Introduction

Curriculum Overview

Congratulations on choosing an outstanding second-grade curriculum. Using this curriculum, you and your student will be engaged in problem-solving, learning new mathematical concepts, practicing skills, and reading literature to reinforce mathematical concepts. One of the advantages in selecting Texas Tech University K-12 curriculum is that you will have an all-encompassing curriculum similar to what you would find in some of the most outstanding teacher's classrooms in our nation.

Before beginning the curriculum, please take a few minutes and look through the textbook, *Texas Go Math!* at <u>www-k6.thinkcentral.com</u>. Your student will use this digital text for all assignments and independent practice.

This course is completed entirely online in Blackboard using the PDF **Unit Lessons** and **Worksheets** documents, along with the digital textbook.

2nd Grade Mathematics

Math is a hands-on subject that builds on itself with each new lesson. It is imperative that you plan ahead and have all manipulatives and other material ready for each lesson.

Because we apply math in our everyday lives, the textbook provides real world math applications in the form of printable books, **Vocabulary Reader** activities, fun extra practice lessons, and games that you and your student can play together to reinforce math concepts in unique ways. The technology activities on the textbook publisher's website offer a different but fun approach to learning math skills. Information on logging into this website is available in the **Online Resources** section of this Introduction. Once you have accessed the website, click on *My Library*; you will have access to a variety of resources. Although the activities, practices, games, and books may not all be assigned in the curriculum, please feel free to include them when time permits.

Your student will be using manipulatives and worksheets throughout the curriculum. You will find patterns needed for several of the activities found in the **Worksheets** document in the **Resources** section of this course. **It is strongly recommended that you print these worksheets, attach them to cardstock, and have them laminated, as they will be used often.** You may choose to purchase manipulatives, or you can use the alternative manipulatives listed with the other materials in the introduction. Make sure you have all the manipulatives and other materials needed before beginning each lesson. Have your student keep a math journal of key vocabulary terms and other information for future reference. He or she will add to the journal as new vocabulary is learned. If your student does not keep a journal, the vocabulary terms should be displayed somewhere near the student's work area for reference.

Your student has been learning addition and subtraction facts in past years. Please help the student memorize the basic addition and subtraction facts by practicing them daily. You may use flash cards or simply have your student write down the fact families for practice. Committing these facts to memory will help your student become a more independent and confident learner.

About This Course

In Semester B of this course, your student will be introduced to second-grade math concepts through methods which have been proven highly effective for learning in multiple settings. This curriculum will specifically target the math skills and topics that seem to consistently give students the most trouble. Lessons offer fun, hands-on activities to introduce and reinforce concepts and to provide students with effective problem-solving skills. The first page of each lesson in the consumable textbook states the main idea of each lesson's concept in age-appropriate language that is easy for the student to read and understand. Vocabulary words, both new and review, enable students to identify the terms being presented in each lesson. An **Essential Question** in each lesson offers your student the opportunity to use the vocabulary and math skills learned to orally demonstrate an understanding of the lesson's concept.

This curriculum offers many problem-solving opportunities throughout each chapter which allow your student to apply the math skills learned to solve problems using visual thinking, logical reasoning, and number sense. Problem-solving strategy lessons give your student different methods to effectively solve word problems. The word problems in this curriculum are not simple computations, but involve multiple steps to solve, allowing your student the opportunity to analyze what the problem is asking and decide how to use the information given.

The scripted lessons and user-friendly techniques of this curriculum will provide the instructor and student with step-by-step learning, daily reviews, and cumulative assessments. New skills build on those previously learned and ensure that the student will master each skill before moving ahead to new ones. This method will help instill confidence, a willingness to learn, and success for the student.

For each Unit assessment in this course, the student will download and complete PDF **Unit Test** pages, then scan or take a digital photograph of the completed pages showing his or her work. Combine the images into a single PDF (see **Requirements for Creating PDFs** on the course home page) and upload the file for grading as instructed in the assignment.

Course Objectives

The mathematics curriculum covers all of the <u>Texas Essential Knowledge and Skills</u> (TEKS) for second grade. At the end of this course, the student should be able to master the following:

• Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

- ◊ apply mathematics to problems arising in everyday life, society, and the workplace;
- use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
- select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
- communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
- create and use representations to organize, record, and communicate mathematical ideas;
- analyze mathematical relationships to connect and communicate mathematical ideas; and
- display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.
- **Number and operations.** The student applies mathematical process standards to develop and use strategies and methods for whole number computations in order to solve addition and subtraction problems with efficiency and accuracy. The student is expected to:
 - Add up to four two-digit numbers and subtract two-digit numbers using mental strategies and algorithms based on knowledge of place value and properties of operations.
- Number and operations. The student applies mathematical process standards to determine the value of coins in order to solve monetary transactions. The student is expected to:
 - ◊ determine the value of a collection of coins up to one dollar; and
 - vuse the cent symbol, dollar sign, and the decimal point to name the value of a collection of coins.
- Number and operations. The student applies mathematical process standards to connect repeated addition and subtraction to multiplication and division situations that involve equal groupings and shares. The student is expected to:
 - Image: model, create, and describe contextual multiplication situations in which equivalent sets of concrete objects are joined; and
 - Imodel, create, and describe contextual division situations in which a set of concrete objects is separated into equivalent sets.
- Algebraic reasoning. The student applies mathematical process standards to identify and apply number patterns within properties of numbers and operations in order to describe relationships. The student is expected to:

- determine whether a number up to 40 is even or odd using pairings of objects to represent the number;
- ♦ use an understanding of place value to determine the number that is 10 or 100 more or less than a given number up to 1,200; and
- represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem.
- **Geometry and measurement.** The student applies mathematical process standards to analyze attributes of two-dimensional shapes and three-dimensional solids to develop generalizations about their properties. The student is expected to:
 - create two-dimensional shapes based on given attributes, including number of sides and vertices;
 - classify and sort three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes as special rectangular prisms), and triangular prisms, based on attributes using formal geometric language;
 - classify and sort polygons with 12 or fewer sides according to attributes, including identifying the number of sides and number of vertices;
 - compose two-dimensional shapes and three-dimensional solids with given properties or attributes; and
 - decompose two-dimensional shapes such as cutting out a square from a rectangle, dividing a shape in half, or partitioning a rectangle into identical triangles and identify the resulting geometric parts.
- **Geometry and measurement.** The student applies mathematical process standards to select and use units to describe length, area, and time. The student is expected to:
 - ♦ find the length of objects using concrete models for standard units of length;
 - describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object;
 - ◊ represent whole numbers as distances from any given location on a number line;
 - determine the length of an object to the nearest marked unit using rulers, yardsticks, meter sticks, or measuring tapes;
 - ◊ determine a solution to a problem involving length, including estimating lengths;
 - use concrete models of square units to find the area of a rectangle by covering it with no gaps or overlaps, counting to find the total number of square units, and describing the measurement using a number and the unit; and
 - read and write time to the nearest one-minute increment using analog and digital clocks and distinguish between a.m. and p.m.

- **Data analysis.** The student applies mathematical process standards to organize data to make it useful for interpreting information and solving problems. The student is expected to:
 - explain that the length of a bar in a bar graph or the number of pictures in a pictograph represents the number of data points for a given category;
 - organize a collection of data with up to four categories using pictographs and bar graphs with intervals of one or more;
 - In write and solve one-step word problems involving addition or subtraction using data represented within pictographs and bar graphs with intervals of one; and
 - \diamond draw conclusions and make predictions from information in a graph.
- **Personal financial literacy.** The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to:
 - ◊ calculate how money saved can accumulate into a larger amount over time;
 - ◊ explain that saving is an alternative to spending;
 - ♦ distinguish between a deposit and a withdrawal;
 - identify examples of borrowing and distinguish between responsible and irresponsible borrowing;
 - identify examples of lending and use concepts of benefits and costs to evaluate lending decisions; and
 - If differentiate between producers and consumers and calculate the cost to produce a simple item.

Source: The provisions of this §111.4 adopted to be effective September 10, 2012, 37 TexReg 7109.

Handwriting

Handwriting is taught in the Language Arts course. However, good handwriting skills are necessary in all subjects including math. In Kindergarten, Grade 1, and Grade 2, manuscript is the preferred technique. When teaching your child handwriting, please consider the appropriate letter and number formation and spacing. Please refer to the manuscript chart included on the next page to assist you in appropriately teaching your child handwriting. Please reinforce the importance of good handwriting in all subject areas.



Books and Materials for MATH 2 this Semester

Textbook

You are required to purchase the digital textbook in order to access all lesson materials. Purchase of the print textbook is strongly suggested, as well.

- Digital: Texas Go Math! (Houghton Mifflin Harcourt, 2015), ISBN 978-0-544-36498-1
- Print: *Texas Go Math!* (Houghton Mifflin Harcourt, 2015), ISBN 978-0-544-13652-6 (2-volume set)

Optional Suggested Literature

These books can be purchased from any book vendor or borrowed from your public library.

Unit 4

Modules 14 and 15

- Burns, Marilyn, The Greedy Triangle, Scholastic, Inc., 2008
- Dexter, Planet, Pattern Block City, Scholastic, Inc., 1995
- Green, Rhonda Gowler, When a Line Bends...A Shape Begins, Houghton Mifflin, 1997
- Grifalconi, Ann, The Village of Round and Square Houses, Little Brown, 1986
- Hoban, Tana, Cubes, Cones, Cylinders, & Spheres, Greenwillow Books, 2000
- Murphy, Stuart J., Captain Invincible and the Space Shapes, HarperCollins, 2001
- Murphy, Stuart J., Circus Shapes, HarperCollins, 1999
- Tompert, Ann, Grandfather Tang's Story, Dragonfly Books, 1997

Unit 5

Modules 16 and 17

- Adler, David A., How Tall, How Short, How Far Away, Holiday House, Inc., 2000
- Leedy, Loreen, *Measuring Penny*, Henry Holt and Co., 2000
- Lionni, Leo, Inch by Inch, HarperCollins, 1995
- Murphy, Stuart J., *Bigger, Better, Best!*, HarperCollins, 2002
- Murphy, Stuart J., Polly's Pen Pal, HarperCollins, 2005
- Murphy, Stuart J., Super Sand Castle Saturday, HarperCollins, 1998
- Pinczes, Elinor J., Inchworm and a Half, Houghton Mifflin, 2001
- Ross, Tony, Centipede's 100 Shoes, Henry Holt and Co., 2003

Module 18

- Appelt, Katy, Bats Around the Clock, HarperCollins, 2000
- Axelrod, Amy, Pigs On a Blanket, Aladdin, 1998
- Burstein, John, Go Fly a Kite!, Gareth Stevens Publishing, 2003
- Carle, Eric, The Grouchy Ladybug, HarperFestival, 1999
- Hutchins, Pat, Clocks and More Clocks, Aladdin, 1994
- Kassirer, Sue and Page Eastburn O'Rourke, What's Next, Nina?, Kane Press, 2005
- McCaughrean, Geraldine, My Grandmother's Clock, Clarion Books, 2002
- Randolph, J.A., Science Tools, Newbridge Education Pub, 1999

Unit 6

Module 19:

- Bickel, Cindy, *Tiger Math: Learning to Graph from a Baby Tiger*, Henry Holt and Company, 2000
- Bogart, Jo Ellen, 10 for Dinner, Scholastic, Inc., 1989
- Giganti, Paul, Jr., Each Orange Had 8 Slices, Greenwillow Books, 1992
- Hollander, Cass, Ten Toads and Eleven Lizards, Modern Curriculum Press, 1993
- Murphy, Stuart J., Lemonade for Sale, HarperCollins Children's Books, 1998
- Ochiltree, Diane, Bart's Amazing Charts, Scholastic, Inc., 1999

Module 20:

- Axelrod, Amy, Pigs will be Pigs, Aladdin, reprint 1997
- Berenstain, Stan, *The Berenstain Bear's Trouble with Money*, Random House Books for Young Readers, 2013
- Murphy, Stuart J., The Penny Pot, HarperCollins, 1998
- Schwartz, David M., If You Made a Million, HarperCollins, 1994
- Viorst, Judith, Alexander, Who Used to be Rich Last Sunday, Silver Burdett, 1987
- Wells, Rosemary, Bunny Money, Puffin Books, reprint 2000
- Ziefert, Harry, You Can't Buy a Dinosaur with a Dime, Blue Apple Books, reprint 2011

Manipulatives and Materials

Required:

- 3-dimensional household shapes: can, tissue box, ice cream cone, paper towel roll, ball, block, dice, etc.
- 3-dimensional shapes
- bag, small opaque

- base-ten blocks
- clay or Play-Doh®
- clocks, analog and digital
- color tiles
- connecting cubes: blue, red, green, orange
- containers of various shapes
- counters, 4 different kinds: unit cubes, beans, marbles, beads, etc.
- counters, two-color
- craft sticks
- crayons or color pencils
- curved objects to measure: cup, bottle, round wastebasket, etc.
- dice, 2
- dry erase board and markers
- egg carton
- envelopes, 2
- glue
- highlighter
- index cards
- jar
- knife, plastic
- magazines, flyers, catalogs, newspapers, and books
- marbles
- markers: green, blue, red, black
- masking tape
- math journal from MATH 2A or wide-ruled spiral notebook or three-ring binder and lined notebook paper
- measuring tape
- meter stick
- multicolored cubes
- non-standard measuring tools: paper clips, blocks, pens, coins, pencils, crayons, erasers, string, connecting cubes, toothpicks, straws, etc.
- objects that are 1 meter long and about 1 foot long
- objects to measure: chair, table, crayon, book, door, eraser stapler, marker, etc.
- paintbrush

- paper clips, small and large
- paper: construction (many colors), dot grid, graph, lined notebook, plain white
- pattern blocks
- pencils
- picture of a pinecone, life-size
- pictures of analog clocks, 2
- plastic bags, resealable, 3
- poster board
- real or play money
- ruler with inches and centimeters (or separate rulers for inches and centimeters)
- school supplies: pens, crayons, scissors, stapler, etc.
- scissors
- stickers, football or basketball
- tape
- toothpicks
- yardstick
- yarn, two pieces: 1 meter long and 1 yard long

Optional:

- beads, red and green
- brass fastener
- calendar, large-format grid
- card stock and/or cardboard
- geoboard
- Legos, Skittles, M&Ms, or marbles (two colors)
- number cards
- stickers smiley-face
- string

Alternative Manipulatives

Manipulative:	Suggested Alternative:
connecting cubes	paper clips
number cubes	spinner, playing cards
two-colored counters	buttons, coins, beans, small toys, small candies
pattern blocks	construction paper (cut pattern blocks from it)
base-ten blocks	grid paper cut into squares of ones (units), tens, hundreds, etc.

Online Resources

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Navigate ThinkCentral

To move around in *ThinkCentral*:

→ Click one of the areas on the *ThinkCentral* home page to open that page: **Things to Do**, **My Library**, or **My Scores**.



Descriptions of each area is provided in the following table.

Area	Area Name	Description
A	ThinkCentral logo	Returns you to the <i>ThinkCentral</i> home page.
B	Banner Links	 Help – Opens an online help system that provides detailed instructions for ThinkCentral tasks. Log Out – Logs you out of ThinkCentral.

Area	Area Name	Description		
		 Account linking icon – If you have more than one account (accounts in more than one school or more than one class), this allows you to select and open another account. 		
C	Things to Do	Opens the Things to Do page, which lists all of the tests and assignments your teacher has assigned to you. You can even find your old assignments after you are done with them.		
D	My Library	Opens the My Library page, where you can find all of your online classroom resources, such as books, movies, sound files, worksheets, and more.		
8	My Scores	Opens the My Scores page, which lists the scores that you received on tests and assignments that you have taken. If your teacher has written a comment on your assignment, you can find it here. You can even look at your old tests to see how well you did on each question.		

→ Once you open a page, you can move to a different page by clicking the area with the page name on the left panel.

Things to Do	Things to Do	hist your togehor know your	ús completed you	rassianment	
Things to Do	Today is Wednesday, Ma	rch 2, 2016	ve completed you	Show: All As	signments 🗸
My Scores	Assignment	Teacher	Subject	Due Date	
	Math 1	Shea	Mathematics	Mar. 09, 2016	Done
	Math test	Shea	Mathematics	Mar. 09, 2016	Done
				Old	Assignments

Using My Library

The **My Library** page lists all of the library items available to you, including online classroom books, movies, sound files, worksheets, and more.

→ To open the My Library page, click My Library on the left panel.



On the My Library page, you can do any of the following:

 \rightarrow Open a library item by clicking the item. The item opens in a separate window.

Note:	When	you	close	an item,	the My	Library	page is	still open.
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→ Filter the items that appear by clicking one of the subject buttons (e.g., Mathematics and Reading) located at the bottom of the left panel.

 $continued \rightarrow$



- → Click My Library to see all of your items again.
- → Click the Search Library magnifying glass.

Search My Library

My Library lists all of the library items that are available to you. You can search for a specific library item using the Search Library option.

To search My Library:

1. In My Library, click the Search Library magnifying glass. The Search Library page appears.

You can search for a library item by subject, by words, or by both subject and words.

- 2. In the **Subject** list, select the subject of the item.
- 3. In the **Text Search** box, type a word or words that identify the item.

Note: To empty the Search Criteria area and start a new search, click Clear.

4. Click Find. The items that match your search filters are listed in the Search Results area.

	Search Criteria	
Things to Do My Scores	Subject: Mathematics	
My Library	C Exact Match Any Word	Find Clear
POWER	Search Results	
	Title	
	Indiana Test Prep SE - Introduction	~
	Indiana Test Prep SE - Contents	
	Indiana Test Prep SE - Tips for Success	
	Indiana Test Prep SE - Problem Solving on Location	
	Indiana Test Prep SE - Skills Practice	
	Indiana Test Prep SE - Practice B	
	Indiana Test Prep SE - Practice A	
	Indiana Test Prep SE - Standards Practice	

- 5. To open an item in the list, click the name of the item. The item opens in a separate window.
- 6. To return to My Library, click My Library on the left side of the page.

Grading Procedures and Unit Assessment Checklists

Grades are calculated for Unit 4, Unit 5, and Unit 6. The semester grade is an average of the three unit grades. The unit grades will include a test for each unit. Unit Tests 4 and 5 are located in their respective Unit folders in this online course; the Unit 6 Test is in the Final Exam folder.

The Unit assessments will be uploaded to Texas Tech University K-12 to be graded. After the student has finished each test, scan or take digital photographs of the assigned pages showing his or her work. Combine the images into a *single PDF* (see "Requirements for Creating PDFs" on the course home page). When you save the document, use the naming convention given for each Unit Test as the name of your file. Upload the file according to the instructions given in the assignment.

Schedule for tests

Unit 4, Day 100

• Unit 4 Test

Unit 5, Day 125

• Unit 5 Test

Unit 6, Day 150

• Unit 6 Test (Final Exam)