Imagine Schools
Summer Math Challenge

Second Grade

Dear Parents,

This packet of math activities was made to help your child stay engaged and excited about math over the summer months.

All projects in the packet are designed to be completed with parent support. Please read the directions for each activity to your child and help your child get started. Some projects will require the child and parent to work together throughout the project. Other projects will allow the student to work independently after getting started. All projects in the challenge packet are based on the Common Core State Standards. To learn more about the Common Core State Standards visit: www.corestandards.org

We suggest doing one project a day. Take time to discuss and enjoy each project. Try to find ways to reinforce the concepts throughout your daily routine. For example, if the activity discusses money you may want your child to count out the change next time you are in the grocery store or at a restaurant.

Sincerely,
Imagine Schools National Academic & Character Team

Project #1

Domain: Number and Operations in Base Ten (NBT)
2.NBT.3. Read and write numbers to 1,000 using base-ten numerals, number names and expanded form.
2.NBT.4. Compare two three-digit numbers based on meanings of the hundreds, tens and ones digits using >, =, and < symbols to record the results of comparisons.

Directions: Cut out the number cards on the next page. Then follow the directions to complete the activity with the cards and record your answers.

Using the cards:

1. **Example:** Build the largest number you can. Record it here: **9,876,543,210**

2. Build the smallest number you can. Record it here: _____

3. Build a number less than 700. Record it here:_____

4. Build a number greater than 700. Record it here: _____

5. Build a number that is between 300 and 500. Record it here: _____

6. Build a different number that is between 300 and 500. Record it here:_____

1	2	3	4	5
6	7	8	9	0

Project #2

Domain: Operations and Algebraic Thinking (OA)
2.OA.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.

Directions: Solve the following word problem:

Amy had 62 hair clips in her collection. She bought a pack of 36 hair clips to add to her collection. How many does she have now? Write a number sentence below to solve the problem.

In the space below write your own word problem using 2 or 3 digit numbers. Solve the problem below using a number sentence.

Project # 3

Domain: Number and Operations in Base Ten (NBT)

2.NBT.1 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.

Value	1	10	100	1,000
Hieroglyph				
Description	Single Stroke	Heel bone	Coil of Rope	Water Lily

Directions: In the United States we express numbers in a certain way. The ancient Egyptians expressed numbers differently. Use the key above to write numbers in Egyptian hieroglyphics.

For example, for the Ancient Egyptians the number **36** would be:

The number **111** would be:

Try to write the number **3** using Egyptian hieroglyphics:

Try to write the number **47** using Egyptian hieroglyphics:

Try to write the number **101** using Egyptian hieroglyphics:

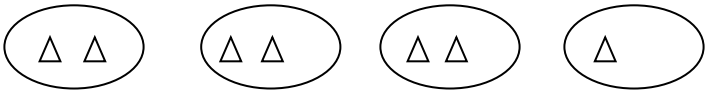
Project #4

Domain: Operations and Algebraic Thinking (OA)
2.OA.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.

Directions: Show a given number using the model below. Then, label the number as "odd" or "even". The number is odd if there is one left over without a partner. The number is even if there is none left over.

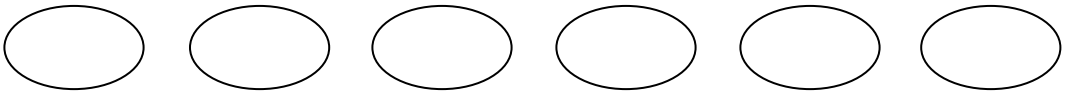
Example:

7



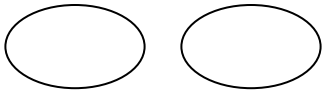
Is 7 odd or even? _____

11



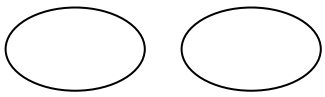
Is 11 odd or even? _____

4



Is 4 odd or even? _____

3

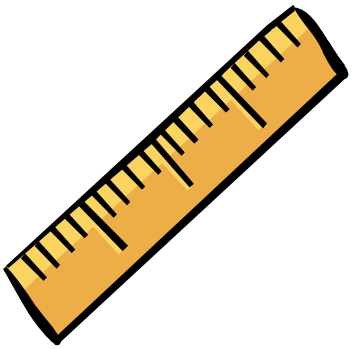


Is 3 odd or even? _____

Project # 5

Domain: Measurement and Data (MD)

2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.



Directions: Use a one-foot ruler to measure different objects in your home. Write the measurements of the objects in the chart below.

Objects	**Length** **(Be sure to include the word "inches" after each length)**
Paperclip	2 inches

Project #6

Domain: Number and Operations in Base Ten (NBT)
2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction

Directions: Estimate the answer to the addition problems below. Round the numbers in the addition problems below to help you estimate an answer. When adding two numbers of 2 or 3 digits, first round to the nearest ten and then add both numbers.

For example when adding: 73 + 59 =
To estimate a solution first round each number to the nearest ten:
70 + 60 =
Then, add the numbers.
70 + 60 = 130

Estimate the answers to the problems below:

1) 89 + 64 =

2) 51 + 33 =

3) 28 + 21 =

4) 19 + 11 =

5) 121 + 61 =

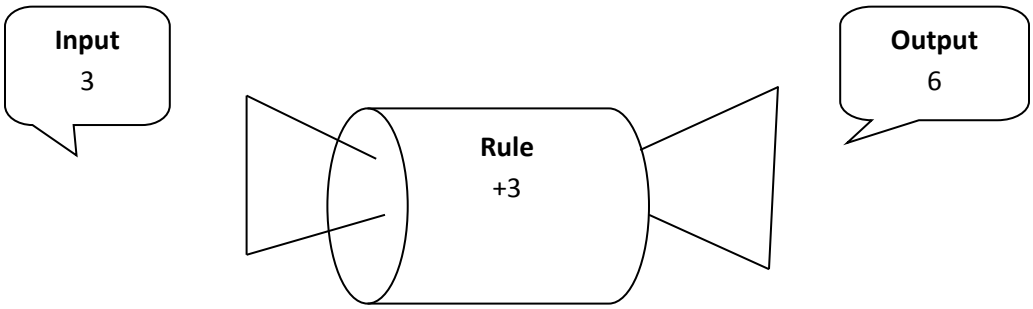
Project # 7

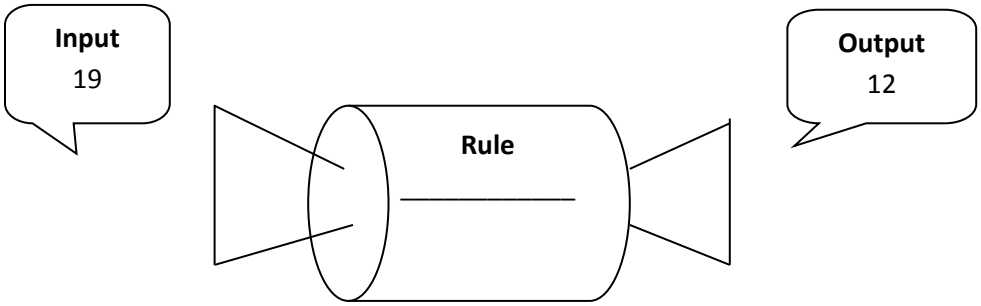
Domain: Number and Operations in Base Ten (NBT)

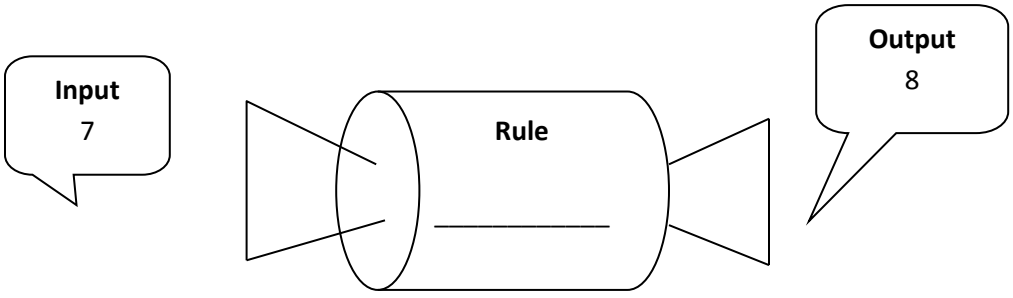
2.OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

2.OA.2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Directions: Find the rule for all of the problems below. Follow the example below.







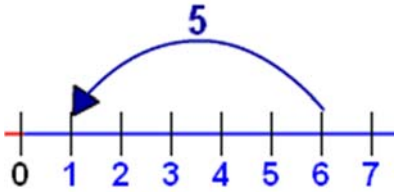
Project # 8

Domain: Measurement and Data (MD)

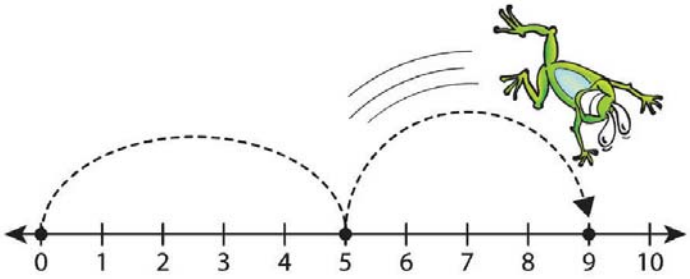
2.MD.6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Directions: Write the number sentence that the number line represents. Then, create a number line to illustrate a subtraction problem.

Example: The number line below represents the number sentence: **6-5=1**.



Write a number sentence that would explain the number line below.



Draw your own number line to represent the following number sentence:

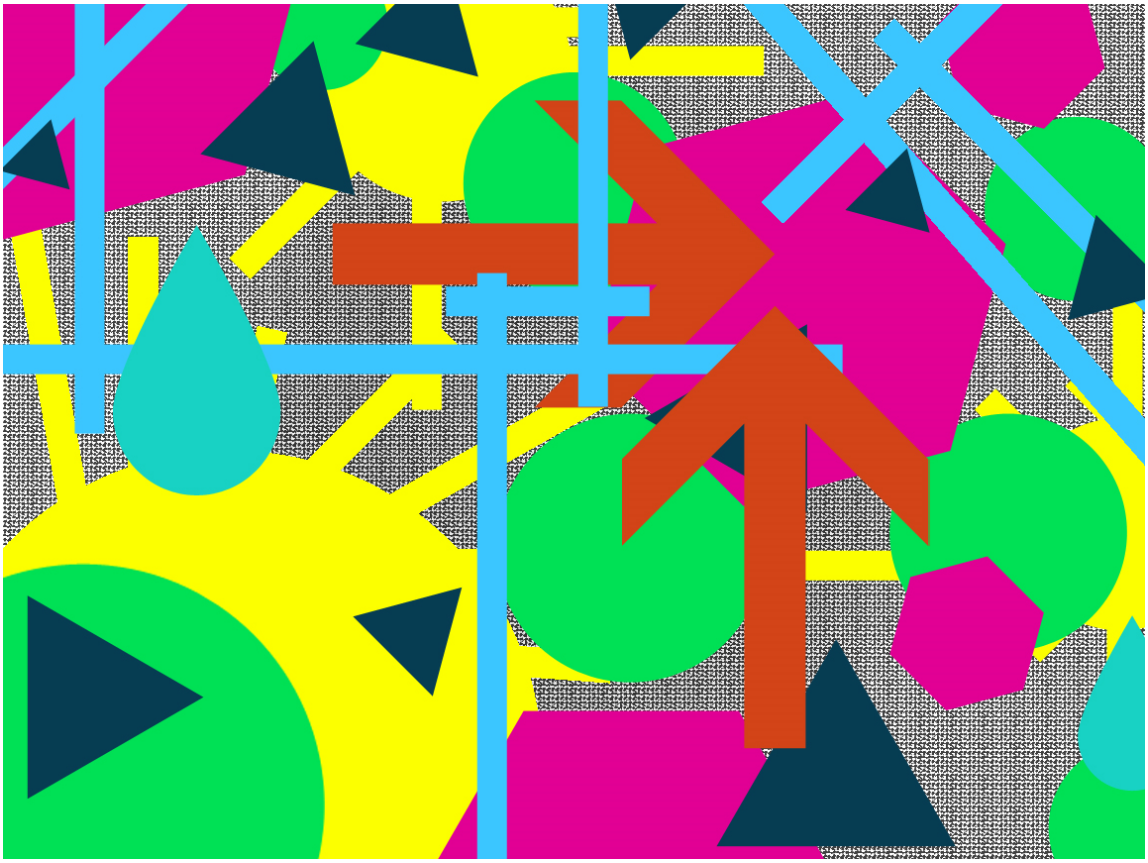
9 - 2 = 7

Project #9

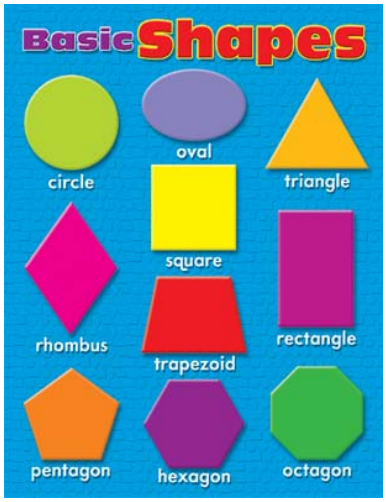
Domain: Geometry (G)

2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Directions: Trace all the shapes you can find in the picture below with a colored pencil or marker.



List the different shapes you have found below. The box to the right lists the basic shapes you might need to know to complete this activity.



Project #10

Domain: Number and Operations in Base Ten (NBT)
2.NBT.2. Count within 1000; skip count by 5s, 10s, and 100s.

Directions: Cut out the number cards below. Next, put the cards in numerical order. Then, practice counting by 100s to 1000.

100	300
800	200
600	700
1000	500
400	900

Project # 11

Domain: Measurement and Data (MD)
2.MD. 10 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~~1~~ using information presented in a bar graph.

Directions: Collect the following items:

- clock or watch
- newspaper
- blank paper
- graph paper (can be hand-drawn)
- ruler
- markers

Together with your child, keep track of how he or she spends time in one 24-hour period: time spent sleeping, eating, playing, reading, and going to school. Measure a strip of paper that is 24 inches long. Let each inch represent 1 hour. Color in the number of hours for each activity, using a different color for each activity. When finished, make the strip into a circle and place it on a blank piece of paper. Trace around the circle. Then make lines from the center of the circle to the end of each color. Your child has just made a circle (pie) chart of how he or she spends 24 hours. Compare this with how other people in your family spend their time.

Kanter, Patsy and Darby, Linda B. *Helping Your Child Learn Math*. Washington, D.C.: U.S. Department of Education, 1999.

Project #12

Domain: Operations and Algebraic Thinking (OA)
2.OA.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.

Directions: Sort the even and odd numbers listed below into the table below. Write the even numbers in the even category and the odd numbers in the odd category. After you are finished sorting the numbers explain to an adult why certain numbers are odd and certain numbers are even.

The numbers:

53, 72, 86, 8, 10, 15, 91, 84, 25, 67, 109

Even	Odd
Example: 72	**Example: 15**

Project # 13

Domain: Measurement and Data (MD)
2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Directions: Find one penny, one nickel, one dime, and one quarter. Order the coins by value from least to greatest. Answer the following questions:

1. Which coin is worth the least amount? How much is it worth?

2. Which coin is worth the most? How much is it worth?

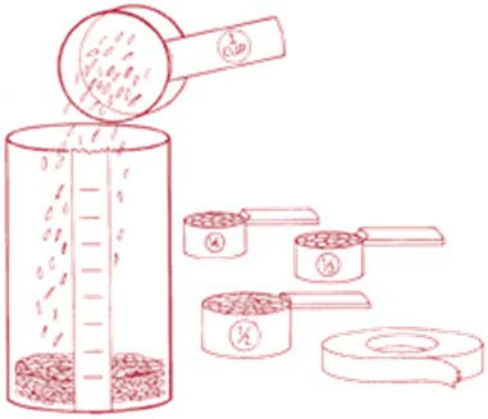
3. If you had to make 31 cents to pay for something, which coins would you use?

Project # 14

Domain: Geometry (G)
2.G.3 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, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Directions: Collect the following supplies:

- clear container
- masking tape
- marker
- measuring cups (1/2, 1/3, or 1/4 cup measure)
- uncooked rice or popcorn kernels
- water



1. Have your child stick a piece of masking tape straight up one side of the clear container from the bottom to the top.
2. For younger children, use a 1/2 cup measure. For older children, use a 1/3 or 1/4 cup measure. Choose the unit of measure and fill the measuring cup. Then let your child pour the substance from the measuring cup into the clear container. Continue to pour the same amount of the substance into the container.
3. As each equal amount of the substance is poured, mark the level on the container by drawing a line on the tape. Write the cup size or appropriate fraction on each line. The fraction for one-third cup would be 1/3.
4. Follow this procedure until the container is full and the tape is marked in increments to the top of the container.
5. Fill the container again and again using different measures each time. Ask your child "thinking" questions.
    - How many whole cups do you think this container will hold? How many 1/2 cups, 1/3 cups, or 1/4 cups do you think the container will hold?
    - How many 1/2 cups equal a cup?
    - How many 1/4 cups equal 1/2 cup? A cup?
    - How many 1/4 cups equal 3/4 cup?

Kanter, Patsy and Darby, Linda B. *Helping Your Child Learn Math*. Washington, D.C.: U.S. Department of Education, 1999.

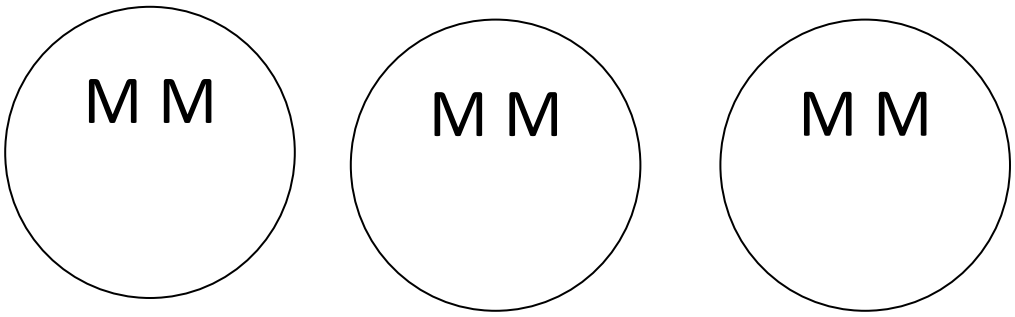
Project # 15

Domain: Operations and Algebraic Thinking (OA)
College and Career Readiness Anchor Standard: Work with equal groups of numbers to gain foundations for multiplication.

Directions: Use the example below to make multiplication models with your student.

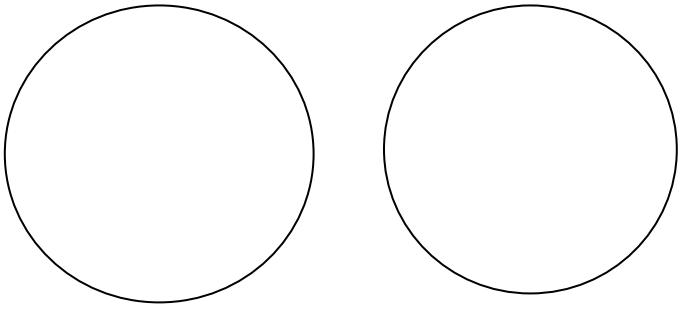
Explanation:
When you read the number sentence 3 x 2 = 6 you may not know what it means. But, you can replace the "x" symbol with the words "groups of". You could say: "3 groups of 2 equals 6." Below I have drawn a model of three groups of 2. Each circle is one group. Each circle has two M's. So, there are 3 groups of 2 Ms for 6 Ms total.

3 x 2 = 6



Create your own model of the number sentence below.

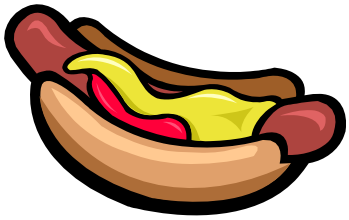
2 x 4 = 8



Project # 16

Domain: Measurement and Data (MD)
2.MD.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Directions: Pick two items to buy from the menu below. Then, add up the total cost of your food. Next, write a number sentence to show what dollar bills you would give to the cashier to pay for your food. Explain your number sentence.



For example, I bought an ice cream cone and sweet potato fries. My total bill was $8. ($2 + $6 = $8). I gave the cashier a $5 bill and three $1 dollar bills to pay for my food.

Menu

Food	Price
Hot dog	$1
Soda	$1
Hamburger	$2
Ice Cream Cone	$2
Large French Fries	$5
Sweet Potato Fries	$6

What two items would you like to buy? How much will they cost?

What money will you have to give the cashier to pay for your food?

Project # 17

Domain: Operations and Algebraic Thinking (OA)
2.OA.2. Fluently add and subtract within 20 using mental math strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.

Directions: Encourage your child to play one of the following addition games for twenty minutes or until they master the game. Watch your child play a round of the game to ensure they have mastered the game and are reviewing their addition skills.

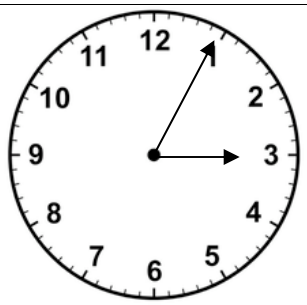
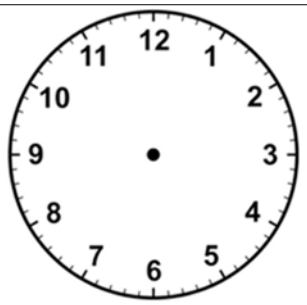
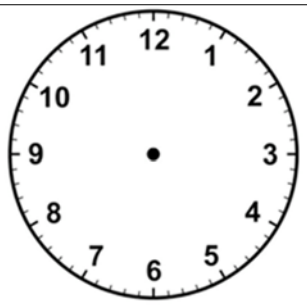
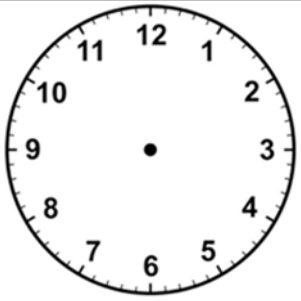
Penguin Addition allows student to add one-digit number at various speeds.
http://www.sheppardsoftware.com/mathgames/popup/popup_addition.htm

Or, play the addition farm game that allows you to choose different addition fact families to practice:
http://www.fun4thebrain.com/addition/ffoadd.html

Project # 18

Domain: Measurement and Data (MD)
2.MD.7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Directions: Create a chart of your favorite times of day. Include a.m. and p.m. in your chart.

Activity	Draw Time on the Clock	Write the Time
My favorite cartoons are on TV.		3:05 p.m.
		
		
		

Project #19

Domain: Measurement and Data (MD)
2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Directions: Use the word bank to fill in the blanks in the following story.

Word Bank
ruler cup scale thermometer

I woke up on Tuesday morning and wanted some breakfast. I wanted ½ cup of milk in my cereal. I used a measuring _____ to find just the right amount of milk!

On Tuesday mornings I weigh myself. I use the bathroom _____. Then, part of my homework was to measure a line on my math paper. I found out the line was 6 inches long by using a _____.

Then, my mom wanted me to get dressed for school. But, she asked me to look at the temperature to make sure I wore clothes that were warm enough. I looked at the _____ and I found out it was 36 degrees Fahrenheit. I was definitely going to wear a warm sweater and coat.

Extensions

The following activities are based on standards your student will learn in third or fourth. They may be challenging for your student.

Project # 20

Domain: Operations and Algebraic Thinking (OA)
3.OA.1. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7

Directions: Draw a picture of groups/sets of a number to represent the meaning of multiplication. Then, write the number sentence and the answer to go with the picture. Write the answer in a complete sentence.

Example: There are 5 pots (groups) of 2 flowers. How many flowers in all?

5 x 2 = 10. There are 10 flowers in all.

1) **There are 6 bags of candy. There are 3 pieces of candy in each bag. How many pieces of candy are there in all?**

2) **There are 15 children. Each child has 4 markers. How many markers are there in all?**