fewer objects.Using squares to represent a tower or train of cubes, draw more or fewer squares than a given tower or train. Then count and compare.Compare numbers without using drawings or physical objects. For example, shown two numbers, students record which number is more and which is less than the other number.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Kindergarten Module 3 Homework Helpers](#)
- [Kindergarten Module 3 Topic E Parent Tips \(Spanish\)](#)
- [Kindergarten Module 3 Topic F Parent Tips \(Spanish\)](#)
- [Kindergarten Module 3 Topic G Parent Tips \(Spanish\)](#)
- [Zearn Helpers for Parents](#)
- [Zearn Math Helpers for Students](#)

Family Learning Guide:

Grade 1 Mathematics



Unit Topic(s): Introduction to Place Value Through Addition and Subtraction Within 20 (*Module 2*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- I can solve addition and subtraction word problems up to 20 using a variety of strategies.
- I can solve addition word problems (using 3 whole numbers, whose sum is ≥ 20) using a variety of strategies.
- I can add and subtract using strategies called “properties of operations”.
- I can explain how addition and subtraction are related.
- I can add and subtract with fluency within 10.
- I can explain what each digit in a two-digit number represents.

HOW WILL WE TEACH YOUR CHILDREN?

You can expect to see your child doing the following:

- Change the order of addends in an addition problem to make ten. *For example, consider the problem $1 + 5 + 9 = 9 + 1 + 5 = 10 + 5 = 15$.*
- Solve problems by using the make ten and take from ten strategies.
- Use the Read, Draw, Write (RDW) process to solve word problems.
- Use 5-group formations (rows) and number bonds to model subtracting 7, 8, and 9 from teen numbers.
- Use the take from ten and counting on strategies to subtract from teen numbers and relate the strategies to making ten.
- Decide which subtraction strategy is best for a given problem, and critique peers’ solutions.
- Determine whether two expressions (e.g., $3 + 4$ and $6 + 2$), when set equal to each other, make a true number sentence. *For example, is $3 + 4 = 6 + 2$ true or false?*
- Break apart teen numbers into a ten and some ones, using math drawings and number bonds.
- Make teen numbers by combining a ten and some ones, using math drawings and number bonds.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Grade 1 Module 2 Homework Helpers](#)
- [Grade 1 Module 2 Topic A Parent Tips \(Spanish\)](#)
- [Grade 1 Module 2 Topic B Parent Tips \(Spanish\)](#)
- [Grade 1 Module 2 Topic C Parent Tips \(Spanish\)](#)
- [Grade 1 Module 2 Topic D Parent Tips \(Spanish\)](#)
- [Zearn Helpers for Parents](#)
- [Zearn Math Helpers for Students](#)

Family Learning Guide:

[Grade 2 Mathematics](#)



Unit Topic(s): Place Value, Counting, and Comparison of Numbers to 1,000 (Module 3)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?	HOW WILL WE TEACH YOUR CHILDREN?
<ul style="list-style-type: none">• I can explain what the three digits of a three-digit number represent.• I can count within 1000.• I can skip count by 5s, 10s and 100s.• I can read and write numbers to 1000 using numerals, number names, and expanded form.• I can compare three-digit numbers using the symbols $>$, $=$, and $<$.	<p>You can expect to see your child doing the following:</p> <ul style="list-style-type: none">• Order units from largest to smallest. <i>For example, 3 hundreds, 5 tens, 9 ones.</i>• Skip-count by hundreds, tens, and ones to reach a given number.• Use place value charts, number bonds, expanded form, and standard form to express the value of numbers up to 1,000, showing the value of each digit.• Name the value of the digit in any given place in a three-digit number. <i>For example, the value of the 6 in 364 is 60, or 6 tens.</i>• Count combinations of \$100, \$10, and \$1 bills.• Use an empty number line to model how to count in various orders. <i>For example, count first by tens and then by hundreds, or count first by hundreds and then by tens.</i>• Exchange units of equal value, for example, 30 ones for 3 tens, or 4 hundreds for 40 tens.• Use the RDW process to solve word problems involving three-digit numbers.• Compare and order numbers, using the words greater than, less than, or equal to as well as the comparison symbols ($>$, $<$, $=$). Compare numbers in different forms; for example, 307 is greater than 30 tens.• Identify the number that is 1, 10, or 100 more than or less than a given number.
WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?	
<ul style="list-style-type: none">• Grade 2 Module 3 Homework Helpers• Grade 2 Module 3 Topics A&B Parent Tips (Spanish)• Grade 2 Module 3 Topic C Parent Tips (Spanish)• Grade 2 Module 3 Topic D Parent Tips (Spanish)• Grade 2 Module 3 Topic E Parent Tips (Spanish)	<ul style="list-style-type: none">• Grade 2 Module 3 Topic F Parent Tips (Spanish)• Grade 2 Module 3 Topic G Parent Tips (Spanish)• Zearn Helpers for Parents• Zearn Math Helpers for Students

Family Learning Guide:

Grade 3 Mathematics



Unit Topic(s): Place Value and Problem Solving with Units of Measure (*Module 2*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- I can explain what each digit of a three-digit number represents.
- I can round whole numbers to the nearest 10 or 100.
- I can fluently add and subtract within 1000 using a variety of strategies.
- I can tell time to the nearest minute.
- I can use addition and subtraction to solve word problems involving time.
- I can measure liquid volumes and masses of objects using standard units (grams, kilograms, and liters).
- I can solve problems involving liquid volumes and masses of objects.

HOW WILL WE TEACH YOUR CHILDREN?

You can expect to see your child doing the following:

- Plot and label given times on a number line and draw hands on a clock for given times.
- Read and write the time to the nearest minute using analog and digital clocks.
- Solve word problems involving time, metric weight, liquid volume, and capacity.
- Read and write metric weights (in grams or kilograms) and liquid volumes (in milliliters or liters).
- Round numbers to the nearest ten or hundred by using a vertical number line.
- Use the symbol \approx to represent rounded numbers.
- Add two- and three-digit numbers.
- Solve word problems involving addition by using the standard algorithm.
- Estimate sums and differences by rounding (e.g., $43 \text{ mL} - 29 \text{ mL} \approx 40 \text{ mL} - 30 \text{ mL} = 10 \text{ mL}$).

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Grade 3 Module 2 Homework Helpers](#)
- [Grade 3 Module 2 Topic A Parent Tips \(Spanish\)](#)
- [Grade 3 Module 2 Topic B Parent Tips \(Spanish\)](#)
- [Grade 3 Module 2 Topic C Parent Tips \(Spanish\)](#)
- [Grade 3 Module 2 Topic D Parent Tips \(Spanish\)](#)
- [Grade 3 Module 2 Topic E Parent Tips \(Spanish\)](#)
- [Zearn Helpers for Parents](#)
- [Zearn Math Helpers for Students](#)

Family Learning Guide:

Grade 4 Mathematics



Unit Topic(s): Multi-Digit Multiplication and Division (*Module 3*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- I can represent the context of a multiplication and division word problem using drawings and equations.
- I can use variables to represent unknown quantities in a problem.
- I can name the factors of all whole numbers 0-100.
- I can determine whether any number 0-100 is a multiple of a given one-digit number.
- I can determine whether any number 0-100 is prime or composite.
- I can explain the relationship between digits in different places within a whole number.
- I can multiply whole numbers using a variety of strategies. (4 digits x 1 digit; 2 digits x 2 digits).
- I can prove my calculations are correct using equations, rectangular arrays, and/or area models.
- I can find whole-number quotients and remainders using a variety of strategies.
- I can use area and perimeter formulas to solve problems.

HOW WILL WE TEACH YOUR CHILDREN?

You can expect to see your child doing the following:

- Solve word problems by using the formulas for area and perimeter.
- Draw place value disks and arrows on a place value chart to represent multiplication by 10, 100, and 1,000 and by multiples of 10, 100, and 1,000.
- Use an area model to represent the multiplication of a two-digit multiple of 10 by a two-digit multiple of 10 (e.g., 40×40).
- Draw place value disks to represent multiplication expressions.
- Multiply one-digit numbers by a number with up to four digits by using the standard algorithm, the partial products method, and the area model.
- Use the multiplication, division and the RDW process to solve word problems involving remainders.
- Show division by using place value disks, arrays, area models, and long division.
- Draw tape diagrams and solve division word problems, identifying whether the size of the groups or number of groups is unknown.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Grade 4 Module 3 Homework Helpers](#)
- [Grade 4 Module 3 Topic A Parent Tips \(Spanish\)](#)
- [Grade 4 Module 3 Topic B Parent Tips \(Spanish\)](#)
- [Grade 4 Module 3 Topic C Parent Tips \(Spanish\)](#)
- [Grade 4 Module 3 Topic D Parent Tips \(Spanish\)](#)

- [Grade 4 Module 3 Topic E Parent Tips \(Spanish\)](#)
- [Grade 4 Module 3 Topic F Parent Tips \(Spanish\)](#)
- [Grade 4 Module 3 Topic G Parent Tips \(Spanish\)](#)
- [Zearn Helpers for Parents](#)
- [Zearn Math Helpers for Students](#)

Family Learning Guide:

Grade 5 Mathematics



Unit Topic(s): Multi-Digit Whole Number and Decimal Fraction Operations (*Module 2*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

1. I can evaluate expressions that involve parentheses, brackets, and/or braces.
2. I can translate words into expressions.
3. I can fluently multiply multi-digit whole numbers.
4. I can find quotients using a variety of strategies.
5. I can prove my calculations are correct using equations, rectangular arrays, and/or area models.
6. I can add, subtract, multiply, and divide decimals using a variety of strategies.
7. I can solve measurement word problems involving conversions.

HOW WILL WE TEACH YOUR CHILDREN?

You can expect to see your child doing the following:

- Find the product of multi-digit multiplication expressions.
- Change an expression written in word form to one written in number form, and vice versa. *For example, the sum of 3 sixteens and 2 nines can be written as $(3 \times 16) + (2 \times 9)$.*
- Solve multi-digit multiplication problems by using mental math. *For example, consider the problem 19×15 . Think: $20 \text{ fifteens} - 1 \text{ fifteen} = (20 \times 15) - (1 \times 15) = 300 - 15 = 285$.*
- Solve multiplication problems by using an area model.
- Rewrite division problems as easier problems, and then solve. *For example, $12,000 \div 300 = 12,000 \div 100 \div 3 = 120 \div 3 = 40$.*
- Rewrite division problems as easier problems, and then solve. *For example, $1.2 \div 60 = 1.2 \div 6 \div 10 = 0.2 \div 10 = 0.02$.*
- Divide multi-digit numbers using long division.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Grade 5 Module 2 Homework Helpers](#)
- [Grade 5 Module 2 Topic A Parent Tips \(Spanish\)](#)
- [Grade 5 Module 2 Topic B Parent Tips \(Spanish\)](#)
- [Grade 5 Module 2 Topic C Parent Tips \(Spanish\)](#)
- [Grade 5 Module 2 Topic D Parent Tips \(Spanish\)](#)
- [Grade 5 Module 2 Topic E Parent Tips \(Spanish\)](#)
- [Grade 5 Module 2 Topic F Parent Tips \(Spanish\)](#)
- [Grade 5 Module 2 Topic G Parent Tips \(Spanish\)](#)
- [Grade 5 Module 2 Topic H Parent Tips \(Spanish\)](#)
- [Zearn Helpers for Parents](#)
- [Zearn Math Helpers for Students](#)

Family Learning Guide:

Grade 6 Mathematics



Unit Topic(s): Arithmetic Operations Including Division of Fractions (*Module 2*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- I can represent the context of a fraction word problem using a variety of models.
- I can solve word problems involving division of fractions by fractions.
- I can fluently divide multi-digit numbers.
- I can fluently add, subtract, multiply, and divide multi-digit decimals.
- I can find the greatest common factors of two whole numbers (up to 100).
- I can use the distributive property to express a sum of two whole numbers.

HOW WILL WE TEACH YOUR CHILDREN?

You can expect to see your child doing the following:

- Rewrite a division expression (e.g., $9/12 \div 3/12$) in unit language (9 twelfths \div 3 twelfths).
- Use the standard algorithm for dividing fractions—invert the divisor (the second fraction) and multiply it by the first fraction (e.g., $2/3 \div 3/4 = 2/3 \times 4/3 = 8/9$).
- Calculate the product by using partial products.
- Use mental math, estimation, and/or the division algorithm to divide whole numbers and multi-digit decimals (*remembering to create a whole number divisor*).
- Use the divisibility rules to determine whether a number is divisible by other numbers. Find a number that is divisible by other numbers.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Grade 6 Module 2 Homework Helpers](#)
- [Grade 6 Module 2 Topic A Parent Tips](#) ([Spanish](#))
- [Grade 6 Module 2 Topic B Parent Tips](#) ([Spanish](#))
- [Grade 6 Module 2 Topic C Parent Tips](#) ([Spanish](#))
- [Grade 6 Module 2 Topic D Parent Tips](#) ([Spanish](#))
- [Zearn Helpers for Parents](#)
- [Zearn Math Helpers for Students](#)

Family Learning Guide:

Grade 7 Mathematics



Unit Topic(s): Rational Numbers (*Module 2*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- I can add and subtract rational numbers. This means that:
 - I can represent addition and subtraction on horizontal and vertical number lines.
 - I can subtract a rational number by adding its opposite (additive inverse).
 - I can use the absolute values of numbers on a number line to illustrate both addition and subtraction.
 - I can apply properties of operations (commutative, associative, and distributive) to add and subtract rational numbers.
- I can multiply and divide rational numbers.
- I can apply the commutative, associative, and distributive properties appropriately in multiplying and dividing rational numbers.
- I can convert a fraction to a decimal using long division.
- I can explain the difference between a rational and an irrational number.
- I can rewrite an expression in different forms to help me understand and solve problems.
- I can write, solve, and interpret two-step equations using known and unknown values.

HOW WILL WE TEACH YOUR CHILDREN?

You can expect to see your child doing the following:

- Use the Integer Game to discuss additive inverses (for example, 5 and -5 ; $\frac{1}{4}$ and $-\frac{1}{4}$), write expressions, and explain how to add and subtract with integers.
- Use vectors on a number line to model expressions.
- Evaluate addition and subtraction expressions involving integers and other rational numbers.
- Apply multiplication and division of integers to real-world contexts.
- Recognize patterns that indicate whether a product or quotient is positive or negative.
- Use properties, such as commutative or associative properties, to evaluate expressions efficiently.
- Use tape diagrams to model a problem, given a real-world context.
- Write expressions and equations when given a real-world context.
- Solve equations using if-then moves.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Grade 7 Module 2 Homework Helpers](#)
- [Grade 7 Module 2 Topic A Parent Tips \(Spanish\)](#)
- [Grade 7 Module 2 Topic B Parent Tips \(Spanish\)](#)
- [Grade 7 Module 2 Topic C Parent Tips \(Spanish\)](#)
- [Zearn Helpers for Parents](#)
- [Zearn Math Helpers for Students](#)

Family Learning Guide:

Grade 8 Mathematics



Unit Topic(s): Developing Function Foundations (*Module 2*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- I can determine if a relation is a function using a table, graph, or set of ordered pairs.
- I can compare and contrast multiple representations of (tables, graphs, equations, and verbal models) of two functions. This means that from any type of representation:
 - I can determine whether the relationship is a function.
 - I can identify the rate of change and y-intercept for a linear function.
- I can determine if a function is linear or non-linear from a table, equation, graph, or verbal model.
- I can write, graph, and interpret linear functions. This means:
 - I can construct a function to model a linear relationship from a table of values, two points, or verbal description.
 - I can determine the rate of change (slope) and initial value (y-intercept) from a table and graph.
 - I can explain the meaning of the rate of change and initial value of a linear function in terms of the situation it models.
- I can describe the relationship between two quantities when given a graph.
- I can sketch a graph from a verbal description of a function.

HOW WILL WE TEACH YOUR CHILDREN?

- Developing Function Foundations provides students with a deep conceptual understanding of functions. Students define a function as a rule that assigns each input in a relation to exactly one output. They explore linear functions specifically: how they are represented, how they build from prior knowledge, and how they can be used to analyze data. By the conclusion of this module, students will have a strong conceptual understanding of functions, particularly linear functions.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Course 3 Module 2 Topic 1 Family Guide](#)
- [Course 3 Module 2 Topic 2 Family Guide](#)
- [Course 3 Module 2 Topic 3 Family Guide](#)
- [Course 3 Module 2 Topic 4 Family Guide](#)
- [Course 3 Lesson Video Library](#)
- [MATHia Student User's Guide](#)

Family Learning Guide:

[Algebra I \(Grade 9\)](#)



Unit Topic(s): Exploring Constant Change (*Module 2*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- Relate the defining characteristics of an arithmetic sequence, the first term and common difference, and the defining characteristics of a linear function, the y-intercept and slope. Connect the slope of a line to the average rate of change of a function.
- Identify key characteristics of the graphs of linear functions, such as slope and y-intercept, in terms of quantities from a verbal description.
- Compare linear functions represented algebraically, graphically, in tables, or with verbal descriptions.
- Use Properties of Equality to solve linear equations and justify a solution method.
- Determine whether an equation has one solution, no solution, or infinite solutions. Solve linear equations with variables on both sides.
- Rearrange literal equations to highlight quantities of interest.
- Write and solve inequalities. Graph compound inequalities.
- Determine the intercepts of an equation in standard form and use intercepts to graph an equation.
- Use slope and y-intercept to determine whether the system of two linear equations has one solution, no solution, or infinite solutions.
- Solve a system of equations algebraically using linear combinations.
- Graph the solutions to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.
- Graph absolute value functions and transformations of absolute value functions.
- Create graphs of linear piecewise functions.

HOW WILL WE TEACH YOUR CHILDREN?

- Students investigate linear functions as the most basic polynomial function and prove that linear functions grow by equal differences over equal intervals. They are introduced to function transformation and investigate dilations and vertical translations of linear functions. They extend their knowledge of solving one-variable equations to solve more complex equations and inequalities; and they learn more sophisticated strategies to solve linear systems of equations. Finally, students connect what they know about absolute value of a number and the line $y = x$ to build the basic absolute value function. They transform and learn strategies to solve absolute value functions.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- [Algebra I Module 2 Topic 1 Family Guide](#)
- [Algebra I Module 2 Topic 2 Family Guide](#)
- [Algebra I Module 2 Topic 3 Family Guide](#)
- [Algebra I Module 2 Topic 4 Family Guide](#)
- [Algebra I Lesson Video Library](#)
- [MATHia Student User's Guide](#)

Family Learning Guide:

Algebra II (Grade 10)



Unit Topic(s): Polynomial Functions of Degree 2: Quadratic Functions (*Unit 3*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- I can factor a quadratic expression in order to reveal its zeros.
- I can complete the square of a quadratic expression to reveal the maximum or minimum value of the function.
- I can write and interpret quadratic equations and inequalities mathematically and in context, graphically and algebraically.
- I can determine whether the solution of a quadratic equation will be real or complex.
- I can find real solutions to quadratic equations in one variable using multiple methods and justify my solution method.
- I can analyze a quadratic model based on a verbal description. This means:
 - I can sketch a reasonable graph of a quadratic function based on a verbal description.
 - I can identify the intercepts, intervals for which the function is increasing, decreasing, positive, or negative on a graph or table.
 - I can determine a local maximum or minimum.
 - I can find the line of symmetry.
- I can describe a real-world context using a quadratic model.
- I can describe how a quadratic function can be transformed using a constant, k . This means:
 - I can experiment with different transformational constants and construct an argument about their effect on a quadratic functions using technology.
 - I can determine the transformational constant from graph of a quadratic (shifts and stretches, both vertical and horizontal).
- I can determine the complex solutions of a quadratic equation with real coefficients.

HOW WILL WE TEACH YOUR CHILDREN?

- This unit begins with a study of the parent function $f(x)=x^2$, after which students will see how the transformations $f(x)+k$, $f(x+k)$, $kf(x)$ and $f(kx)$ shift and stretch the graph, and how these transformations are related to writing quadratic functions in standard and vertex forms.
- Students examine the various methods for solving quadratic equations. These include graphing, factoring, completing the square, and the quadratic formula.
- Students develop the definition of the imaginary number i ; the powers of i ; the basic operations of addition, subtraction, and multiplication of complex numbers; and the solution of quadratic equations that have complex solutions in the form of complex conjugates, $a+bi$ and $a-bi$.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- Access to a device with audio and internet to participate in lessons and access additional practice on Khan Academy.

Family Learning Guide:

Geometry & Data (Grade 11)



Unit Topic(s): Congruence, Constructions, and Proof (*Unit 2*)

WHAT ARE OUR LEARNING GOALS FOR YOUR CHILDREN?

- Given two figures, I can determine if they are congruent using properties of rigid motion.
- I can prove the following triangle congruence theorems (ASA, SAS, SSS) using properties of rigid motion.
- I can prove the following theorems about lines and angles:
 - vertical angles are congruent;
 - when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent;
 - points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.
- I can prove the following theorems about triangles:
 - the measures of interior angles of a triangle sum to 180° ;
 - the base angles of isosceles triangles are congruent;
 - the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length;
 - the medians of a triangle meet at a point.
- I can prove geometric theorems algebraically by using coordinate points.

HOW WILL WE TEACH YOUR CHILDREN?

- It is known from work completed in Grade 8 that *two figures are congruent if one is the image of the other under a sequence of transformations (rigid motions)*. Using this understanding, students will then be able to identify corresponding parts of congruent polygons and conclude that polygons are congruent if and only if their corresponding parts are congruent. The concept of congruence will culminate with proving and applying theorems that can be used to justify that triangles are congruent to one another.
- Students are given the opportunity to further their understanding of triangles by exploring properties associated with isosceles and equilateral triangles. They also explore four additional theorems involving triangles, to include: exterior angle of a triangle theorem, the angle opposite longer side theorem, the side opposite larger angle theorem, and the triangle inequality theorem.
- Students learn the vocabulary to describe pairs of angles formed by the intersection of two lines and when two lines (not necessarily parallel) are cut by a transversal. They will apply the Linear Postulate and the Parallel Postulate to prove theorems, and then write proofs using these theorems.

WHAT RESOURCES WILL BE NEEDED TO SUPPORT AT-HOME LEARNING?

- Access to a device with audio and internet to participate in lessons and access additional practice on Khan Academy.