4TH GRADE

A FAMILY GUIDE FOR STUDENT SUCCESS

MISSISSIPPI
DEPARTMENT OF
EDUCATION

Ensuring a bright future for every child

A FAMILY GUIDE FOR STUDENT SUCCESS

4TH GRADE

The MDE would like to thank the following individuals for their expertise, commitment, and time devoted to the development of this guide.

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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 fourth grade, your child will continue building his reading skills. In addition to reading stories and literature, he will read more texts that provide facts and information in areas including science and social studies. Your child will be expected to understand and summarize what he has learned by referring to details from the text. Activities in these areas may include:

- Reading and comprehending literature, including stories, dramas, and poetry, while determining a theme and summarizing the text.

- Reading and comprehending history, social studies, science, and technical texts, while determining the main idea of a text and explaining how it is supported by key details.

- Describing the overall structure of events, ideas, concepts, or information in a text.

- Using combined knowledge of all letter-sounds and syllabication patterns to accurately read unfamiliar multisyllabic words in and out of context.

Your child refers to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

- Ask questions to clarify meaning.

- Visualize key elements within the text.

- Ask and answer questions before, during, and after reading.

- Take notes based on reading with a question in mind.

- Locate the answers to specific questions within the text.

- Reference the text when answering questions.

HELP AT HOME

▸ Play "Question Toss." Ask a question then toss a ball to your child. Your child will refer to the text to give the answer to the question. Then, your child will ask a related follow-up question for you to answer and toss the ball back to you. Repeat this process.

▸ Encourage your child to ask questions about everything he is reading to ensure comprehension.

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. Your child can summarize the text.

- Identify the major character, setting, problem, and solution in retelling a story.

- Make connections to the text based on prior knowledge.

- Identify the main topic of a multi-paragraphed text.

- Demonstrate the ability to understand the main topic one paragraph at a time.

- Locate key details in the text that the author used to support the theme, lesson, or moral of the story.

- Understand that the theme of a story is the lesson or message that the author wants you to learn from the story.

HELP AT HOME

- ▶ Use a story map to identify character, setting, problem, and solution.
- ▶ Read familiar fairy tales and discuss the themes.
- ▶ Provide your child with the possible theme of a story and let him create a short story to go with the provided theme.
- ▶ Encourage your child to create a story map of his written story.

RESOURCES

SAMPLE STORY MAP

Using a sheet of notebook paper or construction paper, make a simple story map for your child to complete as he reads a story.

BOOK TITLE: _____

AUTHOR: _____

CHARACTERS

SETTING

PROBLEM

SOLUTION

VOCABULARY

The **THEME** of a story is the central message or lesson the author wants you to take away from the story. Common themes include friendship, courage, honesty, family, jealousy.

Your child can describe in depth, a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).

- Identify the characters in a story.

- Describe a character orally.

- Use prior knowledge to predict what is coming next in the text.

- Identify basic story elements as well as major events or challenges within a story.

- Monitor thinking so that he understands when meaning is lost.

- Establish a personal or real life connection that relates to the main topic.

- Identify the cause and effect or the problem and solution of the actions, events, or steps and how it relates to the main topic.

HELP AT HOME

▸ Choose a character from a favorite book or movie and have your child describe the character's hair color, eye color, face shape, body shape, age, temperament, personality, strengths, weaknesses, etc.

▸ Ask your child to explain how the character's decisions or choices changed the events or actions that occurred in the story.

▸ Show the front and back of a book, as well as the table of contents. Ask your child to use this information to make a list of as many outcomes for the story as possible.

Your child determines the meaning of words and phrases as they are used in a text, including those that refer to significant characters found in mythology (e.g., Herculean).

- Know that phrases are sequences of words intended to have meaning.

- Know that context clues are the words or phrases surrounding an unknown word that can provide hints about the meaning of the word.

- Use prior knowledge, including knowledge of significant characters found in mythology, to determine the meaning of words and phrases as they are used in a text.

HELP AT HOME

▸ Expose your child to several characters and words from mythology. Look at the unknown words and discuss the origin and meanings of the words.

▸ Help your child complete a short research project on someone from mythology (e.g., Zeus, Hercules, Poseidon). Have your child write down any unknown words he encounters during his research and discuss the meaning of the words with him.

VOCABULARY

MYTHOLOGY is stories about gods, goddesses, heroes, monsters, and their interactions with humans. These stories are also used to explain natural phenomena (e.g., why there are stars, earthquakes, storms).

Your child can explain major differences between poems, drama, and prose, and can refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about a text.

- Use the terms chapter, scene, and stanza when writing or speaking about a text.

- Describe how events in stories, dramas, and poems build upon each other.
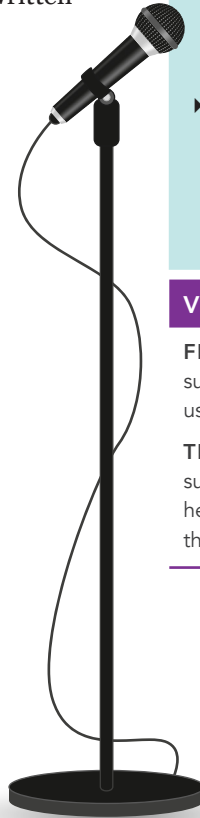
- Discuss the differences between poems, drama, and prose.

HELP AT HOME

▸ Introduce poetry and drama vocabulary to your child (e.g., verse, rhythm, meter, dialogue, stage direction).

▸ Use a story map to identify the different parts of the story, drama, or poem. Map out the chapters, scenes, or stanzas.

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Your child can compare and contrast the point of view from which different stories are narrated, including the difference between first and third person narrations.

- Identify the point of view from which a story is being told.

- Compare and contrast stories that use the same point of view.

- Compare and contrast stories that use different points of view.

- Find similarities and differences in narration between a story written in first person and a story written in third person.

HELP AT HOME

▶ Read a familiar text and have you and your child read different parts aloud, using different voices and emotions for each character. Discuss the point of view of the characters you are playing and then have your child tell how the characters' point of view may or may not be different from his own.

▶ Have your child practice identifying third person point of view from first person point of view based on keywords.

VOCABULARY

FIRST PERSON uses keywords such as: I, me, mine, myself, we, us, ours.

THIRD PERSON uses keywords such as: he, she, it, him, her, his, hers, himself, herself, itself, they, them, theirs.

Your child can make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.

- Make connections between written, visual, and oral versions of a text to improve comprehension.

- Know that making connections requires considering both the information from text and the reader's background knowledge.

- Identify descriptions and directions in a written, visual, or oral presentation of a text.

- Compare different presentations of a text using concrete details, quotations, and other information from each presentation of the work.

HELP AT HOME

▸ Read a story aloud to your child while having him sketch a picture of what you are reading. After your child's picture is complete, have him explain the sketch and how it relates to specific parts of the story.

Your child can compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.

- Compare and contrast themes and topics in stories, myths, and traditional literature from a variety of different cultures.

- Compare and contrast patterns of events in stories, myths, and traditional literature from a variety of different cultures.

- Explain how themes and topics are revealed by characters, settings, and events in stories.

- Explain how stories, myths, and traditional literature reflect the values and beliefs of the culture from which they come.
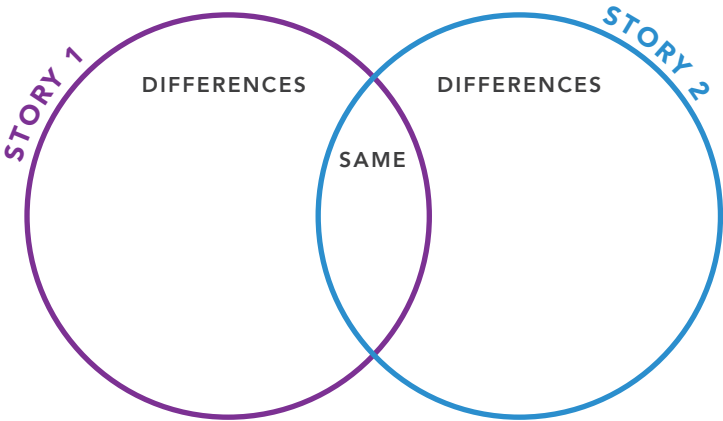
HELP AT HOME

▸ Read with your child the original tale of "The Three Little Pigs" and the fractured tale "The True Story of the Three Little Pigs" and have your child create a Venn diagram comparing and contrasting the similarities and differences between the two versions of the story.

▸ Discuss the differences between the good characters (the pigs) and the evil characters (the wolf).

RESOURCES

SAMPLE VENN DIAGRAM
Using a sheet of notebook paper or construction paper, make a simple Venn diagram for your child to complete after he reads two stories.

STORY 1   DIFFERENCES   DIFFERENCES   STORY 2

SAME

By the end of the year, your child will read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.

- Comprehend grade level text proficiently.

- Read grade level text independently and proficiently.

HELP AT HOME

▸ Make sure your child is being exposed to quality literature and nonfiction text on their grade level.

▸ It is important to read to your child from different genres. Choose from a variety of books, on grade level and beyond, when you are looking for something to read aloud.

GENRES

Different genres include, but are not limited to:

- fantasy
- realistic fiction
- mystery
- traditional literature
- historical fiction

- science fiction
- informational
- biography
- autobiography
- poetry

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Your child can determine the main idea of an informational text and can explain how it is supported by key details. Your child can summarize the text.

- Know the main idea of an informational text is the message the author is trying to make.

- Understand that the main idea of a text is often stated in a topic sentence.

- Understand a summary contains only the most important details of the text.

- Identify key details from the text and explain how they support the main idea.

- Use details and the main idea to summarize the text.

HELP AT HOME

▸ Provide your child with informational magazine or newspaper articles. Have your child read an article and complete a graphic organizer to determine the main idea and supporting details.

▸ After determining the main idea, have your child write a paragraph summary of only the most important points on the article he just read.

VOCABULARY

An **INFORMATIONAL TEXT** is nonfiction writing, written with the intention of informing/teaching the reader about a topic.

INTERNET RESOURCES

A graphic organizer helps the reader visually sort out his ideas and information from the text. Many useful graphic organizers can be found at http://www.eduplace.com/graphicorganizer/.

Your child can explain events, procedures, ideas, or concepts in an historical, scientific, or technical text, including what happened and why, based on specific information in the text.

- Understand that an author's organizational techniques affect the overall meaning of the text.

- Know that what happens in an informational text is as important as why it happens.

- Explain the events by describing what happened, why it happened, and how it happened.

HELP AT HOME

▸ Have your child read nonfiction newspaper or magazine articles. Spend time listing cause/effect relationships and/or the sequence of events in the passage.
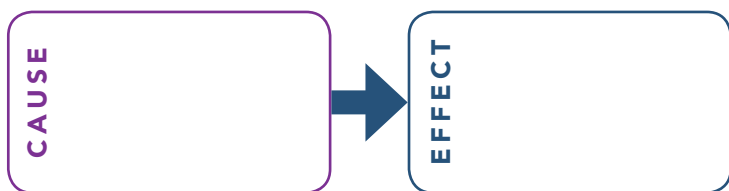
TEXT FEATURES
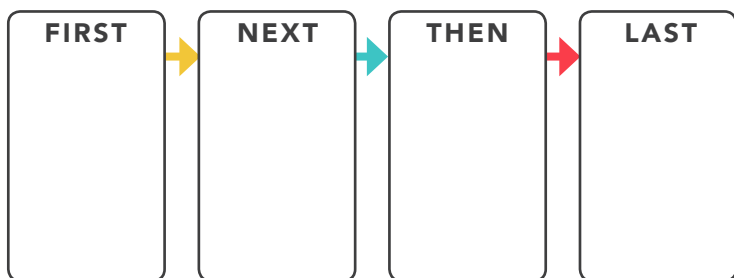
Examples of text features of informational text include:

- title
- sidebar
- glossary
- pictures
- captions
- table of contents
- index

RESOURCES

CAUSE AND EFFECT

CAUSE → EFFECT

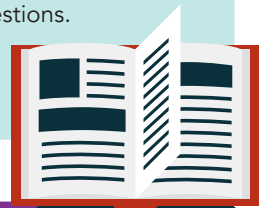### SEQUENCING

FIRST → NEXT → THEN → LAST

Your child can determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

- Identify common prefixes, suffixes, and roots and their meanings.

- Use context such as definitions, examples, and restatements found in text to determine the meaning of a word.

- Use common Greek and Latin affixes and roots to determine the meaning of a word.

- Use a glossary, dictionary, or thesaurus to determine the meaning of a word.

- Know a thesaurus is a book of synonyms and antonyms alphabetically arranged.

HELP AT HOME

▸ Choose nonfiction books to read aloud with your child (e.g., biographies, autobiographies, books on specific events in history, science experiments, and technical texts). Explore unfamiliar words and phrases together. Write down questions your child has about the topics and help him complete extended research to answer the questions.

VOCABULARY

A **BIOGRAPHY** is a text written to inform a reader about a real person's life. The author is someone other than the person featured in the text.

An **AUTOBIOGRAPHY** is a text written by the author of the text to inform you about his life.

Your child can describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

- Determine the overall text structure by using signal or sequence words and how events or ideas relate to one another.

- Evaluate how the text structure connects the events, ideas, concepts, and information presented in the text.

- Determine why an author chose a particular text structure.

- Describe the order of events when they are written chronologically.

- Describe a cause and explain why it led to a specific effect.

- Describe the problem and possible solution(s) to the problem from a text.

HELP AT HOME

▸ Provide your child with different informational texts written in a variety of different text structures. Make note cards with different text structures on them (e.g., description, cause and effect, sequence, compare/contrast). Provide examples of each text structure on the back of the note card.

▸ As your child reads articles and other informational texts, have him match the texts with the different structures on the note cards.

COMMON TEXT STRUCTURES

Text structures are the way in which a text is arranged.

Common text structures include:

DESCRIPTION
Tells or describes a specific thing.

PROBLEM/SOLUTION
States a problem and provides a solution.

CAUSE/EFFECT
Shows why something happened and the result from it.

CHRONOLOGICAL/SEQUENTIAL
Shows events or procedures in time order.

COMPARE/CONTRAST
Shows how two or more things are alike and different.

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Your child can compare and contrast a firsthand and secondhand account of the same event or topic. Your child can describe the differences in the accounts and focus on the information provided.

- Identify important details from the text that reveal the author's purpose.

- Identify the focus of both firsthand and secondhand accounts of an event or topic.

- Describe the similarities and differences between the information provided in different accounts of the same event or topic.

- Identify the focus of both firsthand (primary source) and secondhand accounts (secondary source) of an event or topic.

- Contrast the details and information provided in different accounts of the same event or topic.

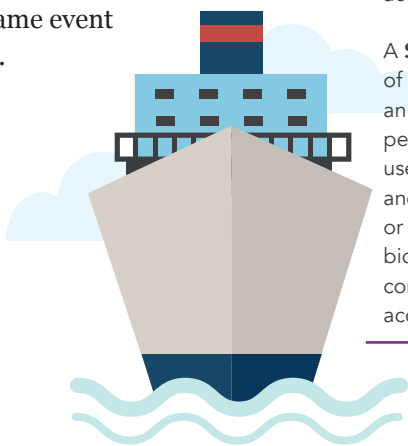- Compare and contrast a firsthand and secondhand account of the same event or topic.

HELP AT HOME

▶ Provide your child with articles written on the same topic by different people (e.g., The Oregon Trail, The Civil War, The Titanic). Have your child compare and contrast the differences in the way the articles are written and how people view the same events in different ways.

VOCABULARY

A **FIRSTHAND ACCOUNT** of an event or topic is based on an author's personal experience. The author uses pronouns such as I, me, and we to describe the event or topic. Diaries, autobiographies, and letters are considered to be firsthand accounts.

A **SECONDHAND ACCOUNT** of an event or topic is based on an author's research, rather than personal experience. The author uses pronouns such as he, she, and they to describe the event or topic. Encyclopedia entries, biographies, and textbooks are considered to be secondhand accounts.
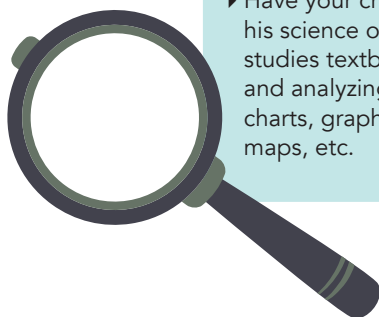
Your child can interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, interactive elements on web pages) and explain how the information contributes to an understanding of the text in which it appears.

- Identify informational text features such as: charts, graphs, diagrams, time lines, animations, or interactive elements on web pages.

- Know the purpose of each text feature (e.g., charts, graphs, diagrams, time lines, animations, interactive elements on web pages).

- Read and interpret charts, graphs, diagrams, timelines, legends, etc.

HELP AT HOME

▸ Send your child on a text feature scavenger hunt. (For a list of common text features, see page 14.) Provide your child with a list of text features he has to locate. Provide him with magazines and newspapers. Have your child hunt for the text features in the magazines and newspapers, cut them out, and label them with the correct text feature name.

▸ Have your child explore his science or social studies textbook, locating and analyzing all the charts, graphs, timelines, maps, etc.
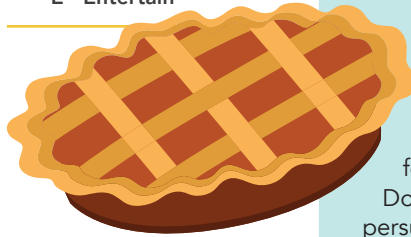
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Your child can explain how an author uses reasons and evidence to support particular points in an informational text.

- Identify reasons and evidence used to support particular points in a text.

- Know that reasons and evidence are pieces of information that support particular points within a text.

AUTHOR'S PURPOSE

Three possible purposes for writing a text, or the author's purpose, can be remembered by using the acronym "P.I.E."

   P - Persuade
   I - Inform
   E - Entertain

HELP AT HOME

▸ Provide your child with an informational text. Ask him to identify and summarize the author's main point and supporting points.

▸ Have your child find and make note of key words. Direct him to the opening sentences in paragraphs to find the point(s), then to the closing sentence of the text to find the main point.

▸ Explain to your child that sometimes the main point is also conveniently spelled out in the title.

▸ Talk about the author's purpose for writing the text. Does the text inform, persuade, entertain, or some combination? Next, have your child get specific about the purpose of each point made.

▸ Understanding the author's purpose will help your child identify the author's points as well as his reasons for making the points.

Your child can integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

- Know that information from two texts can be combined to create a more complete understanding of a topic.

- Identify key and relevant details on a single topic from two texts.

- Categorize key details from the two texts.

- Eliminate nonessential information.

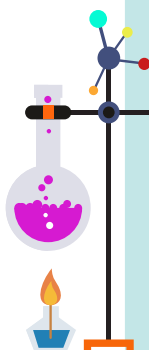- Combine information from two texts on a single topic.

HELP AT HOME

▶ Have your child pretend to be a reporter and interview two people about a specific topic or major event (e.g., Hurricane Katrina, the events of 9/11).

▶ Then have your child write a newspaper article on the topic summarizing both points of view of the people he interviewed.

By the end of the year, your child reads and comprehends informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.

- Read a variety of informational texts.

HELP AT HOME

▶ Choose nonfiction books to read aloud with your child (e.g., biographies, autobiographies, books on specific events in history, science experiments, and technical texts). Explore unfamiliar words and phrases together. Write down questions your child has about the topics help him complete extended research to answer the questions.

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Your child can apply grade level phonics and word analysis skills to decode words.

- Understand that letter sound correspondence can help determine the spelling of a word.

- Know grade level high frequency words.

- Apply spelling sound rules to determine an unknown word.

FRY'S FOURTH 100-WORD LIST

LIST 1				
body	questions	horse	knew	usually
music	fish	birds	since	didn't
color	area	problem	ever	friends
stand	mark	complete	piece	easy
sun	dog	room	told	heard

LIST 2				
order	top	short	hours	measure
red	ship	better	black	remember
door	across	best	products	early
sure	today	however	happened	waves
become	during	low	whole	reached

LIST 3				
listen	fast	five	true	table
wind	several	step	hundred	north
rock	hold	morning	against	slowly
space	himself	passed	pattern	money
covered	toward	vowel	numeral	map

LIST 4				
farm	cold	sing	town	field
pulled	cried	war	I'll	travel
draw	plan	ground	unit	wood
voice	notice	fall	figure	fire
seen	south	king	certain	upon

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

- Understand grade level vocabulary.

- Determine how to read grade level words accurately and repeatedly.

- Read text with fluency and expression.

- Check for understanding of comprehension before, during, and after reading.

HELP AT HOME

▸ Have your child read a familiar poem or nursery rhyme to you. Encourage him to read it fluently and with expression. You can model fluency and good expression for your child.

VOCABULARY

FLUENCY is the ability to read words in the text effortlessly and accurately with meaningful expression.

MATHEMATICS

In fourth grade, your child will focus on three critical areas. The first is developing understanding and fluency with multi-digit multiplication and developing understanding of dividing to find quotients involving multi-digit dividends. Your child will also focus on developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers. The third focus area is understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.
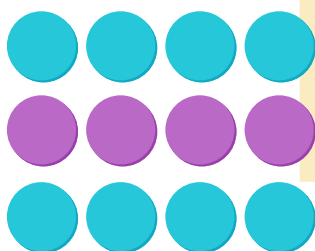
Activities in these areas include:

- Solving multiplication and division word problems that involve an unknown product, an unknown group size, and/or number of groups unknown.

- Writing multi-digit whole numbers in expanded form (e.g., 2,436 = 2,000 + 400 + 30 + 6).

- Rounding multi-digit whole numbers up to the millions place.

- Finding the product of up to a four-digit by a one-digit number and dividing up to four-digit numbers that will result in whole numbers and remainders.

- Plotting, labeling, and identifying fractions on a number line.

- Creating equivalent fractions by finding common denominators.

- Decomposing and composing fractions.

- Defining and recognizing examples of the following: point, line, line segment, ray, angle, acute angle, right angle, obtuse angle, perpendicular, and parallel lines.

- Constructing examples of angles and triangles that are acute, right, or obtuse.

- Constructing examples of points, lines, line segments, and parallel and perpendicular lines.

Your child can interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5). Your child can represent verbal statements of multiplicative comparisons as multiplication equations.

- Use models, drawings, and repeated addition to show that multiplication fact problems can be seen as comparisons of groups (e.g., 24 = 4 × 6 can be thought of as 4 groups of 6 or 6 groups of 4).

3 × 4 = 12

HELP AT HOME

▸ Arrange pennies into different arrays and have your child write the multiplication fact for the array (e.g., arrange 4 pennies across the top and 3 pennies going down which would represent 3 groups of 4 and your child would identify that 3 groups of 4 would represent 3 × 4 = 12).

Your child can multiply or divide to solve word problems involving multiplicative comparisons (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison).

- Use drawings or equations to solve for unknown in word problems requiring multiplication and/or division.
- Multiply or divide to solve word problems by using drawings or writing equations with a symbol for a missing number.

HELP AT HOME

▸ Give your child problems with missing numbers, such as N × 4 = 12 or N ÷ 4 = 3 and have him use blocks to figure out the missing number.

▸ Remind your child that if he knows multiplication he can figure out division.

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Your child can solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Your child can represent these problems using equations with a letter standing for the unknown quantity and assess the reasonableness of answers using mental computation and estimation strategies including rounding.

- Solve addition, subtraction, multiplication, and division multi-step word problems involving whole numbers.

- Check answers for reasonableness using mental math and estimation.

T-CHART

T-Charts are used to organize information in order to help students solve problems. Below is an example T-chart used to solve a word problem about elapsed time.

Image from http://teacherweb.com/AZ/Pueblodel-Sol/Gojkovich4th/time-T-Chart-method.jpg
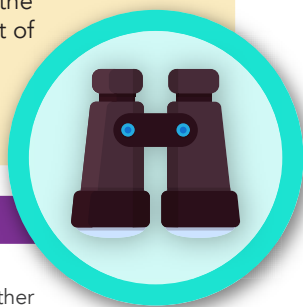
HELP AT HOME

▸ After reading a word problem, have your child mentally estimate what the answer should be. Have him write down the estimate. After solving the problem, look back at the estimation and discuss if the estimate was close to the answer or determine why the estimate was wrong.

▸ Work on solving multi-step problems, one step at a time, through the usage of T-Charts to better organize information.

▸ Provide your child with a dry erase marker and a plastic plate. Have your child practice solving multi-step word problems, one step at a time, on the plate.

▸ Talk about the importance of reading the question carefully and marking out unimportant information. Ask questions such as, "What is the problem really asking?" and "What do I already know before I start working?"

Your child can find all factor pairs for a whole number in the range 1–100. Your child can recognize that a whole number is a multiple of each of its factors. Your child can also determine whether a given whole number (1–100) is a multiple of a given one-digit number, and whether a given whole number (1–100) is prime or composite.

- Obtain a product (answer to a multiplication problem) by multiplying a factor (number).

- Know that a multiple is a product of two factors.

- Be fluent with finding factors and multiples and recognize that a whole number is a multiple of each of its factors.

- Know that a prime number has exactly two factors: the number one and itself.

- Know that a composite number has three or more factors.

HELP AT HOME

▶ Take your child on a multiplication scavenger hunt. There are numbers all over your house or in the grocery store. Have your child find 2 factors and determine if each number is prime or composite. Then, multiply the factors to find the product before being able to find the next set of factors.

VOCABULARY

FACTORS are numbers that can be multiplied together to get another number (e.g., 2 and 3 are factors of 6, because 2 × 3 = 6).

A **PRIME NUMBER** can be divided evenly only by 1 or itself (e.g., 7, 13).

A **COMPOSITE NUMBER** can be divided evenly by numbers other than 1 or itself (e.g., 6, 12).

Your child can generate a number or shape pattern that follows a given rule. Your child can identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Your child can explain informally why the numbers will continue to alternate in this way.

- Practice with patterns involving numbers or symbols which either repeat or grow.

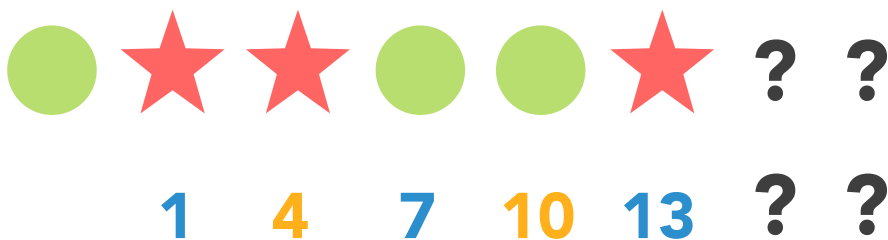- Create and extend number and shape patterns.

HELP AT HOME

▶ Provide your child with a sheet of patterns already drawn or written. Then, provide him with graph paper. Have him extend each pattern by the next 5 shapes or numbers.

VOCABULARY

A **PATTERN** is a sequence that repeats the same process over and over.

A **RULE** dictates what that process will look like.

Patterns are one of the most important ways to develop a student's mathematical thinking process. When he begins seeing patterns, sequences, and order in equations, he will have a stronger understanding of how to answer mathematical problems.

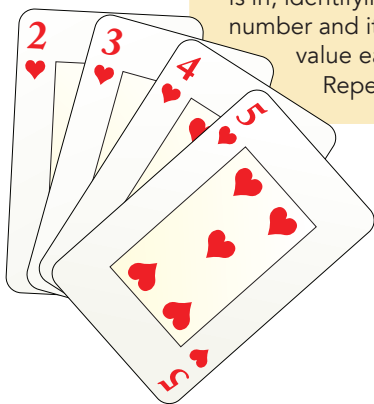1   4   7   10   13   ?   ?

Your child can recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.

- Know place value positions of whole numbers to one million.

- Know the value of each digit in a given number to one million.

- Know that multiplying by 10 increases a number's value and shifts its place one position to the left.

- Know strategies for multiplying by 10.

- Explain the relationship of the place value positions in whole numbers to one million.

- Explain that a digit in one place represents 10 times what it represents in the place to its right.

HELP AT HOME

▸ Provide your child with a deck of cards. Take a cardboard box and draw 7 rectangles on the cardboard to represent each place value position (e.g., ones, tens, hundreds, thousands, ten thousands, hundred thousands, millions). Have your child create 7 digit numbers using the deck of cards. Have him use the same 7 cards and exchange the place value position each is in, identifying the new number and its different value each time. Repeat.

Your child can read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Your child can also compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

- Know place value positions to the millions place.

- Know the value of a digit in a given number up to one million.

- Understand and correctly read the symbols < (less than), > (greater than), and = (equal to).

- Compare two numbers up to one million.

- Use the symbols <, >, and =, to record the correct relationship between two numbers up to one million.

- Read and write whole numbers up to one million in base-ten numerals, expanded, and word form.

VOCABULARY

STANDARD FORM: 354
EXPANDED FORM: 300 + 50 + 4
WORD FORM: three hundred fifty-four

HELP AT HOME

▶ Play a place value game! Cut up small sheets of paper with the words "expanded form," "word form," "identify number," and "compare numbers" on the paper. Place in a bowl. Then, provide your child with a dice or number cube. Have your child roll the cube 7 times to create a 7 digit number and then 7 more times to create a second 7 digit number. Your child then draws one of the small sheets of paper out of the bowl and performs the task on the paper to the created numbers. For example, if he draws "compare numbers" have him compare the created numbers using the <, >, or = symbols.

RESOURCES

PLACE VALUE

1,375,429

millions — hundred thousands — ten thousands — thousands — hundreds — tens — ones

Your child can use place value understanding to round multi-digit whole numbers to any place.

- Know whole numbers from zero to one million.

- Know the names and values of the digits in any given place value position up to one million.

- Know the rules for rounding to any selected place value up to one million, beyond just the leading digit.

- Determine whether the digit being rounded goes up by one or stays the same based on the value of the digit to the right.

- Use place value models to reason about numbers.

HELP AT HOME

▸ Write several numbers ranging from 10 - 1,000,000 on small pieces of paper. Fold them up and put them in a bowl. Have your child draw a number from the bowl. Then, have him round the numbers to a variety of place values (e.g., to the nearest 10, 100, 1,000, 10,000, 100,000). Repeat until all the numbers have been drawn.

3,455   176,078

23,112   4,217

42

166

RESOURCES

Teach your child the saying, "4 or less, let it rest; 5 or more, up the score."
It is a fun way for your child to remember the rounding rules.

Your child can fluently add and subtract multi-digit whole numbers using the standard algorithm.

- Know basic addition and subtraction facts.

- Know how to add and subtract with regrouping.

- Understand how the base-ten system works.

- Connect the standard algorithm for addition and subtraction to strategies based on place value and/or non-standard algorithms.

- Explain how and why the standard algorithm for addition and subtraction works.

- Check answer for reasonableness.

HELP AT HOME

▸ Play Monopoly or another board game involving money with your child. Monopoly is a great way for your child to practice adding and subtracting money.

VOCABULARY

STANDARD ALGORITHM is the specific method for solving an addition or subtraction problem.

Your child can multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Your child can also illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

- Multiply a whole number of up to four digits by a one-digit whole number.

- Multiply two two-digit numbers.

- Illustrate and explain calculations by using equations, rectangular arrays, and area models.

HELP AT HOME

▸ Using a number cubes (dice), create a number with two to four digits. Write it down. Roll again. This time create a number with one or two digits. Multiply the two numbers. Work the problem separately from your child, then compare answers. Repeat this game until your child has created numbers with two, three, and four digits, and multiplied them by one and two-digit numbers.

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

- Know division can be derived through repeated subtraction.

- Know multiplication and division have an inverse relationship.

- Use models, such as rectangular arrays and area models, to show division concepts and solve division operations.

- Know what the remainder means in a division problem.

- Know how to check an answer to see if it is reasonable.

- Use the properties of operations to solve division problems.

- Illustrate and explain which strategy or model was used to find the quotient.

HELP AT HOME

▸ Provide your child with a jar of pennies and a division problem (e.g., 30÷5). Have your child create an array of 30 pennies in rows of 5. Ask, "If you have 30 pennies arranged in groups of 5, how many groups of pennies do you have?" The answer would be 6 because 30÷5 = 6. Repeat with other equations.

▸ Have your child practice creating different arrays with the pennies and identifying the resulting division and multiplication problems.

VOCABULARY

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

A **DIVIDEND** is the number being divided in a division problem.

A **DIVISOR** is the number that you are dividing by in a division problem.

Your child can explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Your child can use this principle to recognize and generate equivalent fractions.
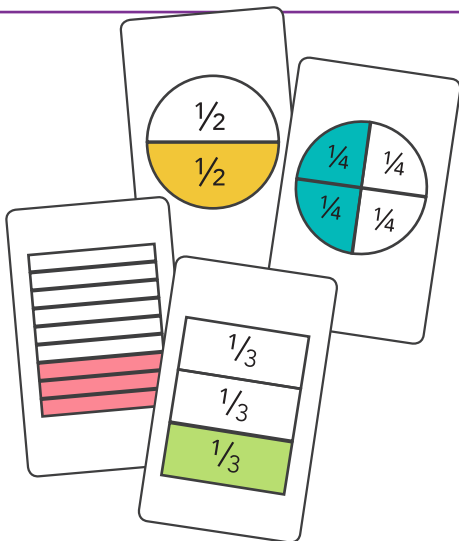
- Use visual fraction models appropriately.

- Know when a denominator increases, the number of pieces it is divided into increases and the size of each piece decreases.

- Know two fractions can be equivalent even though the numerators and denominators are different numerals.

HELP AT HOME

▸ Draw visual representations of fractions on index cards and then draw a matching equivalent fraction on another index card. Scatter the index cards on the floor in front of your child and have him sort the cards, matching up the equivalent fractions. For example, ½ would match up with ²/₄.

VOCABULARY

EQUIVALENT FRACTIONS are fractions which have the same value, even though they may look different (e.g., ½ and ²/₄ are equivalent, because they are both "half").

Your child can compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as ½). Your child can recognize that comparisons are valid only when the two fractions refer to the same whole, and can record the results of comparisons with symbols >, =, or <, and justify the conclusions (e.g., by using a visual fraction model).

- Know how to use fraction models to show equivalent fractions.

- Know how to create equivalent fractions.

- Know the larger the denominator, the smaller the partitions of the whole.

- Know comparisons of fractions are only valid if the whole is the same size.

HELP AT HOME

▸ Create different fractions on note cards and place the note cards face down on the floor. Have your child flip over two cards and determine if he has a common denominator and what it is. Then compare the two fractions using the symbols <, >, or =.

VOCABULARY

NUMERATOR (top number in a fraction) - the number of parts counted or separated.

DENOMINATOR (bottom number in a fraction) - equal pieces of a whole.

$$\frac{2}{3} > \frac{1}{6}$$

Your child can build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

- Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

- Decompose (break down) a fraction into a sum of fractions with the same denominator in more than one way.

- Record each decomposition by an equation.

- Add and subtract mixed numbers with like denominators.

- Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.

- Use visual fraction models and equations to represent a problem.

HELP AT HOME

▸ Provide your child with a sheet of fractions. Have your child break down each fraction into a simpler form. Continue to have your child practice composing (building) and decomposing (breaking down) different fractions.

RESOURCES

COMPOSING FRACTIONS

$$\frac{1}{5} + \frac{2}{5} = \boxed{\frac{3}{5}}$$

DECOMPOSING FRACTIONS

$$\boxed{\frac{7}{10}} \blacktriangleright \frac{4}{10} + \frac{3}{10}$$

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

- Understand the fraction ¾ is a multiple of ¼ and use this understanding to multiply a fraction by a whole number.

- Solve word problems involving multiplication of a fraction by a whole number.

- Use visual fraction models and equations to represent a problem.

HELP AT HOME

▸ Provide your child with different fractions written on note cards. Have your child roll a dice or number cube to get a whole number. Then, draw a fraction from the note cards. He will then take the whole number and multiply it by the fraction card. Repeat until all note card fractions have been multiplied.

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Your child can express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.

- Know that fractions should be seen and treated as regular numbers.

- Know that the denominator represents the number of parts that comprise the whole and the numerator represents the number of parts that are being identified.

- Use a variety of visual models (e.g., number line, base-ten blocks) to represent a decimal.

- Write a fraction that has 10 or 100 on the bottom as a decimal.

HELP AT HOME

▸ Have your child use coins to compare different amounts (e.g., 30 pennies = 3 dimes; 10 dimes = 1 dollar). It's good for your child to get a better understanding that different coins can equal the same amount.

Your child can use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; and locate 0.62 on a number line diagram.

- Know that decimals can be written as fractions and fractions can be written as decimals.

- Know that fractions with a denominator 10 or 100 are called decimal fractions.

- Generate equivalent decimal fractions.

- Properly name fractions and decimals (e.g., 7/10 and .7 are "seven tenths").

- Add fractions with like denominators and decimal fractions.

- Write decimal fractions as decimals in a variety of situations.

$\frac{1}{4}$

0.25

$\frac{1}{8}$

0.125

Your child can compare two decimals to hundredths by reasoning about their size. Your child can recognize that comparisons are valid only when the two decimals refer to the same whole. Your child can also record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual model).

- Compare two decimals by reasoning about their size.

- Justify conclusions about the comparison of decimals using visual models and other methods.

- Relate a decimal to a whole number.

- Use what is known about fractions to help compare decimals.

HELP AT HOME

▸ Create a number line using string and clothespins. Write different decimals (up to the hundredths place) on index cards. Have your child practice comparing decimals by placing the cards on the number line in order from least to greatest.

0   0.027   0.05   0.1

Your child can identify, explain, and describe relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, your child can express measurements in a larger unit in terms of a smaller unit. Your child can record measurement equivalents in a two-column table. (For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), …)

- Know length is measured with meters (m), kilometers (km), centimeters (cm), millimeters (mm), inches (in), feet (ft).

- Know volume is measured with liters (l), milliliters (ml).

- Know mass is measured with grams (g), kilograms (kg), ounces (oz), pounds (lb).

- Know time is measured with hours (hr), minutes (min), and seconds (sec).

- Reason about the measure of objects using benchmarks and mental images of the sizes of measurement units.

- Express and record larger units in terms of smaller units.

- Record measurement equivalents in a two-column table.

HELP AT HOME

▸ Using a measuring stick or tape measure, have your child measure different items around the house. If the item is measured in inches, have him convert the length to feet. If the item is measured in feet, have him convert feet to inches. Repeat several times using all units of measurement.
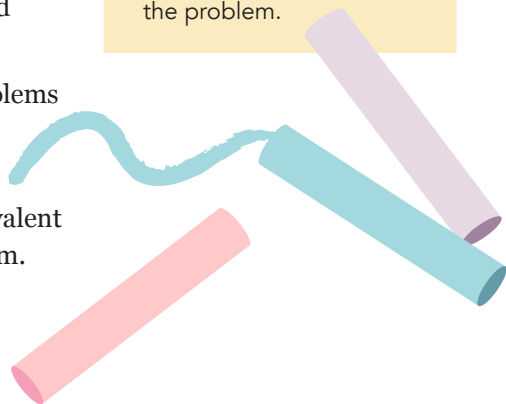
Your child can use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Your child can represent measurement quantities using diagrams, such as number line diagrams that feature a measurement scale.

- Know there are different ways to display measurements.

- Know different tools and strategies that can be used to solve measurement problems.

- Understand that measurement concepts help him communicate mathematically and make sense of real-life situations.

- Use +, -, ×, and ÷ to solve word problems.

- Solve measurement word problems that include whole numbers, fractions, and decimals.

- Convert larger units into equivalent smaller units to solve a problem.

HELP AT HOME

▸ Provide your child with word problems based on measurement. Have your child solve the problems, with chalk, on a set of steps or sidewalk outside your house. This will encourage the child to work step by step to solve a word problem, and help him visualize the parts of the problem.

Your child can apply the area and perimeter formulas for rectangles in real-world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

- Apply the area formula (Length × Width) to find the area of a rectangle.

- Apply the perimeter formula (Side + Side + Side + Side) to find the perimeter of a rectangle.

- Apply formulas to real-world and mathematical problems.

HELP AT HOME

▸ Have your child use a tape measure and walk around the house measuring different size rectangles (e.g., refrigerator, T.V., windows). After collecting the measurements, have your child use formulas to determine the area and perimeter of each shape.

Your child can make a line plot to display a data set of measurements in fractions of a unit (½, ¼, ⅛). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

- Add fractions using information presented in line plots.

- Subtract fractions using information presented in line plots.

- Measure objects up to ⅛ of a unit.

- Know how to make a line plot.

- Represent a "data set" on a line plot.

- Add and subtract fractions based on the information represented on the line plot.

HELP AT HOME

▸ Provide your child with several different pieces of string measuring different lengths (e.g., 2 ⅛ inches, 3 ¼ inches, 1 ½ inches). Make sure that some pieces are the same length. Provide your child with a ruler and have him measure each piece of string and record his findings. Then, have your child create a line plot based on the information recorded through measuring the pieces of string.

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SAMPLE LINE PLOT

LENGTH IN INCHES

Your child can recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.

- Measure an angle with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle.

- Know that an angle that turns through 1/360 degrees of a circle is called a "one-degree angle," and can be used to measure angles.

- Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

HELP AT HOME

▸ Provide your child with graph paper and a protractor.

▸ Have your child go on an "Angle Walk," sketching the different angles he sees. After sketching the angles, have your child go back and measure each angle using a protractor.

VOCABULARY

An **ANGLE** is what is formed by two intersecting rays.

A **RAY** has an endpoint and extends endlessly in the other direction.

A **POINT** is a particular spot.

Your child can recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Your child can solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems (e.g., by using an equation with a symbol for the unknown angle measure).

- Know non-overlapping angle segments can be added to find the total sum of the angle measures.

- Know to use addition and subtraction to find the unknown angles.

- Know the interior angles (inside angles) of a triangle add up to 180 degrees.

- Know the interior angles (inside angles) of a quadrilateral add up to 360 degrees.

- Know an angle can be decomposed into parts.

- Know the whole angle is the sum of the angle parts.

- Recognize angle measures as additive.

HELP AT HOME

▸ Provide your child with a ruler and protractor. Have your child design and draw a blueprint of his dream treehouse. After drawing the blueprint, have your child use the protractor to go back and find the measurement of all the angles in the blueprint.

Your child can draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

- Know that points, line segments, and angles can be classified by their properties as well as basic foundations of geometric shapes.
- Know that polygons can have similar features and still be unique because of the characteristics of the elements that were used to create them.

HELP AT HOME

▸ Provide your child with popsicle sticks. Have him practice building different geometric shapes with the popsicle sticks. Help him locate and discuss points, lines, line segments, rays, angles, and perpendicular and parallel lines.

Your child can classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Your child can recognize right triangles as a category, and identify right triangles.

- Know that two-dimensional figures can be categorized based on certain characteristics (lines and angles).
- Analyze two-dimensional figures to determine the presence or absence of certain characteristics.
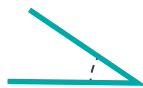
HELP AT HOME

▸ Take your child on a "Geometry Walk." Locate and identify parallel and perpendicular lines and different degree angles (e.g., right angles, acute angles, and obtuse angles).

VOCABULARY

A **RIGHT ANGLE** has two rays that meet to form a 90 degree angle.

An **ACUTE ANGLE** has two rays that meet to form an angle that measures less than 90 degrees.

An **OBTUSE ANGLE** has two rays that meet to form an angle that measures greater than 90 degrees.

Your child can recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Your child can identify line-symmetric figures and draw lines of symmetry.
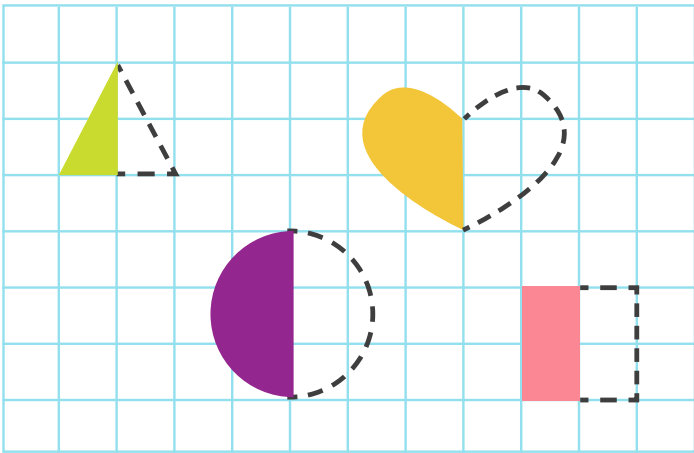
- Create a symmetrical figure by drawing in the missing half of the figure.

- Draw in all of the lines of symmetry in a figure.

- Identify symmetrical figures.

HELP AT HOME

▸ Cut out several geometric shapes from paper (e.g., rectangles, triangles, squares, circles, hearts). Then, cut the shapes in halves and tape the halves to graph paper. Have your child draw the missing halves to the shapes.

▸ Discuss how many lines of symmetry each shape has. Practice folding the shapes at the lines of symmetry.

VOCABULARY

A **LINE OF SYMMETRY** divides a shape into two congruent (equal) parts. A figure can have one line of symmetry, more than one line of symmetry, or none at all.

NOTES