Family Guide for Student SUCCESS

Kindergarten MATH

AMSTI
Alabama Math, Science, and Technology Initiative

FAMILIES + SCHOOLS = STUDENT SUCCESS

Parents and family are a child's first teachers in life and have valuable insights into the needs, strengths, and interests of their child. The collaboration of caregivers and educators is vital in guiding each child toward success. The Family Guide for Student Success outlines what your child should learn in Kindergarten. You can encourage your child's academic growth by reinforcing classroom activities at home. The Family Guide for Student Success outlines the critical content that all students should know and be able to do at the end of Kindergarten. The achievement of the expectations will help your child meet the assessment standards established by our state. It is only through your support and active participation in your child's education that we form a partnership for success for all the children in Alabama.

WHY ARE STANDARDS IMPORTANT?

- They help ensure that all students, no matter where they live, are prepared for success in college and the workforce.
- Standards provide a clear roadmap of learning for teachers, parents, and students.
- Having clearly defined goals helps families and teachers work together to ensure that students succeed.
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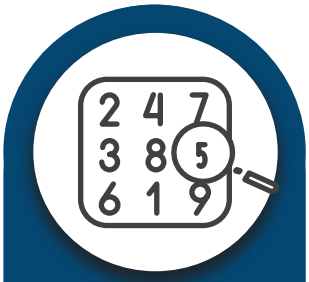
KINDERGARTEN CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of Kindergarten in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for 1st grade. In Kindergarten, instructional time should focus on four essential areas, all of which have equal importance:

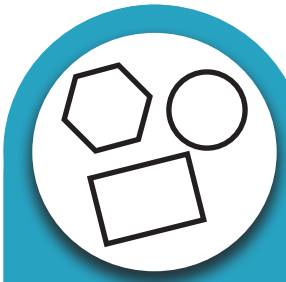


COUNTING

Your child can count and connect numbers with quantities.

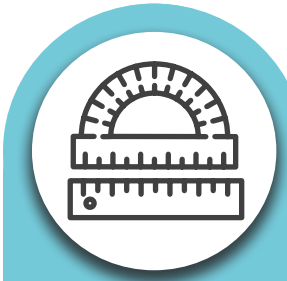
ADD & SUBTRACT

Your child will make connections between objects and pictures to use with addition and subtraction in problem-solving.



SHAPES

Your child will recognize and compare two-dimensional and three-diminsional shapes.



MEASUREMENT

Your child will build their mathematical vocabulary like more, less, long, wide, length, weight, above, below, etc.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the Kindergarten math concepts he/she is learning at school and apply them at home in everyday situations.

Counting

- Have your child count out loud to 100.
- Count while touching and moving an everyday item like balls from 1 - 20.
- Skip count by 10s to 100 using dry beans.
- Play counting games with your child like Candyland, Chutes & Ladders, & Hi Ho Cherry-O.

Add & Subtract

- Have your child add and subtract goldfish crackers within 5.
- Start with 3 pieces and ask them, "How many more do I need to make 5?" Then start with 5 pieces and ask, "How many will be left if you eat 4 of them?" Continue by changing the starting amount and how many are being added and taken away within 5.
- Have your child add and subtract pieces of candy within 10.
- Start with 6 pieces and ask them, "How many more do I need to make 10?" Then start with 10 pieces and ask, "How many will be left if you eat 3 of them?" Continue by changing the starting amount and how many are being added and taken away within 10.

Shapes

- Go on a shape walk in your home or outside. Ask your child to identify the shapes they see around them.
- When you are putting up groceries, ask your child, "What shape is this?"
- You can play "I SPY..." and use shapes to determine what you are looking at.

Measurement

- Starting with a pile of ten or fewer toys or legos, have your child sort them by similarities and differences among them and then count the number of toys or legos in each set.
- Have your child measure objects, like a book, with paper clips or other items and get them to use vocabulary such as taller, longer, shorter, heavier and lighter.

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HOMEWORK HELP

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Quick links for Family Resources to do math at home.

www.amsti.org/k2-math-student-family

Khan Academy

Instructional Math Videos with Interactive Guided Practice

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DREME

Family card games that support early math skills.

www.dreme.stanford.edu/news/10-family-card-games-support-early-math-skills

GFletchy

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PBS Learning Media

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Family Guide for Student SUCCESS

1st Grade MATH

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1ST GRADE CONTENT PRIORITIES

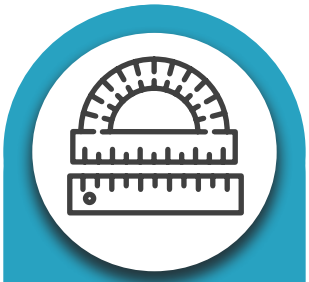
This guide provides an overview of what your child will learn by the end of 1st Grade in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for 2nd grade. In 1st grade, instructional time should focus on four essential areas, all of which have equal importance:

ADD & SUBTACT

Your child can add & subtract amounts within 20 using objects, drawings, & equations.

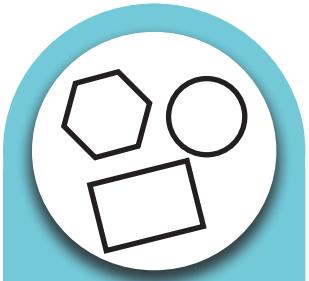
COUNTING & PLACE VALUE

Your child can count a group of objects and organize into tens and leftover ones.



MEASUREMENT

Your child can measure & compare the lengths of two objects as well as tell time to the hour & half hour.



SHAPES

Your child can name, build, take apart, draw, describe, & identify 2 dimensional and 3 dimensional shapes.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the 1st grade math concepts he/she is learning at school and apply them at home in everyday situations.

Add & Subtract

- Play GO FISH but search for ways to make 10, like 6 & 4 or 3 & 7, instead of finding matches.
- Roll dice (or draw cards) and add to find the sum, or compare to find the difference.
- Take advantage of opportune moments to illustrate math, like asking your child, "How many forks do we still need on the table? How many tacos are left if I had ten, but ate six? How many dollars do I need for this $20 video game if I've saved $5?

Counting & Place Value

- Count and organize everything such as buttons, beans, toys, or shoes! Ask them to count from 0 - 120, forwards & backwards by ones & tens.
- Organize your items into groups or rows of ten. Ask your child, "What is the total? How many 10s are there? Do we have any leftovers that did not make a 10? What is 10 more or 10 less than what we have? Can you draw/represent it & write the number that matches?"
- Count pennies by ones, and count dimes by tens.

Measurement

- Compare two pencils. Which is longer? Which is shorter?
- Measure length using everyday objects end to end with no overlaps or gaps. For example: "How many crayons long is this book? or "How many paper clips does it take to measure this piece of paper?"
- Use digital and analog (wall) clocks to tell time to the hour (3:00) and half-hour (3:30).

Shapes

- You can play "I SPY..." with rectangles (dollar bills), squares (windows), trapezoids (a plane's wings), half-circles/ quarter-circles (leftover pizza), cubes (dice), rectangular prisms (shoeboxes), cones (party hats), cylinders (can of beans).
- Divide a sandwich into halves (2 equal parts) and fourths (4 equal parts). Combine shapes to create new ones.

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Family Guide for Student SUCCESS

2nd Grade MATH

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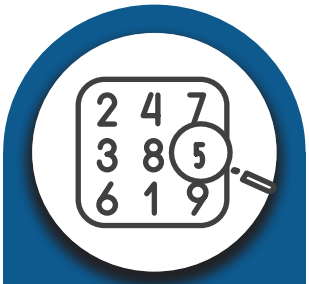
2ND GRADE CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of 2nd Grade in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for 3rd grade. In grade 2, instructional time should focus on four essential areas, all of which have equal importance:

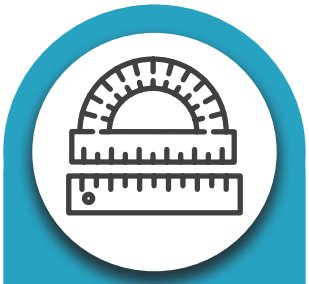
ADD & SUBTRACT

Your child can add and subtract within 1,000 using models, drawings, strategies, and equations.



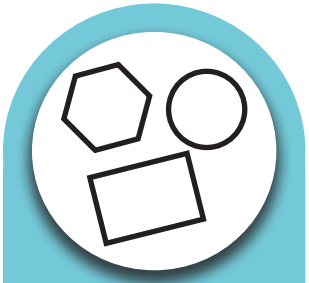
PLACE VALUE

Your child can count, group, and break apart numbers or collections of objects into hundreds, tens, and ones.



MEASUREMENT

Your child can measure, compare, work with graphs, tell time to the nearest 5 minutes, and work with coins up to $1.00.



SHAPES

Your child can name, build, take apart, draw, describe, & identify 2 dimensional and 3 dimensional shapes.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the 2nd grade math concepts he/she is learning at school and apply them at home in everyday situations.

Add & Subtract

- Draw two cards (or roll 2 dice) and add. Try with 3 or 4 cards! Keep a running total and see who can get to 100 first.
- Organize doughnuts in equal rows (an array). How many in each row? How many rows? How many doughnuts in all? Is there another way to organize?
- Play any game and tally your scores. Who won? By how many?
- When having taco night at home, ask your child, "I had 5 tacos. I got 3 more, then ate 2. How many do I have now?"

Place Value

- Count within 1,000 (forward and backward) by 1s, 5s, 10s, and 100s. Start on zero, or on a random number!
- Ask "how many" ones, tens, and hundreds in sets of objects. (Ten 10s in a box of 100 paperclips)
- Find objects around the house and practice organizing them into arrays (equal rows & groups), writing numerals (231), number words (two hundred thirty-one), and expanded form (200 + 30 + 1). Draw to represent that amount. What's 10 more? What's 100 more?

Measurement

- Measure the length of a table and a shoe. Discuss which tool (ruler, yard stick, measuring tape) is best for each job.
- Measure the height of everyone in your house. Create a graph of the heights you recorded (line plot, picture graph, bar graph).

Shapes

- SHAPES QUIZ: "What 2D shape has 6 sides? What 3D shape has 6 square faces? Identify and draw or build it!"
- Partition (equal size pieces) cookies or brownies into 2 halves, 3 thirds, or 4 fourths.

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HOMEWORK HELP

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Family Guide for Student SUCCESS

3rd Grade MATH

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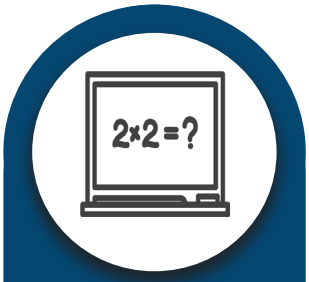
3RD GRADE CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of 3rd grade in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for 4th grade. In Grade 3, instructional time should focus on four essential areas, all of which have equal importance:



MULTIPLICATION & DIVISION

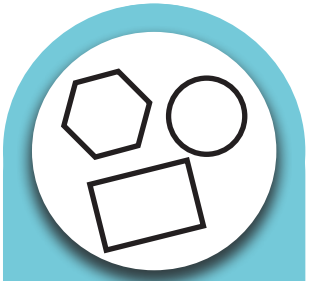
Your child can develop an understanding of what it means to multiply & divide whole numbers.

FRACTIONS

Your child can build on their understanding of breaking shapes into parts to begin formalizing their knowledge of fractions.

AREA

Your child can measure area by finding the total numbers of square tiles it takes to cover a rectangular shape.



SHAPES

Your child can describe and analyze two-dimensional shapes and classify them by common traits.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the 3rd grade math concepts he/she is learning at school and apply them at home in everyday situations.

Multiplication & Divison

- Lots of items you buy are arranged in rectangular arrays (rows & columns), like eggs, canned drinks, tiles on a floor, or window panes.
- Ask your child, "If we buy 3 cartons of eggs, how many eggs will we have?" or "We need 24 canned cokes, how many 6 packs of coke do we need to buy?"
- When cooking, tell your child, "I need 10 cups of water in the pot and this measuring cup holds 2 cups. How many times will you need to fill the measuring cup with water and put in the pot?"

Fractions

- When making peanut butter & jelly sandwiches, ask you child to cut it into halves and then into fourths. Ask them what happens to the size of the pieces as they are dividing them into a greater number of pieces.
- When you are eating pizza, decide how to cut the pizza into equal parts for your family. What is the fractional part of each piece? Is your share of the pizza fair?

Area

- Ask your child, "How many Cheez-Itz would it take to cover the front of the box? How many Cheez-Itz tall is the box? How many Cheez-Itz wide is the box? How do you think we could figure out how many Cheez-Itz it would take to cover the front of the box without having to actually do it?"
- If you have square tiles at home, ask your child to figure out how many square feet is in the tiled area. Ask them what could be a good strategy to determine how many square feet are inside a space.

Shapes

- You can help your child by looking for shapes that are common in everyday life, from triangles in Doritos to squares & rectangles in picture frames. Always be on the look out for shapes around you and ask your child to tell you what shape it is. Then ask the most important question, "How do you know?"

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HOMEWORK HELP

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WolframAlpha

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Family Guide for Student SUCCESS

4th Grade MATH

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4TH GRADE CONTENT PRIORITIES

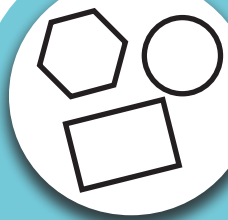
This guide provides an overview of what your child will learn by the end of 4th grade in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for 5th grade. In Grade 4, instructional time should focus on three essential areas, all of which have equal importance:

MULTIPLICATION & DIVISION

Your child can build on strategies and concepts to multiply and divide multi-digit whole numbers.

FRACTIONS

Your child can find equivalent fractions, add & subtract fractions, and multiply fractions with a whole number.



SHAPES

Your child can analyze and classify shapes based on properties like parallel lines, side lengths, and angles.

MATH @ HOME

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Multiplication & Division

- Look for items that are packaged or arranged in rectangular arrays (things arranged in columns & rows). For example, when you go through the drive through & buy 10 dozen doughnuts, ask your child "How many doughnuts did we order?"
- If your family is having a graduation party and needs 96 sodas for your guests, how many 6 packs of sodas will you need to buy at the store?

Fractions

- Take advantage of any natural opportunities to use fractions as they arise. For example, your family orders 2 large pizzas for dinner. One of the pizzas is cut into fourths and the other is cut into eighths. Ask your child, "Would you rather eat a ¼ piece or 2 of the one-eighth pieces?" Do not forget to ask them what their reasoning is for their answer.
- Bake brownies with your child for his/her friends and triple the recipe. If the recipe calls for ¼ of a cup of oil, ask you child, "How much oil will we need if we are going to triple the recipe?"

Shapes

- Look for examples of triangles and quadrilaterals (closed shapes with 4 straight sides) with your child. For example, when you are in the car or on a walk, your child can point out the triangles or quadrilaterals that he or she sees on signs, buildings, shop windows, and so on.
- There are many opportunities to notice, name, and discuss symmetry. Look for objects that are symmetrical around your home. When they identify a symmetrical object, be sure to ask, "What makes it symmetrical?"
- Have your child fold a leaf in half to see if both sides are the same. Then ask them, "Can you fold it in half again a different way?"

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"Education is the foundation upon which we build our future."
-Christine Gregoire

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5th Grade MATH

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5TH GRADE CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of 5th grade in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for 6th grade. In Grade 5, instructional time should focus on three essential areas, all of which have equal importance:

MULTIPLICATION & DIVISION

Your child can extend their work to include real world problems and decimal numbers.

FRACTIONS

Your child can build on their knowledge of operations to work with fractions while using models to support their understanding.

VOLUME

Your child can recognize volume as an attribute of three-dimensional space and use units to fill a 3D solid.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the 5th grade math concepts he/she is learning at school and apply them at home in everyday situations.

Multiplication & Division

- Ask your child to give you estimated solutions. For example, can they give an estimate of five items on a grocery list or determine the estimated cost of four plants.
- Support your child while learning division with larger numbers. If you have 750 minutes on your phone each week and you use 100 minutes a day, will you have enough minutes for the week? What if you have 12,500 minutes for a month? Can you use 100 minutes a day and have enough minutes for the whole month?

Fractions

- Have students make models to find equivalent fractions when working with unlike denominators (differently-sized pieces). For example, fill one measuring cup with 2/3 of a cup with water water and give your child another measuring cup with 3 and 3/4 cups of water. Then ask, "How much water do we have in all?"
- Bake a cake or brownies. Have your child find ¾ of the pan. After some have been eaten, ask them, "Can you determine the fraction that is left?" Are there other ways we can name the fraction?"

Volume

- Your child can measure objects with 3 dimensions around your home to determine and compare their volumes. Focus on the fact that volume is filling an object, area is covering a space, and length is how long something is.
- Use cubes, wooden blocks, or legos to build solid 3-D figures and determine the volume. Put two of the figures together to make an irregular shape. Determine the volume by adding the two volumes together. Then let your child count the units to verify the volume.

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> "Education is the foundation upon which we build our future."
> -Christine Gregoire

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Family Guide for Student SUCCESS

6th Grade MATH

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WHY ARE STANDARDS IMPORTANT?

- They help ensure that all students, no matter where they live, are prepared for success in college and the workforce.
- Standards provide a clear roadmap of learning for teachers, parents, and students.
- Having clearly defined goals helps families and teachers work together to ensure that students succeed.
- They also will help your child develop critical thinking skills that will prepare him or her for college and career.

6TH GRADE CONTENT PRIORITIES

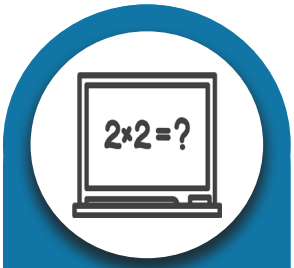
This guide provides an overview of what your child will learn by the end of 6th grade in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for 7th grade. In Grade 6, instructional time should focus on five essential areas, all of which have equal importance:

RATIOS & UNIT RATES

Your child can build on multiplication concepts to solve ratio and unit rate problems.

DIVIDING FRACTIONS

Your child can build on division concepts to divide fractions.



EXPRESSIONS & EQUATIONS

Your child can use expressions and equations to represent relationships between quantities.

ANALYZE DATA

Your child can analyze data to determine trends, outliers, and the best measure of central tendency.

2D & 3D SHAPES

Your child can analyze 2D and 3D shapes and develop formulas for area, perimeter, surface area, and volume.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the 6th grade math concepts he/she is learning at school and apply them at home in everyday situations.

Ratios & Unit Rates

- If a 6 pack of canned drinks is $3.00, how much is each one?
- Determine which is the best buy at the local store: a the regular size bag of chips or the family size?
- Use a toy car to determine speed. Record the time it takes the toy to travel the distance. This is a ratio of distance to time, which will simplify to give you the speed: 12 feet in 3 seconds is the same as 4 feet per second.

Dividing Fractions

- Divide an apple in half. Cut each half into two parts. 1/2 ÷ 2 is 1/4 the size of the original apple.
- If you have 2.5 lbs of hamburger meat and your burgers are 1/4 lb each, how many burgers will you be able to make?

Expressions & Equations

- Create a "Memory" card game with flash cards. Create sets of eqivalent expressions and allow your student to find the matches.
- At the concession stand you buy 2 hot dogs and a drink. Altogether it costs you $5.50. If drinks cost 1.50 each, how much does each hot dog cost?

Analyze Data

- Determine mean, median, & mode of your math grades for each 9 weeks at school and represent it graphically.
- Have your child record how many pages are in 10 books you have at home. Represent the data using multiple graphic representations (line plot, histogram, box-n-whisker plot). Ask them questions & have them use their graphic representations to answer.

2D & 3D Shapes

- Measure a ceral box to find it's volume. Then, have your child cut the edges of the box & flatten it to find it's net. Use the net to take measurements & find the surface area of the box.

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> "You are your child's greatest champion. Ask about your child's math progress frequently!"

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Family Guide for Student SUCCESS

7th Grade MATH

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WHY ARE STANDARDS IMPORTANT?

- They help ensure that all students, no matter where they live, are prepared for success in college and the workforce.
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- Having clearly defined goals helps families and teachers work together to ensure that students succeed.
- They also will help your child develop critical thinking skills that will prepare him or her for college and career.

7TH GRADE CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of 7th grade in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for 8th grade. In Grade 7, instructional time should focus on four essential areas, all of which have equal importance:

PROPORTIONAL RELATIONSHIPS

Your child can build on unit rate understanding to determine proportional relationships.

RATIONAL NUMBERS

Your child can perform operations with rational numbers and apply understanding to expressions & linear equations.

ANALYZE DATA

Your child can analyze data to determine populations based on samples.

2D & 3D SHAPES

Your child can construct scale drawings as well as use 2D & 3D shapes to determine area, surface area, and volume.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the 7th grade math concepts he/she is learning at school and apply them at home in everyday situations.

Proportional Relationships

- Make a table with your child to show the speed of a car in miles per hour.
- Have your child graph the results and determine if the car was traveling at a constant speed. What was the constant speed?
- Have your child write the equation that represents the speed.
- While at a store, have your child find the sales tax for a purchase. You can have them find how much of a tip for a waiter while at a resturant or how to make an income working on commission, like a real estate agent. All of these are based on percents.

Rational Numbers

- On a number line with positive and negative numbers, choose a starting point and then draw a card from a deck. A red card is negative and a black card is positive. Move that number of spaces in the apporpriate direction. What is the end result? Have them write the matching equation of the situation.
- Watch Jeopardy! together. Have your child notice what happens when a player gets a right answer vs. a wrong answer. Play a version of Jeopardy! at home and have them keep track of their points, adding positive and negatives to their total as they get answers right or wrong.

Analyze Data

- Have your child conduct a survey/poll on social media for their favorite food. Use the results to create a graph and then apply those numbers to a larger scale; Based off your data, out of 5,000 people, how many would you expect to like chicken best?
- Have your child record how many pages are in 10 books you have at home.

2D & 3D Shapes

- Take a piece of string and a circular can or jar at home. Have your student measure the item with the string. Have them use their measurement to determine the circumference, area, & volume of the item.

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Family Guide for Student SUCCESS

8th Grade MATH

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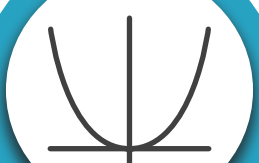
8TH GRADE CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of 8th grade in mathematics. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for High School. In Grade 8, instructional time should focus on three essential areas, all of which have equal importance:

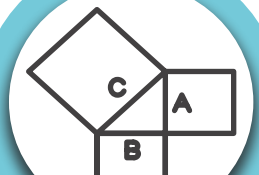
EQUATIONS

Your child can model and solve equations & systems of equations with more than one variable.



FUNCTIONS

Your child can formulate functions and analyze how one quantity determines another, recognizing the relationship between them.



2D & 3D SHAPES

Your child can construct and apply the Pythagorean Theorem, model transformations, and find the volume of cones, cylinders & spheres.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the 8th grade math concepts he/she is learning at school and apply them at home in everyday situations.

Equations

- Give your child equations to solve equations such as: $4x = 24$, $2x+2 = 10$, $5x + 4 = 5x + 7 - 3$, $3x - 1 = 3x + 5$, $1/3x + 7 = 10$, $5(x + 3) = 2(x + 7)$. Determine how many solutions each equation has (one, infinite or none).
- Have your child solve situations that have two variables. For example: Ralph had 3 cookies and 2 cupcakes. He spent $12. Jim had 2 cookies and 4 cupcakes. He spent $16. How much was each item? Explain what the x and y values mean in this problem. Have your child graph the two systems then check the solution on the graph at the point of intersection.

Functions

- Have your child find solutions to functions in real life. For example, your club at school is purchasing hats & t-shirts to sell for a fund raiser. Each hat costs $5 and each shirt costs $10. If your club has $500 to spend, how many of each will they be able to purchase? Create a table & a graph to represent the possible solutions.
- Create a story problem with your child. For example: Sally was riding her bike to practice. She stopped for a few minutes to get a snack. She then continued at a slower rate than before until she got to practice. Graph Sally's trip.

2D & 3D Shapes

- Have your child draw a figure on graph paper. Then have him trace with wax paper or tracing paper. Have him/her do a series of rotations, reflections, translations. Instruct them to determine what happened to the length of each side and angle.
- Have your child draw a right triangle on graph paper with side lengths measuring 3 cm, 4 cm, and 5 cm. Now have them use the ruler to draw squares of each side attached to it. This will show a proof of the Pythagorean Theorem.
- Have your child determine how much ice cream would fit into a waffle cone.

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Family Guide for Student SUCCESS

Geometry

with Data Analysis

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GEOMETRY CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of Geometry. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for future High School courses. In Geometry, instructional time should focus on four essential areas, all of which have equal importance:

NUMBER and QUANTITY

Your child can work with rational and irrational numbers within algebraic expressions to solve problems.

ALGEBRA and FUNCTIONS

Your child can formulate, analyze, and solve equations and functions and explain the relationship between quantities.

STATISTICS and PROBABILITY

Your child can represent data and use statistical reasoning about data to draw conclusions and make predictions.

GEOMETRY and MEASUREMENT

Your child can determine the volume and 3-D figures and use transforations to verify congruence and similarity of geometric figures.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the Geometry concepts he/she is learning at school and apply them at home in everyday situations.

Number and Quantity

- Find matheamtical inormation in the news or magazines and create problems. Example: According to an article in Runners' World magazine:

  On average the human body is more than 50 percent water [by weight]. Runners and other endurance athletes average around 60 percent. This equals about 120 soda cans' worth of water in a 160-pound runner!

  Investigate their calculation. Approximately how many soda cans' worth of water are in the body of a 160-pound runner? What unprovided information do you need to answer this question?

Algebra and Functions

- Create a story problem with your child. For example: Sally was riding her bike to practice. She stopped for a few minutes to get a snack. She then continued at a slower rate than before until she got to practice. Graph Sally's trip.

- Sherry sold tickets for the dance. After the dance was over, she noticed a dollar on the ground. The price of tickets for the dance was 1 ticket for $5 (for individuals) or 2 tickets for $8 (for couples). Sherry looked inside the cash box and found $200 and ticket stubs for the 47 students in attendance. Does the dollar belong inside the cash box or not?

Data Analysis, Statistics, and Probability

- Have your child look for ways in media (newspapers, magazines, websites, etc.) in which data is displayed. Have conversations about what the data means. Also, discuss any possible biases that might have occurred when the data was collected such as:
  - Was enough data collected to be meaningful?
  - Was the data that was collected truly random?
  - Was the data presented in a way that seemed to intentionally encourage certain conclusions?

Geometry and Measurement

- Take a piece of string and a circular can or jar at home. Have your student measure the item with the string. Have them use their measurement to determine the circumference, area, & volume of the item.

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Family Guide for Student SUCCESS

Algebra 1 with Probability

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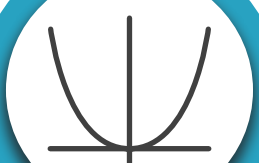
ALGEBRA 1 CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of Algebra 1. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for later High School Courses. In Algebra 1, instructional time should focus on three essential areas, all of which have equal importance:

Number and Quantity

Your child can work with rational and irrational numbers within algebraic expressions to solve problems.



Algebra and Functions

Your child can formulate, analyze, and solve equations and functions and explain the relationship between quantities.

Statistics and Probability

Your child can represent data and use statistical reasoning about the data to draw conclusions and make predictions.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the Algebra 1 concepts he/she is learning at school and apply them at home in everyday situations.

Number and Quantity

- Give your child an opportunity to rewrite expressions involving radicals and rational exponents using properties of exponents such as rewriting $(5^3)^{1/2}$ as $5\sqrt{5}$.
- Give your child an opportunity to use units as a way to understand problems and to guide the solution of multi-step problems. For example: Every minute, 2.2 gallons of water flows from a shower. A family of 5 people showers for an average of 9 minutes per person every morning. How many gallons of water does the family use for showering every morning?

Algebra and Functions

- Give your child equations to solve equations such as: $4x = 24$, $2x+2 = 10$, $5x + 4 = 5x + 7 - 3$, $3x - 1 = 3x + 5$, $1/3x + 7 = 10$, $5(x + 3) = 2(x + 7)$. Determine how many solutions each equation has (one, infinite or none).
- Create a story problem with your child. For example: Sally was riding her bike to practice. She stopped for a few minutes to get a snack. She then continued at a slower rate than before until she got to practice. Graph Sally's trip.

Data Analysis, Statistics, and Probability

- Have your child look for ways in media (newspapers, magazines, websites, etc.) in which data is displayed. Have conversations about what the data means. Also, discuss any possible biases that might have occurred when the data was collected such as:
  - Was enough data collected to be meaningful?
  - Was the data that was collected truly random?
  - Was the data presented in a way that seemed to intentionally encourage certain conclusions?
- Have your child use spreadsheets and other technical tools to explore statistics.

Planning for College and Career

Sit down with your child's teachers and counselor to discuss what it will take for your child to graduate, your child's goals, and his/her plans after high school. Create a plan together to help your child reach these goals. This plan should include:

An appropriate course sequence to meet your child's goals
The most appropriate extracurricular activities for your child
Your plan to help your child prepare for college or career.

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Family Guide for Student SUCCESS

Algebra 2

with Statistics

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ALGEBRA 2 CONTENT PRIORITIES

This guide provides an overview of what your child will learn by the end of Algebra 2. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for future High School courses. In Algebra 2, instructional time should focus on four essential areas, all of which have equal importance:

NUMBER and QUANTITY

Your child can use real and complex numbers to solve real-world problems.

ALGEBRA and FUNCTIONS

Your child can formulate, analyze, and solve equations and functios and explain the relationship between quantities.

STATISTICS and PROBABILITY

Your child can represent data and use statistical reasoning about data collected from rando samples to draw conclusions and make predictions.

GEOMETRY and MEASUREMENT

Your child canuse proportional relationships to explore the effects of changing quantities of 2D & 3D shapes.

MATH @ HOME

Have you ever heard this phrase from your child before about math, "When will I ever use this?" The more they can make a connection between math & the real world, the more they will value it. Below you will find a few ideas to showcase how your child can relate the 7th grade math concepts he/she is learning at school and apply them at home in everyday situations.

Number and Quantity

- Have you child describe the pattern observed and algebraically prove their observation. Example: the letter i denotes the imaginary unit, $i = \sqrt{(-1)}$. For each integer k from 0 to 8, write i^k in the form a+bi. In particular, simplify i^{195}.
- Find values for a, b, c, and d so that the matrix below that contains these variables is the multiplicative identity matrix, for the following matrix multiplication. Will this same matrix work as the multiplicative identity for all 2 X 2 matrices?

$$\begin{bmatrix} 3 & 1 \\ 4 & 2 \end{bmatrix} \cdot \begin{bmatrix} a & b \\ c & d \end{bmatrix} = \begin{bmatrix} 3 & 1 \\ 4 & 2 \end{bmatrix}$$

Algebra and Functions

- Create a story problem with your child. For example: Sally was riding her bike to practice. She stopped for a few minutes to get a snack. She then continued at a slower rate than before until she got to practice. Graph Sally's trip.
- Watch Jeopardy! together. Have your child notice what happens when a player gets a right answer vs. a wrong answer. Play a version of Jeopardy! at home and have them keep track of their points, adding positive and negatives to their total as they get answers right or wrong.

Statistics and Probability

- Have your child look for ways in media (newspapers, magazines, websites, etc.) in which data is displayed. Have conversations about what the data means. Also, discuss any possible biases that might have occurred when the data was collected such as:
  - Was enough data collected to be meaningful?
  - Was the data that was collected truly random?
  - Was the data presented in a way that seemed to intentionally encourage certain conclusions?

Geometry and Measurement

- Take a piece of string and a circular can or jar at home. Have your student measure the item with the string. Have them use their measurement to determine the circumference, area, & volume of the item.

WHAT IS AMSTI?

The Alabama Math, Science, and Technology Initiative, commonly referred to as AMSTI, is the Alabama Department of Education's initiative to improve STEM teaching & learning statewide. Its mission is to support Alabama educators and students in learning STEM by doing STEM. Check us out by scanning the QR Code.

> "Education is the most powerful weapon which you can use to change the world."
> - Nelson Mandella

HOMEWORK HELP

AMSTI

Quick links for Family Resources to do math at home.

www.amsti.org/912-math-student-family

Khan Academy

Instructional Math Videos with Interactive Guided Practice

www.khanacademy.com

Math Help!

Instructional Math Videos with Interactive Guided Practice & Self Assessment

www.mathhelp.com

DESMOS

Free Graphing or Scientific Calculator

www.desmos.com

GeoGebra

Free Graphing, Scientific, 3D, & CAS Calculator

www.geogebra.org