5TH GRADE

A FAMILY GUIDE FOR STUDENT SUCCESS

MISSISSIPPI DEPARTMENT OF EDUCATION

Ensuring a bright future for every child

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STUDENT EXPECTATIONS

Parents are their child's first teachers in life and know their child better than anyone else. Parents have valuable insights into their child's needs, strengths, abilities, and interests. The collaboration of parents and educators is vital in guiding each child toward success. The *Family Guide for Student Success* outlines what your child should learn at each grade level from pre-kindergarten through eighth grade. You can encourage your child's academic growth by reinforcing classroom activities at home. The *Family Guide for Student Success* booklets represent what all students should know and be able to do at the end of each grade level. 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 Mississippi.

If you have special questions regarding curriculum or school programs, please call your child's school. Do not be afraid to reach out to your child's teacher for additional activities to support mastery of the standards. This guide will help set clear and consistent expectations for your child, build your child's knowledge and skills, and help set high goals for your child.

READING

In grade five reading, your child will continue reading and writing, but in addition to stories and literature, he will read more texts that provide facts and background knowledge in areas including science and social studies. He will read more challenging texts and be asked questions that will require he to refer back to what he has read. There will also be an increased emphasis on building a strong vocabulary so that your child can read and understand more challenging material. Your child will be expected to understand and clearly summarize what he has learned from readings and classroom discussions, referring to specific evidence and details from the text. Activities in these areas may include:

- Drawing inferences from the text, citing evidence from the text and including a relevant quote.
- Summarizing the text, including the theme in the original piece.
- Identifying and describing text structures the author uses in a text.
- Analyzing different points of view used in multiple accounts of the same event or topic.
- Identifying reasons or evidences that support the author's key points.
- Using context clues to help unlock the meaning of unknown words/phrases.
- Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text and support the author's message.
- Compare/contrast the approach of similar themes and topics from stories of the same genre.

Your child can accurately quote a text when explaining what the text explicitly says and when drawing inferences from a text.

- Quote accurately from the text to support answers. "Quote accurately" may include using his own words.
- Give more thought to characters' actions in a text.
- Refer to specific details in the text when finding the similarities and differences between two or more characters, settings, or events.

HELP AT HOME

- Give your child sticky notes to jot down thoughts, questions, predictions, inferences, or connections as he reads. Stick those notes to the corresponding page in the text and have him come back to them when answering questions about the text.

VOCABULARY

An **INFERENCE** is made by using observations and background knowledge to determine a conclusion that makes sense. For example, John hears a smoke alarm and smells burnt bacon when he wakes up. John can infer that his mom burned their breakfast.

Your child can determine the theme of a story, drama, or poem using details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects on a topic. Have your child summarize text.

- Link his thinking to the text.
- Identify the most important events that happen in the story.
- Describe how two characters are the same or different.
- Determine how the problem in the story was solved.

HELP AT HOME

- Have your child practice summarizing by allowing him to use your social media account(s) to write a short summary of a fun family activity or an exciting event for friends and family members to see and respond to.
- Teach your child to take phone messages when an adult is unavailable to come to the phone. This teaches summarization as your child must overlook unnecessary information and only note the most important details.

VOCABULARY

A story's **THEME** is its underlying message, or "big idea." For example, the theme of Cinderella is the ability to achieve success through perseverance and positive behavior when faced with negative circumstances.

Your child can compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).

- Draw on specific details given in the text.
- Compare and contrast characters based on their thoughts, words, actions, decisions, physical attributes, and interactions with others.
- Compare and contrast settings based on the time and place.
- Compare and contrast events based on the characters, action, or impact on other events in a story.

HELP AT HOME

- When visiting a new or unfamiliar place, ask your child questions such as: "How is (new place) similar to or different from our home?" Have the child explain his thoughts, using specific things he sees, hears, smells, or touches.

BASIC STORY ELEMENTS

Basic story elements include:

- **CHARACTERS:** persons (or even animals) who take part in the action of a short story.
- **SETTING:** the time and place in which a story happens.
- **PLOT:** the series of events that happen in the story.
- **CONFLICT:** the struggle between two people or things; the main character is usually involved in one side of the conflict.
- **THEME:** the central idea or belief in a story.

Your child can determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.

- Look for elements of figurative language, such as similes and metaphors.

VOCABULARY

SIMILES compare two things using the words "like" or "as" (e.g., the girl sang like a bird.)

METAPHORS compare two things by saying one thing "is" another, different thing (e.g., the hot pavement is a fire under my feet since I am not wearing any shoes).

HELP AT HOME

- Encourage your child to make notes about unfamiliar words and concepts he comes across while reading that can be discussed later with a parent or teacher. Assist the child in using a dictionary or an Internet reference tool to look up those unfamiliar concepts.
- Use questions and prompts such as:
  - What do you do when you come to words or phrases you do not know?
  - Tell me how this text is presented/organized?
  - Think about what you read.
  - Who is telling the story?
  - Can you tell how the person telling the story is thinking?
  - How does this affect the events of the story?

Your child can explain how a series of chapters, scenes, or stanzas fit together to provide the overall structure of a particular story, drama, or poem.

- Answer the question: How does the structure of a text impact the reader's experience and understanding of a text?
- Use understanding of structure to enhance experience with and understanding of text.
- Know that authors use structures purposefully to create dramatic effect.

HELP AT HOME

- After your child has read a story, drama or poem, have him illustrate and describe each chapter, scene, or stanza. Hang the illustrations and descriptions up to show the order of the text. Once the text is in order, have your child explain the purpose of each section and how it fits with the one before it and the one after it.

COMMON TEXT STRUCTURES

A text's "structure" refers to how a story is built. Common text structures include:

CHRONOLOGICAL ORDER
Explains how things happen in order or in sequence.
Clue Words: first, next, later, then, finally.

COMPARE AND CONTRAST
Explains how two things are similar and different.
Clue Words: both, but, instead, differences, on the other hand.

CAUSE AND EFFECT
The writer wants to explain how one event leads to another.
Clue Words: cause, effect, as a result, consequently, so.

PROBLEM AND SOLUTION
The author wants to explain a problem and show one or more solutions. Clue Words: difficulty, problem, answer, future.

Your child can describe how a narrator's or speaker's point of view influences how events are described.

- Understands that personal perspectives shape how events are perceived and described.
- Knows the narrator/speaker in a story tells events from his own point of view.
- Knows events may be described differently, depending on whose point of view a story is being told.

HELP AT HOME

- Have your child imagine the story if his favorite story had been told from a different point of view (e.g., what would the story be like if it was told from the villain's point of view?). Talk it through with your child. Then encourage him to re-write his favorite story from the point of view of a different character.

POINT OF VIEW

Point of view is the viewpoint from which a story is told.

FIRST-PERSON
The character is telling the story from his/her point of view. Clue Words: I, we.

THIRD-PERSON
A person not involved in the actual story is telling the story, including the thinking and action of all characters. Clue Words: he, she, they.

Your child can analyze how visual and multimedia elements contribute to the meaning, tone, and beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).

- Identify how the visual presentation of a text supports the author's message.
- Identify the relationship between the tone and beauty of a text with the meaning of the text.
- Understand that the presentation of a text (e.g., visual or multimedia), enhances the reader's understanding of the text.
- Identify multimedia elements, including: text, graphics, sound, video, and animation.
- Identify types of text, such as: graphic novels, multimedia presentations of fiction, folktales, myths, and poems.

HELP AT HOME

- Take your child to a movie, play or musical based on a written work that he has previously read. Discuss with your child the way the props, music, costumes, and actors' voices and movements bring the story to life.

VOCABULARY

TONE is the author's attitude toward the writing and the readers (e.g., serious, humorous, suspicious).

Your child can compare and contrast stories in the same genre (e.g., mysteries or adventure stories) on their approaches to similar themes and topics.

- Understands that stories can share the same theme or topic even though the story elements differ.
- Knows that story elements include characters, setting, and plot.
- Knows that genre is writing that has a particular form, content, or technique.
- Recognizes that authors reveal the theme of a story by emphasizing a recurrent message through characters and events in a story.

GENRES

Genre is the word used to describe different types of literature, including but not limited to:

FICTION
- Mystery
- Historical fiction
- Realistic fiction
- Folktales
- Fairy tales

NONFICTION
- Informational texts
- Biography
- Autobiography

VOCABULARY

PROTAGONIST is the main character in a novel.

ANTAGONIST is the villain in the story; opposes the main character (protagonist).

HELP AT HOME

- One of the best ways to discover a story's underlying theme is to look at how the main character (protagonist) changes during the course of the story or what he has learned by the story's end. Often, what this character has learned about life is the idea the writer wants to reveal to the reader. Have your child determine the story's theme and give examples from what happened to the main character as evidence to support the chosen theme.
- Suggest a variety of texts surrounding a common theme (e.g., the Dust Bowl or the Civil Rights Movement) in order to help your child see how different authors vary in their approach to the same theme. This helps him understand how information can be integrated from multiple texts on the same topic, which is a skill he will need for research papers in the future.

By the end of the year, your child can read and comprehend literature (including stories, dramas, and poetry) and informational texts (including history/social studies, science, and technical texts) at the high end of the grade 5 text band independently and proficiently.

- Have experience with reading stories, drama, poetry, history, science, and technical texts.
- Comprehend grade-level literature, at a proficient level, when he is reading and working independently.

VOCABULARY

An **INFORMATIONAL TEXT** is nonfiction writing, written with the intention of informing/teaching the reader about a topic. Informational texts include magazines, history or science books, autobiographies, newspapers, and instruction manuals.

HELP AT HOME

- Encourage your child to read a variety of materials, including stories, poems, plays, books, newspapers, and magazines. Look for opportunities to discuss what your child is reading and find out what he has learned. Interacting with your child about what he is reading will improve the child's ability to "read between the lines" and make connections between reading and personal experiences.

Your child can draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

- Answer questions or solve problems efficiently using informational resources wisely.
- Locate credible, trustworthy, informational text in print and digital formats.
- Know strategies to locate answers to questions and solve problems.

HELP AT HOME

- Use technology to build your child's interest in reading. Look for websites where he can read books or articles online. The computer can also help with words your child cannot read or understand independently, as he can use an online dictionary or thesaurus for help.

  Begin teaching your child to use search engines (e.g., Google) to seek out information he needs. Public libraries have computers available for students to access these sites if a computer is not accessible at home.

Your child can explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which points.

- Know that authors include details in the form of reason and evidence, which support and bring validity to particular points in an informational text.
- Identify which evidence supports which points.
- Evaluate and explain the connection between reasons and particular points in a text.

HELP AT HOME

- Listen with your child to a TV reporter, motivational speaker, or political candidate. Review the speaker's main points with your child and ask whether the speaker was trying to convince the audience of something or not. How was the speaker attempting to do so (what kinds of words, details, etc. did he or she use)?

AUTHOR'S PURPOSE

Author's purpose refers to why the author is writing about this topic. Authors write with one or more of the following purpose goals:

TO ENTERTAIN
Written to entertain or amuse readers (e.g., stories, dramas, poems, songs).

TO INFORM
Written to provide the reader with information on a topic (e.g., essays, articles, instructions, encyclopedias).

TO PERSUADE
Written to compel readers to take action or convince them of something (e.g., advertisements, campaign speeches, persuasive letters).

Your child knows and applies grade-level phonics and word analysis skills in decoding words.

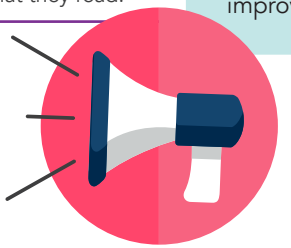
- Know all letter-sound correspondences.
- Understands syllabication patterns.
- Understands root words, prefixes, and suffixes.

VOCABULARY

FLUENCY is the ability to read with speed, accuracy, and proper expression; fluency is necessary for students to be able to understand what they read.

HELP AT HOME

- Encourage your child to read aloud to younger siblings, neighbors, or cousins. This gives him practice reading unfamiliar words in context.
- Read to your child when possible. This helps him understand how written text should sound when read aloud, which improves fluency.



Your child can read with sufficient accuracy and fluency to support comprehension.

- Reads grade level text with purpose and understanding.
- Reads grade level poetry orally with accuracy, proper rate, and expression.
- Use context to confirm or self-correct word recognition and understanding and reread text as necessary.

HELP AT HOME

- Make sure your child is independently reading text on a level that is comfortable for him to succeed. This will allow your child to focus on a predictable vocabulary and clear rhythmic pattern to "hear" what the text is supposed to sound like. More challenging texts should be read with the help of a parent or teacher.
- Establish a daily reading time and note what kinds of reading materials your child likes, then look for additional titles that would encourage your child to read more.

MATHEMATICS

In Grade 5, your child will focus on three critical areas. The first is developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions). Your child will also focus on extending division to two-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations. The third focus area is developing an understanding of volume. Activities in these areas include:

- Finding a common denominator and creating equivalent fractions for given fractions or mixed numbers.
- Multiplying a fraction or whole number by a fraction and interpreting the product.
- Creating visual models to divide a whole number by a unit fraction.
- Reading, writing, and comparing decimals to thousandths using base-ten numerals, number names, and expanded form.
- Placing decimals on a number line to demonstrate an understanding of value.
- Using number lines that show tenths, hundredths, and thousandths.
- Dividing a whole number dividend with up to four digits by a two-digit divisor using any appropriate strategy.
- Finding the volume of different rectangular prism/cubes by counting unit cubes and applying the formulas for volume.

Your child can use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

- Know the importance of grouping symbols.
- Connect to properties of addition and multiplication.
- Evaluate expressions by solving within parentheses first, within brackets second, and within the braces last.
- Evaluate, create, and write numerical expressions.

RESOURCES

( ) PARENTHESES

[ ] BRACKETS

{ } BRACES

HELP AT HOME

- Have your child describe a situation where doing things in a certain order is important (e.g., putting socks on before putting on shoes).
- Write a problem on a card. Then write the same problem on another card with grouping the symbols in a different location. Have your child solve both problems and compare answers and describe why the answers vary.
- Encourage your child to pay attention to order and minor errors.

Your child can write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

- Represent a word problem or real-world situation as a numeric expression.
- Write a problem in various equivalent expressions.
- Interpret numerical expressions.

HELP AT HOME

- Play a matching game. Write a verbal expression on one card. Have your child match to as many possible numerical expressions as possible (e.g., Write "add 5 and 2, multiply by 7" on a card. It would match with the cards that have these solutions "(5 + 2) x 7; 7(5 + 2); or 7(2 + 5)").
- Help your child list as many words as possible that mean add, subtract, multiply, divide.

Your child can generate two numerical patterns using two given rules and identify apparent relationships between corresponding terms. Your child can also form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

- Create real-world and mathematical problems which require graphing points in Quadrant I of a coordinate grid.
- Interpret coordinate values of points in the content of the situation.
- Calculate terms of ordered pairs given a rule to follow.
- Explain the relationship between two sets of patterns.

HELP AT HOME

- Play the "Input/Output" game. Think of a rule (e.g., add 7), and ask your child to say a number (e.g., 4), which is the input. Reply with the number that follows the rule (e.g., 4 + 7 = 11), which is the output. Have your child record the input and output in a table. Continue creating inputs and outputs until he is able to determine the rule. Next, have your child graph the input/output number pairs as coordinates on a graph. Have your child explain the pattern. Play the game again with a new rule. To complete the game, have the child compare the two graphs and explain how and why they differ.

RESOURCES

INPUT	OUTPUT
4	11
8	15
13	20
21	28

SAMPLE INPUT/OUTPUT TABLE

Use input/output tables to help your child determine the rule between two numbers. The rule for this table is "add 7," therefore, 7 has been added to each input to determine the output.

Your child can recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

- Tell what value each digit holds in a multi-digit number.
- Explain the patterns of the base-ten system.
- Write an expression for a multi-digit number to show the quantity of each digit.
- Explain why dividing by 10 is equivalent to multiplying by 1/10.

HELP AT HOME

- Use money to explain that $1(ones place value) × 10 = $10 (tens place value) and that a dime (tenths place value) is 1/10 of $1. It takes 10 dimes to equal $1. It takes 10 $1 to equal $10. Explain that since a dime ($.10) is 1/10 of $1, that you can multiply $0.10 by 10 and also get $1. Continue this activity with various place values. Encourage your child by telling him this is a skill he will use daily.

Your child can explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Your child can also use whole number exponents to denote powers of 10.

- Explain how the patterns of the powers of ten relate to numbers being multiplied by them.
- Explain 10^2 is the same as multiplying by 10 x 10 and the product of this is 100.
- Explain why the problem 6.2×10^2 is the same as 6.2 x 100.
- Use patterns and reasoning to place a decimal in a product or quotient.

HELP AT HOME

- Use a place value table to relate exponents on powers of 10 to the number of zeroes in the answer. (See page 22 for an example of a place value table.)
- Remind your child that each time a decimal is moved, a place value is increased or decreased.

Your child can read, write, and compare decimals to thousandths. Your child can read and write decimals to thousandths using base-ten numerals, number names, and expanded form.

- Convert numbers to word form and expanded form.
- Compare the decimal amount in the various forms and with varying decimal place values.

VOCABULARY

STANDARD FORM: 354

EXPANDED FORM: 300 + 50 + 4

WORD FORM: three hundred fifty-four

HELP AT HOME

- Have your child write checks to practice writing numbers in word form.
- Use money from a board game to show examples such as: $342 = 3 × $100 + 4 × $10 + 2 × $1. Use the coins to demonstrate $0.35 = 3 × $0.10 + 5 × $.01.

Your child can read, write, and compare decimals to thousandths. Your child can also compare two decimals to thousandths based on meanings of the digits in each place using >, =, and < symbols to record the results of comparisons.

- Explain decimal equivalence by using visual models and/or fractional equivalence.
- Place decimals on a number line to demonstrate an understanding of value. Use number lines that show tenths, hundredths, and thousandths.
- Explain that tenths are placed between whole numbers, hundredths are placed between tenths, and thousandths are placed between hundredths....

VOCABULARY

DECIMAL EQUIVALENCE is the decimal form of a number.

HELP AT HOME

- Make a set of three cards with the same number written as a decimal, written in word form, and an illustration. Make several sets using various numbers with decimals. Mix them up. Have your child pull two cards and determine if he needs to put <, =, or > in between the cards.
- Create a clothesline made of yarn and clothespins to put numbers in order from least to greatest on a number line. Use the same cards from the first activity above to place in order on the clothesline.
- Help your child realize that just because there are more digits in a number with a decimal it does not mean the value is larger (e.g., 3.456 will be to the left of 3.5 on the clothesline).

RESOURCES

PLACE VALUE TABLE

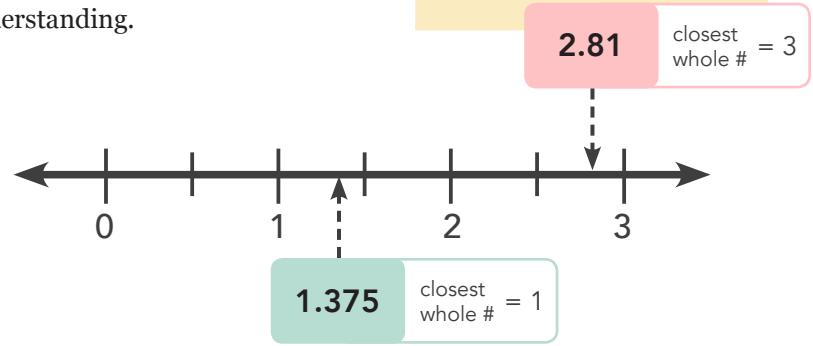
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	.	Tenths	Hundreths	Thousandths
						3	.	4	5	6

Your child can use place value understanding to round decimals to any place.

- Place decimals on a number line.
- Use the number line to determine the benchmark number the original number is closest to on the line.
- Explain that when given a base-ten decimal number, it can be placed between two benchmark numbers. Be able to cite the benchmark numbers that a given base-ten decimal falls between.
- Round a decimal number to any given place using place value understanding.

HELP AT HOME

- Tape a number line on the floor. Have your child hold a card with a decimal number written on it and stand where the number would be on the number line. Then have your child step to the whole number that the decimal number is closest to on the line. Have your child explain if the number was rounded up or if it stayed the same as the whole number.



Your child can fluently multiply multi-digit whole numbers using the standard algorithm.

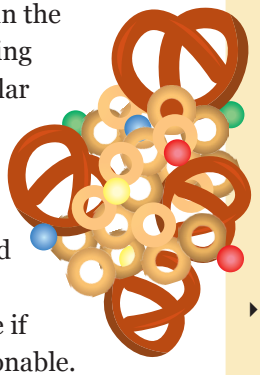
- Explain each of the steps in the standard multiplication problem and how place value plays an important role in each step.
- Explain how the partial products in the standard algorithm relate to the place value of the digits being multiplied.
- Complete all of the steps in the standard algorithm with the corresponding place values lined up appropriately.
- Adhere to precision and determine the reasonableness of the final product based on the numbers multiplied.
- Complete the standard algorithm fluently to multiply multi-digit numbers.

HELP AT HOME

- Write a multiplication problem (e.g., 25 × 38). Have your child write each number in expanded form (20 + 5) × (30 + 8). Your child will multiply the numbers that are in the same place value (20 × 30 = 600) then multiply the numbers in the ones place value (5 × 8 = 40), then mix it up (20 × 8 = 160 and 30 × 5 = 150). Find the sum of all of the products (600 + 40 + 160 + 150 = 950).
- Your child writes a multiplication problem (e.g., 42 × 78). Have him multiply 70 (40 + 2), then 8(40 + 2). Then add the products (2800 +140 + 320 + 16 = 3,276).

Your child can find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Your cihld can illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

- Divide a whole number dividend with up to 4 digits by a 2-digit divisor using any appropriate strategy.
- Use multiple strategies for multi-digit division. Area models illustrate a connection to multiplication, partial quotients make a connection to place value, and concrete models demonstrate the decomposition needed in the standard algorithm.
- Illustrate and explain the solution strategy using equations, rectangular arrays, and/or area models.
- Reason with the value of the dividend and the value of the divisor to determine if the quotient is reasonable.



HELP AT HOME

- Make snack mix. Pour a large number of Cheerios in a big bowl. Ask your child to divide the Cheerios into groups of 32, and determine how many individual sandwich bags will have 32 Cheerios. Continue the above activity with peanuts, pretzels, and candies. Your child can use the number of sandwich bags to work backwards (multiply) to determine how many total of each item to start with so the bags will be equal (e.g., If there are 10 bags of 32 Cheerios, and your child wants 12 pretzels in each bag, then 10 × 12 = 120 pretzels needed to complete snack mix).
- Use the above activity to build on standard algorithm for larger numbers.
- Use money from a board game to divide large numbers. For example, begin with $28,356. Divide the money between 12 people. Your child will have to break down (rename) various amounts to be able to divide evenly.

Your child can add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. Your child can relate the strategy to a written method and explain the reasoning used.

- Use number lines, concrete models, or visual models to illustrate addition, subtraction, multiplication, or division of decimal numbers.
- Apply knowledge of fraction multiplication and division to perform decimal operations.
- Use reasoning to place the decimal in a sum, difference, product, or quotient.
- Explain how the placement of the decimal in an answer is related to the value of the numbers calculated.
- Determine which method or strategy is appropriate for the given problem.

HELP AT HOME

- While shopping, let your child add the prices of each item to determine the pretax amount of the bill.
- Use a dime to remind your child that 1/10 is the same value as $.10, thus 1/10 of $5 is $.50, just as $.10 × $5 is also $.50.
- Explain how the decimal placement affects the answer.

Your child can add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

- Find a common denominator and create equivalent fractions for given fractions or mixed numbers.
- Place a fraction or mixed number on a number line and then increase or decrease it in value from this position to perform an adding or subtracting operation.
- Use bar models, or visual models, to represent the adding and subtracting of fractions or mixed numbers with unlike denominators.

HELP AT HOME

- Use dominoes to make fractions. For example, if the domino has 4 dots on one end and 5 dots on the other it will equal 4/5. Choose two dominoes and have your child find the LCM (least common multiple) for each denominator. (The LCM and the LCD (least common denominator) will be the same number.) Using the LCD, have him make equivalent fractions for each fraction. Using the new fractions, have your child add or subtract the numerators and keep the common denominator.
- Have your child check to make sure a fraction is in lowest terms. If not, simplify it by using the GCF (greatest common factor) between the numerator and denominator.

RESOURCES

The **LEAST COMMON MULTIPLE (LCM)** of two numbers is the smallest number that they both divide evenly into. One good way to find the least common multiple of two numbers is to multiply both numbers by 1,2,3,4,5... and then find the first multiple that appears in both lists.

MULTIPLES OF 3

3 6 9 12 15 18 21...

MULTIPLES OF 5

5 10 15 20 25 30 35...

LCM= 15

The **GREATEST COMMON FACTOR (GCF)** of two numbers is the highest number that divides exactly into two or more numbers.

FACTORS OF 12

1 2 3 4 6 12

FACTORS OF 16

1 2 4 8 16

GCF = 4

Your child can solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models or equations to represent the problem). Your child can sse benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

- Create equivalent fractions for given fractions or mixed numbers.
- Find a common denominator for given fractions or mixed numbers.
- Solve word problems involving addition and subtraction of fractions with like or unlike denominators.
- Use a bar model, equations, or number line to represent adding or subtracting of fractions with unlike denominators.
- Relate fractions to benchmark fractions (0, ½, 1) to determine if a solution is reasonable.

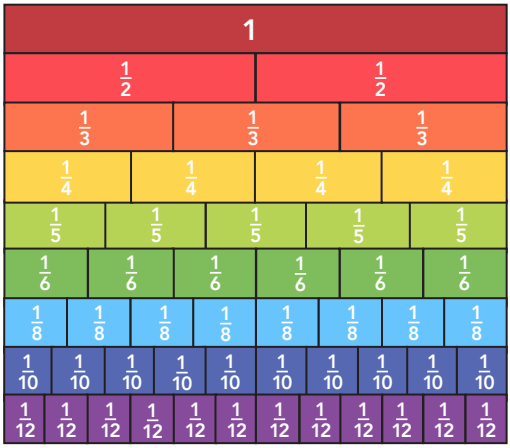
HELP AT HOME

- Help your child make fraction bars. Compare them randomly.
- Have your child add or subtract the fractions he created on the bars. Have him determine if his answer is reasonable by comparing to 0, ½, or 1.

RESOURCES

FRACTION BARS

Cut strips of construction paper in equal lengths. Fold one strip in half and cut at the fold. This will give you ½ fraction bars. Write ½ on each of the two bars. Repeat this process with the other strips, changing the amount of times you fold and cut the paper to create different fractions.



Your child can interpret a fraction as division of the numerator by the denominator. Your child can solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers (e.g., by using visual fraction models or equations to represent the problem).

- Contextualize and decontextualize word problems involving division.
- Produce visual models to justify a division of a fraction.
- Write an equation to represent the division shown in a visual model.
- Estimate the size of the quotient (part) before dividing.

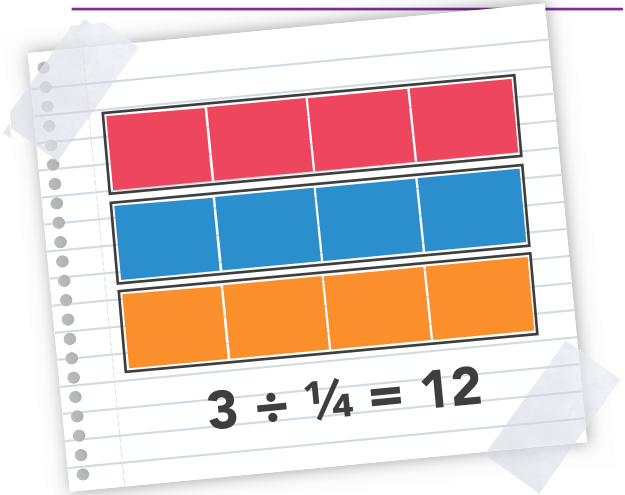
HELP AT HOME

- Draw three bars. Have your child divide each into ¼ pieces. The result is 12 smaller pieces. Therefore 3 ÷ ¼ = 12. Have your child write the equation represented in the visual model he just created (e.g., 3 ÷ ¼ = 12). Repeat this activity with varying number of bars and divisions.

VOCABULARY

CONTEXTUALIZE and **DECONTEXTUALIZE** refer to breaking a word or situation down based on surrounding words to help you understand the problem.

A **QUOTIENT** is the answer to a division problem.



Your child can apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

- Multiply a fraction or whole number by a fraction and interpret the product.
- Use visual fraction models and number lines to show the steps used in solving a problem involving multiplication by a fraction.
- Use benchmarks to estimate the product and determine if the solution is reasonable.
- Contextualize and decontextualize problems by creating word problems and/or equations that represent different multiplication situations and models.

HELP AT HOME

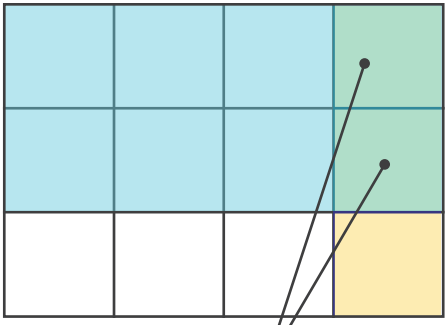
- Have your child draw a 4 by 3 array. Instruct him to shade in 2/3 of it. This shows that 12 × 2/3 = 8.
- Create real-world situations involving fractions for your child to solve (e.g., Makenzie made 5 cakes. Each cake required 1/4 cup of oil. How much oil did she use?).

Your child can apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. Your child can find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Your child can also multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

- Find the area of a rectangle with fractional side lengths using unit squares of the appropriate unit fraction side lengths.
- Find and explain the relationship between the fractional side lengths of the square unit and the fractional side lengths of the rectangle.
- Show that counting the square units used to tile the rectangle and multiplying the side lengths of the rectangle produce the same answer (similar to finding the area of a rectangle with whole number side and lengths).

HELP AT HOME

- Have your child draw a 4 × 3 array (rectangle). Have him shade two rows of the 4 and shade one of the 3 columns. The shaded array shows 2/4 × 1/3. Thus the area that is double shaded equals 2/12 or 1/6 of the large array. Create more examples like this.



DOUBLE SHADED AREA = $\frac{2}{12}$ or $\frac{1}{6}$

Your child can interpret multiplication as scaling (resizing) by comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

- Compare the size of a product of two fractions to the size of one of the factors, without performing the indicated multiplication.
- Make use of the structure of multiplication with whole numbers, and apply this knowledge to predict an outcome for multiplication of fractions.
- Use benchmark fractions to determine if a solution is reasonable.

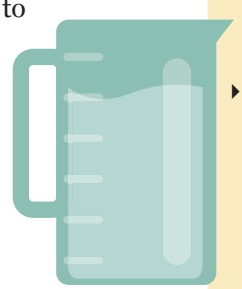
LARGER	SMALLER
10 × 8	7 × ¼
4 × 12	¾ × 2
11 × 11	5 × ½
6 × 7	9 × ⅔

HELP AT HOME

- Give your child a multiplication problem and let him predict if the product will be larger or smaller than both of the factors. Use whole numbers multiplied with whole numbers along with whole numbers multiplied with fractions. Then let your child actually solve the problem to see if his prediction was correct. Have your child make a table with "larger" on one side and "smaller" on the other. Next have him put the problems under the proper heading. Have him explain a pattern he recognizes with the factors compared to the answer (e.g., larger or smaller products). Extend this activity to include fractions multiplied with fractions.

Your child can solve real-world problems involving multiplication of fractions and mixed numbers (e.g., by using visual fraction models or equations to represent the problems).

- Solve real-world multiplication problems involving fractions and mixed numbers by creating a visual model or equation to solve.
- Make use of patterns to solve problems. Use prior knowledge of multiplying by fractions (proper or improper) to solve problems.
- Apply an understanding of the Distributive Property to solve problems.



HELP AT HOME

- Have your child fill a measuring cup 2/3 full and pour it into a large measuring bowl. Repeat this three times. Then let your child measure to determine how much is in the large bowl. This demonstrates 2/3 × 3 = 2 cups.
- Have your child multiply 7 × 5 2/3 by first rewriting 5 2/3 as 5 + 2/3. Then he will multiply each part by 7 and add the products together (e.g., 7(5) + 7(2/3) = 35 + 14/3; this will then become 35 +4 2/3, thus the final answer is 39 2/3.)

VOCABULARY

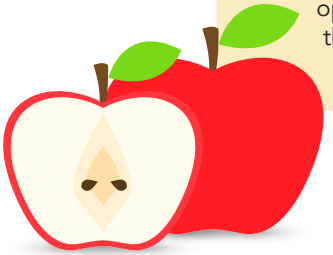
The **DISTRIBUTIVE PROPERTY** lets you find a sum by multiplying each addend separately and then add the products.

Your child can apply previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Your child can interpret division of a unit fraction by a non-zero whole number and compute such quotients.

- Create visual models and divide unit fractions by whole numbers.
- Reason through a division problem.
- Interpret division of a unit fraction by a non-zero whole number and compute quotients. Create a word problem to represent division of a unit fraction by a non-zero whole number.

HELP AT HOME

- Cut an apple in half. Now ask your child if one half can be divided between 4 people. Then cut each half of the apple into 4 equal pieces. This shows ½ ÷ 4= 1/8. Each person would get 1/8 slice of the apple. Use this opportunity to show that 1/8 is smaller than ½.



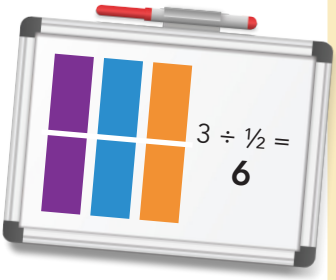
Your child can apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Your child can interpret division of a whole number by a unit fraction, and compute such quotients.

- Create visual models to divide a whole number by a unit fraction.
- Make meaning of a problem.
- Create word problems to represent division problems.
- Draw visual fraction models (bar/circles) using appropriate number of wholes to find out how many of the given unit fraction are found in the whole.

RECIPROCAL REMINDER

2/3 would have a reciprocal of 3/2 because the numerator and denominators are flip-flopped.

FRACTION	RECIPROCAL
3/8	8/3
5/6	6/5
1/3	3/1 = 3
19/7	7/19



HELP AT HOME

- On a chalkboard or dry-erase board, draw a bar. Have your child divide it into 6 equal sections. This shows that 1 ÷ 6 is 1/6. There are 6 smaller sections in 1 bar. Another example would be for your child to draw 3 bars and divide each into 2 equal sections (or ½). The result will be 6 smaller spaces total. Thus 3 ÷ ½ = 6.
- Make a set of cards with a story problem about dividing a whole item into parts on one card. (e.g., Mary had 7 candy bars. She cut each candy bar into equal pieces that were 1/10 the size of the original candy bar. How many people could get a piece of the candy bar?) Then have your child diagram and solve the problem on a chalkboard or dry-erase board. (The diagram would be 7 bars, divided into 10 equal spaces. The solution would be 70). This would be a good time to remind your child that a number multiplied with the reciprocal of the second number is equivalent to dividing the numbers.

Your child can apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Your child can solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.

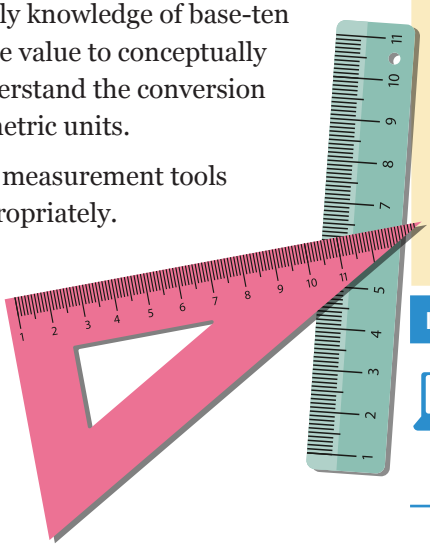
- Solve real-world problems involving division of unit fractions by non-zero whole numbers.
- Solve real-world problems involving division of whole numbers by unit fractions.
- Use visual fraction models and equations to represent word problems and solve them.
- Use prior knowledge of patterns in dividing fractions and whole numbers to reason through problems.
- Use benchmark fractions to estimate quotients and determine the reasonableness of solutions.

HELP AT HOME

- Help your child determine how much snack mix 2 children would get from 3/4 cup of snack mix if evenly divided. Create more examples for your child using items in your pantry or refrigerator. Let your child create some situations for you to solve.
- Do similar activities as above, but have your child estimate the solution before solving (e.g., will each person get closer to 1 whole cup or ½ cup?).

Your child can convert among different sized standard measurement units with a given measurement system, and use conversions in solving multi-step real-world problems.

- Solve multi-step real-world problems using various units of measurement (within the same system).
- Explain equivalents within a given measurement system.
- Use knowledge of whole numbers, fractions, and decimals to compare/convert units of measurement within a system.
- Use visual models for conversions and solve measurement problems.
- Apply knowledge of base-ten place value to conceptually understand the conversion of metric units.
- Use measurement tools appropriately.



HELP AT HOME

- Using a ruler, have your child measure the length of an item. Have him determine how long it is in centimeters. Then remind your child there are 10 millimeters in each centimeter, so have your child multiply by 10 to determine the number of millimeters long the item is. Point out to your child that the size of the object didn't change, just the units you measured in changed. This is a good time to review 1/10 of a number.
- Now have your child do a similar activity with inches and feet. Discuss that these conversions are not based on units of 10, but various bases.

INTERNET RESOURCES

Worksheets for converting metric values to standard English value can be found on the Internet.

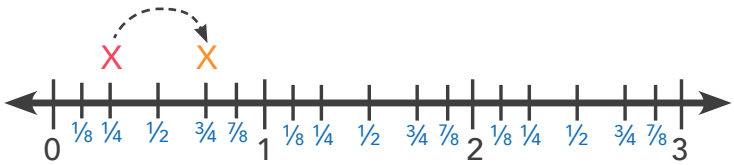
Your child can make a line plot to display a data set of measurements in fractions of a unit (½, ¼, ⅛). Your child can use operations on fractions to solve problems involving information presented in line plots.

- Collect real-world data using fractions (½, ¼, ⅛) and create a line plot to display the results visually.
- Use the results of the line plot to make observations and/or inferences about the data.
- Answer questions using a line plot that has already been created.
- Use fraction operations of addition, subtraction, multiplication, and division to solve real-world problems using line plots.
- Find the mean (average) of a set of data by leveling off the line plot and redistributing the data equally.

HELP AT HOME

- Create problems with equal distribution (e.g., Six containers are the same size. One container is ½ full, another is 1/3 full, another is 1/8 full, and the remaining ones are 1/6 full. How much liquid would be in each container if the liquid were distributed equally?).
- Create a line plot with whole numbers, ½, 1/4, and 1/8 marked on the line plot.
- Use the line plot to answer real-world questions (e.g., How much is 1/4 tsp of vanilla plus ½ tsp of vanilla?).

$$\frac{1}{4} + \frac{1}{2} = \frac{3}{4}$$

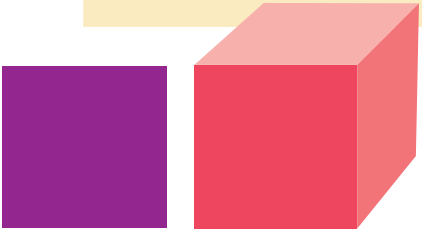


Your child recognizes volume as an attribute of solid figures and understands concepts of volume measurement. A cube with side length of 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

- Explain the concept of volume.
- Provide examples in the real-world that represent a measure of volume.
- Describe the difference between square units and cubic units.
- Make connections between exponents and the relationship they have with square units and cubic units.
- Explain how the unit cube is used to find the volume of an object.
- Select the appropriate unit cube to use to measure a three-dimensional space.

HELP AT HOME

- Help your child name examples all around your home in which volume can be measured.
- Have your child compare a square to a cube. Recognize the difference between a two-dimensional and a three-dimensional figure.
- Using building blocks to make different towers, have your child determine how many cubic units the tower is by counting the blocks. Write the unit answer using the exponent 3 because it has 3 dimensions (length, width, and height).
- Have your child determine how many building blocks will fit in a cereal box.



square cube

Your child can recognize volume as an attribute of solid figures and understands concepts of volume measurement.

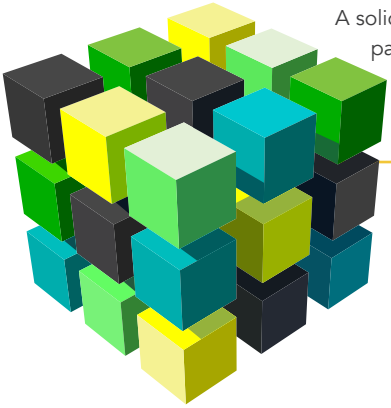
- Explain that when finding volume, unit cubes must be packed without gaps or overlays inside a three-dimensional space.
- Understand the total number of |unit cubes (n) packed into a three-dimensional figure equals the volume of the figure.
- Look at examples of different sized prisms packed with unit cubes, some packed with no gaps or overlays and others packed in an unorganized manner, and explain which examples accurately represent the volume of the prism.

HELP AT HOME

- Have your child determine how many building blocks will fit into a cereal box when neatly stacked. Then have him determine how many building blocks will fit into the same cereal box when not neatly stacked, but put in randomly. Discuss which is the best way to determine the volume of the cereal box. Last, have your child find the volume of the cereal box.
- Try the activity with different containers.

VOLUME

A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n unit cubes.



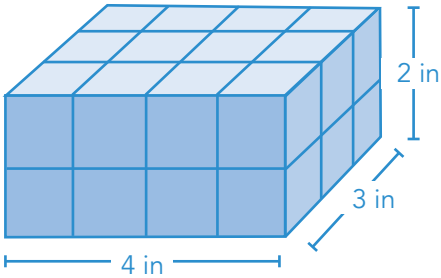
Your child can relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume. Your child can find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Your child can also represent threefold whole-number products as volume (e.g., to represent the associative property of multiplication).

- Pack real-world prisms/cubes with unit cubes such as inch cubes, centimeter cubes, and improvised cubes.
- State the volume of a given prism/cube based on how many unit cubes it holds.
- Calculate the volume of real-world rectangular prisms by counting the unit cubes used for lengths, width, and height and multiplying them to get the total number of unit cubes in the volume.
- Use addition to determine the number of unit cubes or volume in a 3-dimensional shape.
- Solve real-world problems using the concepts related to volume.

HELP AT HOME

- Have your child fill a box with unit cubes stacked neatly to determine how many cubes the container will hold.
- Have your child measure the length, width, and height of the container in inches. Have him multiply the length and width to determine the area of the base. Then multiply the height to determine the volume.

VOLUME



VOLUME = Length × Width × Height

VOLUME = 4 in × 3 in × 2 in

VOLUME = 24 in^3

Your child can relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume. Your child can apply the formulas V = l x w x h (volume = length x width x height) and V = B x h (volume = base x height) for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.

- Discover the formulas for volume based on his knowledge of packing unit cubes into three-dimensional figures and counting the cubes.
- Explain the different formulas.
- Find the volume for real-world problems using rectangular prisms with whole number side lengths.

HELP AT HOME

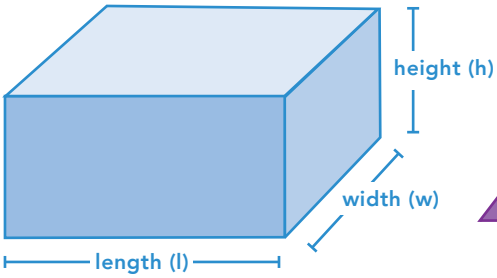
- Review the formulas for area with your child.
- Compare the two different formulas with your child. Discuss how they are similar and situations where he would want to use each. The formula V = l × w × h (volume= product of length, width, and height) would be used to find the volume of a rectangular prism. The formula V = B × h (volume= product of the area of the base and the height) would be used to find the volume of any prism.

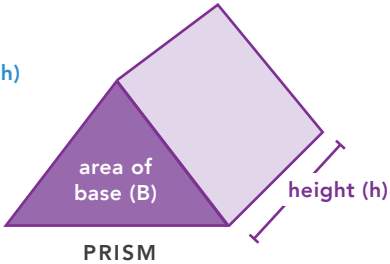
FORMULA REMINDERS

b = base
B = area of a base

RESOURCES

RECTANGULAR PRISM
VOLUME = l × w × h





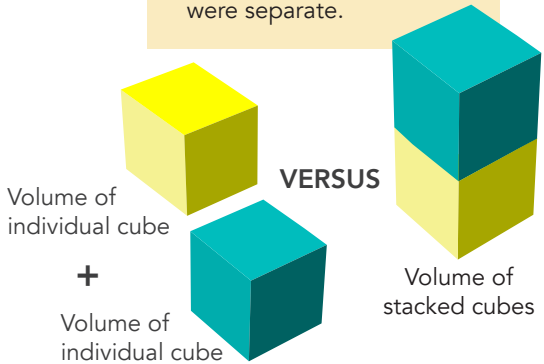
PRISM
VOLUME = B × h

Your child can relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume. Your child can recognize volume as addition. Your child can also find the volume of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems.

- Find the volume of different rectangular prisms/cubes by counting cubes and applying the formulas for volume.
- Combine two different rectangular prisms/cubes and determine the total volume of the combined prisms. Explain that if two prisms are combined, the total volume of one prism is added to the volume of the second prism.
- Find the volume of combined rectangular prisms by decomposing them into separate figures, finding the volume of each, and then compose the figures back together.

HELP AT HOME

- Have your child find the volume of two crates stacked on top of each other. Then break them apart and have him find the volume of each, and the sum of the two individual volumes. Compare the volume when they were one whole to the volume when they were separate.



Your child can use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called coordinates. Your child can understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y coordinate).

- Identify the different parts of the coordinate grid. Know and understand the following: origin, x axis, y axis, ordered pair, and quadrant I, point/coordinate.
- Place a point on the correct coordinate when given an ordered pair.
- Identify the correct ordered pair when given a point in a quadrant.
- Explain how to correctly move and locate points within quadrant I.

HELP AT HOME

- Use tape to make a grid on the floor. The grid needs to be a pair of perpendicular lines that intersect at a point (0,0).
- Call off the terms: origin, x axis, y axis, ordered pair, quadrant 1, and point/coordinate and see how fast your child can step on that location on the grid or tell you what the term means.
- Have your child step 2 units to the right and 3 units up (2,3) and place a small toy at that location. Then have your child place a toy somewhere else on the grid and explain how he arrived at that coordinate from the beginning point, or the origin.

RESOURCES

COORDINATE PLANE GRAPH

For an example of a coordinate plane graph, see page 47.

Your child can represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

- Locate points (coordinates) and follow directions based on a coordinate grid that has been contextualized using a real-world example.
- Use maps, pictures, and drawings with a coordinate grid imposed upon it to create real-world math problems that involve locating and graphing points within quadrant 1.
- Create quadrant I using an x axis and y axis and graph points within quadrant I that relate to real-world data. Connect the points in order to look for structure/patterns in the data. This leads to the creation and interpretation of line graphs.

HELP AT HOME

- Using a map or atlas, have your child to determine what is located at given points (coordinates).
- List towns and coordinates along a given road (horizontal or vertical) and discuss what pattern the coordinates or points have in common.

Your child can understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

- Classify and name a polygon when given the attributes without a visual picture.
- Sort polygons, especially quadrilaterals, into different subcategories by explaining the criterion used to sort the polygons.
- Compare and contrast the different polygons.
- Justify, explain, and debate the categorizing of different types of polygons.

HELP AT HOME

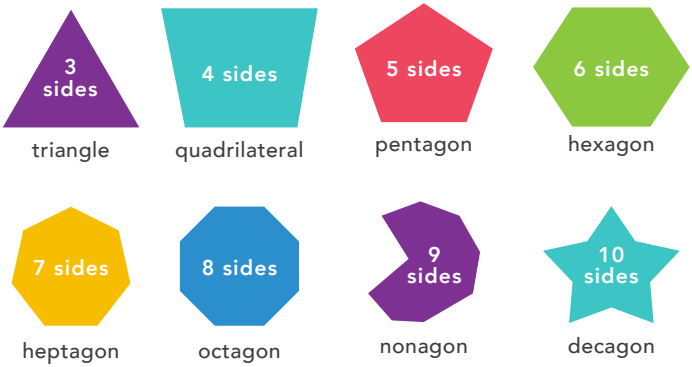
- Play "What am I?" Read off clues (attributes) about a polygon. Your child will guess what polygon you are describing.
- Cut polygons out of paper. Your child will sort the polygons into different groups based on their similar (or same) attributes. Have your child explain why he grouped them the way he did.

ATTRIBUTES

Examples of attributes include side length, angle size, how many sides, etc.

RESOURCES

A **POLYGON** is a simple closed shape made up of straight line segments only. Polygons are classified according to the number of sides they have.



Your child can classify two-dimensional figures in a hierarchy based on properties.

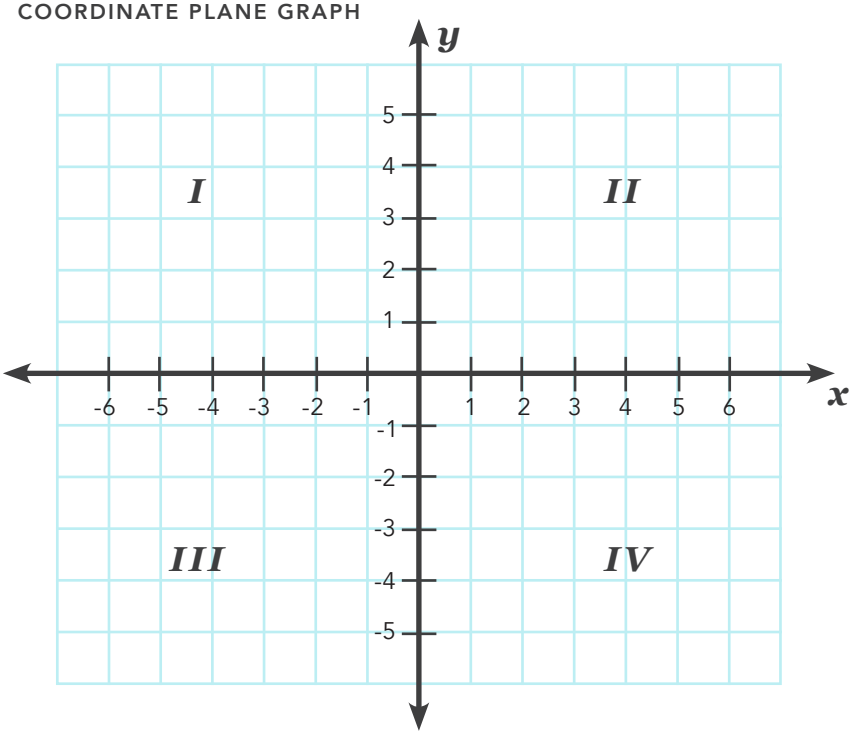
- Classify, draw, and name the polygon when given the attributes without a visual picture.
- Explain why squares are unique among quadrilaterals.
- Create a hierarchy of polygons, such as quadrilaterals, sorted with those with the most attributes and narrowing down to those with the fewest attributes.

HELP AT HOME

- List all the attributes of polygons on individual cards. Have your child put the cards in order from most attributes to least. Then have him name each polygon described on the cards.

RESOURCES

COORDINATE PLANE GRAPH



NOTE: ***x*** = x axis and ***y*** = y axis. Roman numerals ***I, II, III*** and **IV** indicate the quadrants. The origin is the center (where the x axis and y axis meet on this diagram).

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