ACCRS: 2.1

Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mastered:	**Present:**	**Going Forward:**
Student can use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	Students will solve addition problems by creating a 3x3 square by arranging and calculating the sum of 15 using the numbers 1-9 diagonally, vertically, and horizontally and they will create a story about a day in their life.	Students will discover multiple strategies for solving problems.

Present and Going Forward Vocabulary:

Vertically, horizontally, diagonally

Career Connections:

Author, Teacher, Banker

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Student Choice

Student Instructions: Choose one or more of the following activities. Ask your teacher for any needed supplies.

1. **Magic 15**
   a. Cut out the numbers on the lines.
   b. Use the 3x3 grid and the cut out numbers to play the game.
   c. Arrange the numbers inside the grid so that the total of the 3 numbers vertically, horizontally, and diagonally equals 15.

2. **Make your own game.**
   a. Create the game board or cards on paper.
   b. Write the directions on a separate card.
   c. Make an answer sheet or card.
   d. Challenge a friend to read the directions and play your game.

3. **My Very Own Math Curse**
   a. Read the story *Math Curse* by J. Scieszka.
   b. Create a story about a day in your life similar to that of the main character in the book. It can be make-believe.
   c. Write at least five math problems throughout the story.
   d. Illustrate your story.

Materials:

Number cards 1-9 (Provided)
3X3 Grid (Provided)
Drawing or writing paper
Index cards
Math Curse book, by J. Scieszka

Literature Connections/Resources:

- Murphy, Frank. Ben Franklin and the Magic Squares. NY: Random House for Young Children. 2001.
- Scieszka, J. Math Curse. NY: Viking Press Juvenile. 1995.
- Tang, Greg. Grapes of Math. NY: Scholastic Publishing. 2004.
- Wood, Audrey. The Napping House. Boston: Harcourt Children's Books. 2009.

ACCRS: 2.2

Fluently add and subtract within 20 using mental strategies. (See standard 6, Grade 1, for a list of mental strategies). By end of Grade 2, know from memory all sums of two one-digit numbers.

Mastered:	Present:	Going Forward:
Students can fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	Students will solve a riddle by identifying all 2-digit numbers with a sum of 12 or a difference of 1, and create their own riddle.	Students will fluently add and subtract within 50 using mental strategies.

Present and Going Forward Vocabulary:
Digit, 2-digit numbers, sum, difference

Career Connections:
Poet, Writer, Teacher, Business Person

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A,)

Solve My Riddle

Student Instructions: Cut apart the digit cards and use them to help you solve the riddles.

1. I am a 2-digit number. You say my name when you count by 2's, 3's, and 4's. The **sum** of my numbers is 12. What number am I?
2. I am a 2- digit number. You say my name when you count by 2's and 4's. The **difference** of my numbers is 1. What number am I?
3. Write your own riddle for a friend using addition or subtraction.

Materials:

Hundreds Chart downloaded at:
www.superteacherworksheets.com

Literature Connections/Resources:

- http://illuminations.nctm.org/LessonsList.aspx?grade=1&standard=1
- Adler, David. Calculator Riddles. NY: Holiday House. 1996.
- Tang, Greg. Math for All Seasons. NY: Scholastic. 2005

ACCRS:

2.3: Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
2.4: Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Mastered:	Present:	Going Forward:
Students can determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. They can also	Students will arrange a group of objects up to 40 and write equations to express an even number as a sum of two equal addends.	Students will apply concepts of multiplication through the use of manipulatives, number stories, arrays and repeated addition.

use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; and write an equation to express the total as a sum of equal addends.		

Present and Going Forward Vocabulary:
Array, columns, rows

Career Connections:
Restaurant Manager

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Time for Arrays!

Student Instructions: Choose 1 of the following**:**

1. Use up to 40 connecting cubes to build all possible arrays. Draw the arrays on grid paper and write two different equations under the arrays.
   A. Show the total as a sum of the rows.
      Example: The equation by rows: 20=5+5+5+5
   B. Show the total as a sum of the columns.
      Example: The equation by columns: 20=4+4+4+4+4
2. Construct an array with 5 rows and 6 columns with connecting cubes. Write an equation to show the sum of addends. Construct another array and illustrate the number of rows and columns. Then write a number sentence that describes the array.

Materials:

1. Grid paper
2. Connecting cubes or other counters that can be grouped

Literature Connections/Resources:

- Giganti, Paul. Each Orange had 8 Slices. NY: Greenwillow Press. 1999.
- Pinczes, Elinor. One Hundred Hungry Ants. Boston: Sandpiper Press. 1999.
- Hutchins, Pat. The Doorbell Rang. NY: Greenwillow Press. 1989.

ACCRS:

2.5: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
   a. 100 can be thought of as a bundle of ten tens, called a "hundred."
   b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

2.6: Count within 1000; skip-count by 5s, 10s, and 100s.

2.7: Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

2.8: Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits using >, =, and < symbols to record the results of comparisons.

Mastered:	Present:	Going Forward:
Students can understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones; understand the special cases; count within 1000; skip-count by 5s, 10s, and 100; read and write	Students will use problem-solving strategies to determine the solution to unknown numbers and represent numbers in different ways, and explore the ways 3-digits can be placed together to form different 3-digit numbers.	Students will solve addition and subtraction problems, including word problems, with numbers up 1000.

numbers to 1000 using base-ten numerals, number names, and expanded form; and, compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits using >, =, and < symbols to record the results of comparisons.		

Present and Going Forward Vocabulary:
Digit, one-digit number, two-digit number, three-digit number, four-digit number, numeral, sum

Career Connections:
Teacher, Banker, Accountant, Business Person

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

TIC-TAC-TOE:

Student Instructions: Choose three activities in a row, column, or diagonal, just like TIC-TAC-TOE. Then complete the contract to give to your teacher. You may need to plan your products using the organizational tool, Primary Project Planner, located in Appendix B.

1. Who Am I? I am a four-digit number. The sum of my digits is 8. What number could I be? List all possibilities.	2. Create a House Number Using the set of number cards on the next page, find all the ways to get a sum of 6 with three number cards. Now predict how many different 3-digit house numbers you could make using the digit cards. Make a list of the actual house numbers you constructed, then compare to your prediction. How close were you?	3. Create a 3-digit addition and a 3-digit subtraction word problem. Write your problems about real life situations.
4. What is the Question? Write a story problem for the answer 50.	5. Read Grapes of Math. Write a fairy tale story. Write 5 number sentences related to the story and draw pictures.	6. Who Am I? I am greater than 600. I'm an odd number. The sum of my digits is 17. I am less than 999. Who am I? Can I be another number, too?
7. Show the number 1,000 ten different ways. *Example: number sentences, expanded form, base ten blocks*	8. Model the greatest 3 digit number and the least 3 digit number using these numbers: 1726	9. Choose five number cards to create a target number of 10. Each card must be a different number. Find all of the solutions. *Example:* 7+9-3-2-1=10

Literature Connections/Resources:

- Tang , Greg. Grapes of Math. NY: Scholastic Publishing. 2004.
- http://illum.iniations.nctm.org

ACCRS:

2.9: Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

2.10: Add up to four two-digit numbers using strategies based on place value and properties of operations.

2.11: Add and subtract within 1000 using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

2.12: Mentally add 10 or 100 to a given number 100 – 900, and mentally subtract 10 or 100 from a given number 100 – 900.

2.13: Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)

Mastered:	**Present:**	**Going Forward:**
Students can fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction**;** add up to four two-digit numbers using strategies based on place value and properties of operations; add and subtract within 1000 using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. Mentally add 10 or 100 to a given number, and mentally subtract 10 or 100 from a given number.	Students will utilize their understanding of place value to solve the "Thinker Keys" activities and demonstrate the solutions by compiling a list, using drawings or number sentences.	Students will demonstrate computational fluency by adding and subtracting numbers within 1000 with regrouping.

Present and Going Forward Vocabulary:

Place value, properties, operations, number relationships, base ten, manual, symbol, universal, universal language

Career Connections:

Teacher, Banker, Accountant, Business Person

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Thinker Keys

Student Instructions: Choose at least one of the Thinker Keys to complete on your own paper.

What If?	What if all the base ten blocks decided to leave town for good. How would you add and subtract 3 digit numbers?
Alphabet	Create an alphabetical manual of tools, symbols, and operations a mathematician would need in order to do his/her job. Define each with words and illustrations.
Variations	How many ways can you make 100?
Picture	There are 150 students waiting to ride the bus home. There are only 50 seats total. No more than three students can sit in a seat. Determine whether each student will have a seat on the bus. Draw a picture to help you solve this problem.
Question	Why is mathematics considered to be a "universal" language? Are there any other ways of communication that might be universal besides mathematics? Explain your ideas using one of your "universal" languages.

Literature Connections/Resources:

- http://illuminations.nctm.org/ActivityDetail.aspx?ID=218
- One Hundred Hungry Ants.
- Friedman, Aileen. The King's Commissioners (A Marilyn Burns Brainy Day Book). NY: Heinemann. 1994

ACCRS: 2.14

Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Mastered:

Students can measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Present:

Students will draw a scale model of elements of their classrooms.

Going Forward:

Students will use measurement tools and skills to create an imaginary environment.

Present and Going Forward Vocabulary:

Dimensions, scale model

Career Connections:

Architect, Designer, Builder

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Measure Up, Scale Down!

Student Instructions: Draw a scale model of something in your classroom. Some things you might choose to draw are the teacher's desk, the classroom carpet, the classroom floor, the cubby where class supplies are stored, or the reading table.

Example: A scale drawing is one in which an item may be drawn to a larger or smaller scale than the original item, but the proportional relationships remain the same. Your scale drawing will be smaller in order to show items in your classroom in miniature. You might choose to make 1 foot equal 1 inch on the scale diagram. In that case, if your teacher's desk is 4 feet tall, your scale drawing would show the desk as 4 inches tall. If the desk top measures 3 feet long and 2 feet wide (3 feet by 2 feet), your scale drawing would show the desk top as 3 inches long and 2 inches wide (3 inches by 2 inches).

Remember: You must first measure the item you will draw to scale. You may round your measurements to the nearest foot.

Use the graph paper provided or at the Web sites below to make your scale drawings.

Free, downloadable graph paper for scale drawing at:
http://donnayoung.org/f13/math-f/graph-paper/10x14.pdf

Literature Connections/Resources:

- Bowman-Kruhm, Mary**.** A Day in the Life of an Architect**.** NY: Power Kids Press. 2001.
- Free, downloadable graph paper for scale drawing at:
  http://donnayoung.org/f11/math-f/graph-paper/20x26.pdf
  http://donnayoung.org/f11/math-f/graph-paper/10x14.pdf

ACCRS: 2.15
Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Mastered:	**Present:**	**Going Forward:**
Students can measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	Students will use their knowledge of different measuring systems to complete a RAFT in which they evaluate which is the best system.	Students will measure the same object using inches and centimeters and look at emerging patterns to establish a ratio of centimeters to inches.

Present and Going Forward Vocabulary:
Length, units of measure

Career Connections:
International Business Person, Scientist, Mathematician, Weights & Measurements Department Worker

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

***RAFT OR* The Shoes Have it!**

Student Instructions: Choose **one** activity to complete.

Measuring with Metric VS Traditional (English) Units

The contest is on! Which is the easier measuring system-yards, feet and inches, or centimeters and meters? Think about the problem and present your conclusion using the RAFT outline below.

Students**:** Choose one row. Research and write about the TOPIC from the perspective of the ROLE to the AUDIENCE using the FORMAT. You may want to plan your product using the organizational tool, Primary Project Planner.

ROLE	AUDIENCE	FORMAT	TOPIC
Centimeter	Ruler	Song	I am better than inches!
Inches	Ruler	Poem	Pick me, pick me!
Meter Stick	People	Persuasive discussion	How meters measure the world.
Yardstick	2nd grade students	Phone conversation	I'm history, man!

OR

The Shoes Have it

Student Instructions: Make a chart like the one below:

Ask classmates their shoe size and write the answer on the chart. Ask if you can measure the length of their shoes. Do this in inches and centimeters and record the answers on the chart. Then answer the Thought Question at the bottom of the page.

Name	Shoe Size	Length of shoe in inches	Length of shoe in centimeters

Thought Question:
What relationship can you find between the foot length in inches or centimeters and the shoe size?

Literature Connections/Resources:
- VandeCreek, Barbara. Math Rules! Marion, IL: Pieces of Learning. 2001.
- Pluckrose, H. Measuring Penny. NY: Henry Holt & Co. (BYK). 2000.
- Myller, Rolf. How Big is a Foot? NY: Yearling Books. 1991.

ACCRS: 2.16
Students will estimate lengths using units of inches, feet, centimeters, and meters.

Mastered:
Students can estimate lengths using units of inches, feet, centimeters, and meters.

Present:
Students will play an estimation game.

Going Forward:
Students will create an estimation game.

Present and Going Forward Vocabulary:
Estimate, approximate

Career Connections:
Teacher, Lawyer, Doctor, Clothing Designer, Interior Designer, Surveyor, Policeman.

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Estimation Game

Student Instructions:

1. Make a list of ten things you see in your classroom that can be measured in inches. Guess how long you think they are in inches. Then, measure them to see how close your estimate was. Try this with a partner and see whose estimates are closer!

2. Try this again using feet. Make a list of ten things you can see in your classroom that can be measured in feet. Guess how long you think they are in feet, and then measure them to see how close your estimate is.

3. Bonus! Try this with five objects and centimeters. Can you estimate as well using centimeters as you can using inches? Why or why not?

   Extension: Create a board game that requires players to estimate length, weight, time, and amount. Share your game with other students and teachers.

Literature Connections/Resources:
- Ho, Oliver & Sinclair, Jeff. Amazing Math Magic. Gastonia, NC: Goodwill Publishing House. 2009.
- Murphy, Stuart. Betcha. NY: Harper Collins. 1997.
- Estimation Games: http://www.mathsisfun.com/numbers/estimation-game.php

ACCRS: 2.17
Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Mastered:	**Present:**	**Going Forward:**
Students can measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	Students will measure to see how high they can jump. Then, they will experiment with various strategies to improve their jumping height. Finally, they will compare the highest with the lowest distances and explain the strategy that worked best.	Students will use paper airplane design to practice estimating the distance airplanes of different designs will fly. They will hypothesize about causes for distances flown and strategize to make their planes fly further.

Present and Going Forward Vocabulary:
Centimeter, meter stick, brainstorm, experiment, verify

Career Connections:
Race Car Driver, Aerodynamics Engineer, Researcher

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Jump!

(Teachers: This activity is best done in the hallway…and, the lesson is written for meter sticks, but can be done with inches and yardsticks. Also it is best done in pairs.)

Student Instructions:

1. How high can you jump? Roll a bit of masking tape so that the sticky side is to the outside. Put this on the tip of your finger. Using a ruler, stand 10 centimeters away from the wall, facing the wall. Now, jump! Touch your hand (or slap) the wall and leave the tape on the wall. This will mark how high you jumped. Now, get a meter stick and measure the height of your tape. Remember to start measuring from the floor and carefully mark the top of the meter stick with a finger and then place the meter stick right above that to get an accurate measurement. Record your answer on row 1 of the table provided.

2. With your partner, brainstorm what you could do to reach higher on the wall. Roll another piece of tape and try one of your ideas. Can you do better starting closer than 10 centimeters? Do you reach higher from further away? With a running start? Remember to be quiet in the hall while you try your different ideas. The best experiments try each method three times to verify (confirm) the results. Complete the chart below and put a star by the best (highest) method.

Distance from Wall or Method	**Results in Centimeters**	**Your Idea**	**Results**
10 centimeters/standing			
Trial 1			
Trial 2			
Trial 3			

Materials:
Partner
Meter Stick
Masking Tape
Pencil
Centimeter ruler
Chart

Extension: Flying Circus

Student Instructions: Design three different types of paper airplanes. Write a number on each of your airplanes. Make a hypothesis about how far each will fly. Then test fly each, giving each plane 3 trials. Measure the distance each plane flew on each trial. Record the data in the table provided. Using your best trial flight, which one flew farthest? By how much? What do you think made the difference in how far each airplane flew?

Airplane 1: Describe:	Distance flown in feet.	Comments: What seemed to make it fly or not fly? How might you improve your design?
Trial 1		
Trial 2		
Trial 3		
Airplane 2: Describe:	Distance flown in feet	Comments: What seemed to make it fly or not fly? How might you improve your design?
Trial 1		
Trial 2		
Trial 3		
Airplane 3: Describe:	Distance flown in feet	Comments: What seemed to make it fly or not fly? How might you improve your design?
Trial 1		
Trial 2		
Trial 3		

Materials:

Plain paper
Construction paper
Paper clips
Pencil
Chart

Literature Connections/Resources:

Blackburn, K. & Lammers, J. Kids' Paper Airplane Book. NY: Workman's Publishing. 1996.

ACCRS: 2.18

Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Mastered:	Present:	Going Forward:
Students can use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	Students will solve open ended problems.	Students will create problems to solve.

Present and Going Forward Vocabulary:

Measurement, route, height, length, width, average, destination

Career Connections:
Travel Agent, Architect, Cartographer, Interior Designer

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

TIC-TAC-TOE MENU

Student Instructions: Choose three activities in a row, column, or diagonal, just like TIC-TAC-TOE. Complete the contract to give to your teacher. You may want to plan your products using the organizational tool, Primary Project Planner.

1. Which is longer, your arm or your leg? Work with a partner to answer. Use centimeters. How else might you measure your arm and your leg? List 10 ways. How does your list compare to centimeters?	2. Who has the largest lunchbox? Measure height, length, and width to answer the question. Draw a diagram of the lunch boxes you measure and include the dimensions.	3. What is the shortest route from your classroom to the library in your school? Use a meter stick to measure.
4. If your classroom has tile on the floor, how many tiles are under one desk? How many under all of the desks? What is the easiest way to answer the question?	5. Three in One! Write only the story part of a story problem that deals with measurement. Think of at least 3 different questions you could ask about the story. Solve all three problems. Show your story and one of the questions to a friend to solve.	6. Cats, Cats Cats! If every cat needs 6 square feet of space to itself, how many cats could live in 36 square feet?
7. Read a library book about math and write about it on the back of this page. What did you like about the book? What did you learn?	8. Plan a trip to another city. Look up how far away it is. If an average car can travel 25 miles on a gallon of gasoline, how many gallons will it take to get to your destination?	9. Write a story about a rocket ship flying to the moon. How big is it and how many people will it hold? What are some things to consider as you decide how large your rocket ship will be?

Literature Connections/Resources:

- Schwartz, D. G Is for Google. Berkley, CA: Tricycle Press. 1998.
- Schwartz, D. How Much Is a Million? NY: Harper Collins. 2004.
- Scieszka, J. Math Curse. NY: Viking Juvenile. 1995.

ACCRS: 2.19

Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2…, and represent whole-number sums and differences within 100 on a number diagram.

Mastered:	**Present:**	**Going Forward**:
Students can represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2…, and represent whole-number sums and differences within 100 on a number diagram.	Students will construct number paths using addition and subtraction to reach an ending sum.	Students will create number sums and differences for another student.

Present and Going Forward Vocabulary:
Addition, subtraction, calculator, sum, difference

Career Connections:
Teacher, Mathematician, Building Contractor

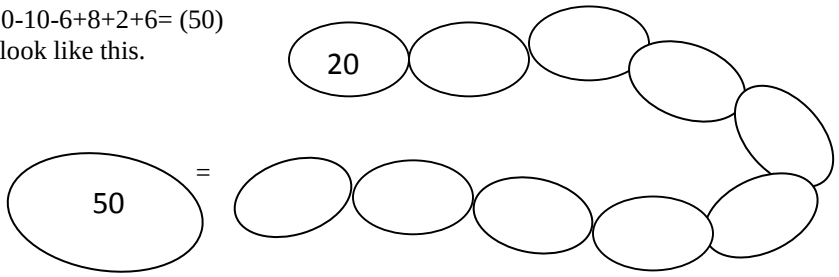
Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Travel the Plus and Minus Path

Student Instructions: With a partner: each of you make a number path for the other to follow. Use only numbers between 0 and 100. Use calculators if you have them to follow the "path." Where will your path take you? Each path should have ten steps. Each time you play set a different target answer. In the example, the target answer was 50.

Example: 20-5+7-1+30-10-6+8+2+6= (50)

Your path might look like this.



OR

Calculator Riddles

Student Instrutions: Using the free on-line calculator found at http://www.metacalc.com/ or a real calculator, play the Calculator Riddle Game. Solve the problems found on the Web site http://www.education.com/activity/article/Calculator_Riddles/

Use the table below to "decode" your calculator's digit to letter code.

Calculator Number	Corresponding Letter **(Turn calculator upside down)**
0	O
1	I
2	Z
3	E
4	h
5	S
6	g
7	L
8	B
9	G

Now try to make up your own calculator riddle.

If you are using the on-line calculator, **remember the following**:
Turning the calculator upside down also reverses the digits, so 1234 would be hEZI, not IZEh.

Literature Connections/Resources:

- Adler, D. Calculator Riddles. NY: Holiday House. 1996.
- Free on-line calculator: http://www.online-calculator.com/

ACCRS: 2.20
Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Mastered:	Present:	Going Forward:
Students can tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	Students will use time in a story.	Students will analyze which time keeping method is best in a given situation.

Present and Going Forward Vocabulary:
Analog, digital

Career Connections:
Author, Researcher, General, Admiral, Travel Agent, International Business Person

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)
FORTUNATELY, UNFORTUNATELY CHAIN STORY
Student Instructions:

1. Research these questions. Make your research notes on the following page.
   - What is a digital clock?
   - Why, when, and how were they invented?
   - In what circumstances would a digital clock be more useful than an analog clock?
   - In what circumstances would an analog clock be more useful?
   - How did people keep time before clocks were invented?
2. Then read the scenarios.
3. **Choose one** and write a Fortunately/ Unfortunately chain story! Use the templates provided to continue your story from the scenario of your choice.
4. Write and illustrate the chain of events to show the positive and negative situations surrounding the scenario you choose. Include all the information you know about time and clocks. You may use additional sheets of paper in order to complete your story. (You may want to read the book, *Fortunately, Unfortunately* by Remy Charlip in order to help you see how the fortunately, unfortunately pattern works.)

SCENARIO 1: Once upon a time, before there were clocks, people got up when the sun came up and went to bed when it got dark. One day, a mom wanted her child home to eat dinner in the middle of the day. "Son", she said, "when the shadow is shortest on the trees, come home to eat and rest during the hottest part of the day."

SCENARIO 2: Billy was running late. He glanced at the clock in the kitchen, and……

Literature Connections/Resources:
- Charlip, R. Fortunately. Unfortunately. NY: Aladdin. 1993.
- Wise, B. Whodunit Math Puzzles. NY: Sterling Publishing Co., Inc. 2002.
- World Time Clocks: http://www.apples4theteacher.com/world-clock.html

ACCRS: 2.21
Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Mastered:	Present:	Going Forward:
Students can solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.	Students will estimate amounts to $100.00 and then adding to verify.	Students will estimate amounts to $1000.00.

Present and Going Forward Vocabulary:
Catalog, budget, prioritize, rank

Career Connections:
Professional Shopper, Banker, Advertising Executive, Accountant

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Shopping!

Student Instructions: Go "shopping" for classroom materials by prioritizing desired items to "purchase" with a budget of $100. Choose items from old education catalogs. Cut out the items you wish to purchase, estimate the cost, and paste them on a sheet of paper. Finally, add up the prices for the actual cost, and write down how close they are to your budget amount without going over.

Materials: catalogs, scissors, glue stick, paper, pencil.

Extension: Follow the Student Instructions above using a budget of $1000.

Literature Connections/Resources:

- Schwartz, D. How Much Is a Million? NY: Harper Collins. 2004.
- Schwartz, D. G Is for Google. Berkley, CA: Tricycle Press. 1998.
- Tattersall, Clare. The Young Zillionaire's Guide to Money. NY: Rosen Publishing Group. 2000.

ACCRS: 2.22
Generate measurement data by measuring lengths of several objects to the nearest whole unit or by making repeated measurements of the same object. Show the measurements by making a line plot where the horizontal scale is marked off in whole-number units

Mastered:	**Present:**	**Going Forward:**
Students can generate measurement data by measuring lengths of several objects to the nearest whole unit or by making repeated measurements of the same object. Show the measurements by making a line plot where the horizontal scale is marked off in whole-number units.	Students will record data.	Students will create a bar graph and interpret data.

Present and Going Forward Vocabulary:
Height, relationship, graph, bar graph, line graph, pie chart, pictograph, chart, hypothesize, axis, increments

Career Connections:
Statistician, Doctor, Therapist or Technician specializing in Sports Medicine, Coach, Athlete

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Kangaroo Jump

Student Instructions:

1. Write your hypothesis (best educated guess) related to this question:
   Is there a relationship between the height of a person and how far they can jump?

My Hypothesis _____

2. Measure a classmate's height and write it down on your chart. Then, ask them to jump from a standing (not running) start. Use a yardstick or meter stick and measure that distance. Do this for four or five volunteers. Record the distance jumped.

Chart:

Initials of person	Height	Distance jumped

3. **Things to think about before graphing your data:**
   A. What will be the title of your graph?
   B. What type of graph will it be?
      Pictograph? Bar Graph? Line Graph? Pie Chart?
   C. On which axis will you graph the height of your classmates? The distance jumped?
   D. What increments will you use on each axis?

Graph Title_____

4. **Answer these Thought Questions using the data from your graph.**
   A. Was your hypothesis TRUE or FALSE? (Circle One)
   B. If you found a relationship between the height of a person and how far they could jump, what was that relationship?
   C. Why do you think this is true?
   D. What other prediction might you be able to make based on your answer to questions 2 and 3?

Literature Connections/Resources:

- Mattern, Joanne. I Use Math at the Game. NY: Scholastic Books (Weekly Reader Early Learning Library. 2005.
- Schwartz, David. If You Hopped Like a Frog. NY: Scholastic Publishing. 1999.

ACCRS: 2.23
Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Mastered:	Present:	Going Forward:
Students can draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. They can solve simple put-together, take-apart, and compare problems using information presented in a bar graph.	Students will problem solve using measurement, graphing.	Students will create data to be graphed and analyzed.

Present and Going Forward Vocabulary:
Graph, height, measurement

Career Connections:
Architect, Statistician, Research, Business Owner or Manager

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Paper Towers

Student Instructions:

1. Work with a partner. Use four of the sheets of construction paper to make the tallest tower you can build. Use the 3 paperclips and no more than 6 inches of tape. Use a measuring stick to find out how tall your tower is and write the height here: _____
2. Now, build a tower using four sheets of copy paper, three paperclips and 6 inches of tape. Measure the height. Record the height here: _____
3. Now, you are going to use the remaining 4 sheets of construction paper to build another tower, but this time you may not use any paperclips or tape. When you are finished, use the measuring stick to measure the height of your tower. Record the height here: _____
4. Now, rearrange the same four sheets of copy paper another way to build a final tower, using no tape or paperclips. Record the height here: _____
5. Which tower was the tallest? Make a graph that shows the height of each of your towers. Be sure to label the columns (one for each tower) so that someone else can look at the graph and tell the results without having to ask you.

***Materials needed*:** 8 sheets of construction paper, 8 sheets of copy paper, tape, paperclips, yardstick or meter stick.

Literature Connections/Resources:
Highlights Magazine. Mathmania. Honesdale, PA: Boyd's Mills Publishing. 2003.

ACCRS: 2.24
Recognize and draw shapes having specified attributes such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (2-G1)

Mastered:	Present:	Going Forward:
Students can recognize and draw shapes having specified attributes such as a given number of angles or a given number of equal faces, and can identify triangles,	Students will apply knowledge of shapes and their attributes to finding real life examples of many varied and different polygons.	Extension: Students will use bar and pie graphs to organize the data they collect about the different polygons in their classrooms. Then they will

quadrilaterals, pentagons, hexagons, and cubes.		evaluate their methods of graphing to determine which is most useful for sharing the data with their teachers and other students.

Present and Going Forward Vocabulary:
Polygons, pie graph, bar graph, percentage

Career Connections:
Artist, Interior Designer, Architect, Statistician

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Shape Scavenger Hunt

Student Instructions: On your paper, draw and label one each of polygons with 3, 4, 5, 6, 7, 8, 9, and 10 sides and angles. Search the classroom environment for real life examples of each. Record your findings by drawing, taking photographs, or writing descriptions. Match the name of the shape to the examples you record and identify its attributes.

Extension: Pie or Bar- Which Do You Prefer?

Student Instructions: In the space provided, make a table and record the number of each type of polygon that you find on your scavenger hunt. Use the grid paper on the next page to organize your data into a bar graph in order to see which shape is most often found in your classroom. Then make a pie graph to show what percentage of each can be found there. You may need to use a calculator or go the Web site: http://nlvm.usu.edu/en/nav/frames_asid_183_g_2_t_5.html?open=activities&from=category_g_2_t_5.html to help you calculate the percentages.

Which shape did you find to be the most common? Which shape had the smallest percentage according to the pie graph? Discuss with a friend or think about which type of graph you find most useful for sharing the data you gathered and why.

***Materials*:** Paper, pencil, camera (optional), calculator, Student Pages

Literature Connections/Resources:

- National Library of Virtual Manipulatives-Pie Graph: http://nlvm.usu.edu/en/nav/frames_asid_183_g_2_t_5.html?open=activities&from=category_g_2_t_5.html
- National Library of Virtual Manipulatives Bar Graph: http://nlvm.usu.edu/en/nav/frames_asid_323_g_2_t_5.html?from=category_g_2_t_5.html
- National Library of Virtual Manipulatives -Fraction Bars: http://nlvm.usu.edu/en/nav/frames_asid_203_g_1_t_1.html?from=topic_t_1.html
- National Library of Virtual Manipulatives-Fraction Naming, Fraction-Parts of a Whole, Fractions-Visualizing: http://nlvm.usu.edu/en/nav/topic_t_1.html
- Burns, Marilyn. The Greedy Triangle. NY: Scholastic Inc. 1994.

ACCRS:

2.25: Partition a rectangle into rows and columns of same size squares, and count to find the total number of them.

2.26: Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two halves, three thirds, or four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Mastered:	**Present:**	**Going Forward:**
Students can partition a rectangle into rows and columns of same size squares, and count to find the total number of them.	Students will describe real life objects in fractional terms.	Students will connect fractional parts to the idea of counting multiple portions in a picture book.

Students can also partition circles and rectangles into two, three, or four equal shares; described the shares using the words halves, thirds, half of, a third of, etc; and described the whole as two halves, three thirds, or four fourths. Recognized that equal shares of identical wholes need not have the same shape.		

Present and Going Forward Vocabulary:
Fraction, fractional parts, multiple, portions

Career Connections:
Pizza Maker, Chef, Civil Engineer, Industrial Designer

Advanced Understanding & Activity (Alternate activity): (Student pages are located in Appendix A.)

Wheels and Things

Student Instructions: Read the book *Each Orange Had 8 Slices* by Paul Giganti. There are many examples of objects with multiple portions. Create a fraction book and write riddles to help others recognize the equal parts of everyday things.

Example: On a bicycle with 2 wheels, each wheel is one-half of the total wheels on the bicycle, two are two halves, or all of the wheels needed for a whole bicycle.

Each wheel would be what portion of the total needed for 2 bicycles? For 4?

Make pages for halves, thirds, and fourths using real life examples.

You may need to use the Web links below to review fractions and fraction naming before making your book.

National Library of Virtual Manipulatives-Fraction Bars:
http://nlvm.usu.edu/en/nav/frames_asid_203_g_2_t_1.html?from=grade_g_2.html
National Library of Virtual Manipulatives-Fraction Naming:
http://nlvm.usu.edu/en/nav/frames_asid_104_g_2_t_1.html?from=grade_g_2.html

Materials: Each Orange Had 8 Slices by Paul Giganti, drawing paper, computer with Internet access.

Literature Connections/Resources:

- Giganti, Paul. Each Orange Had 8 Slices. NY: Greenwillow Books. 1999.
- Murphy, Stuart. Give Me Half. Logan, IA: Perfection Learning. 1996.
- National Library of Virtual Manipulatives-Fraction Bars:
  http://nlvm.usu.edu/en/nav/frames_asid_203_g_2_t_1.html?from=grade_g_2.html
- National Library of Virtual Manipulatives-Fraction Naming:
  http://nlvm.usu.edu/en/nav/frames_asid_104_g_2_t_1.html?from=grade_g_2.html