Measure Twice, Cut Once

Quilting Project Based Learning

2nd Grade Print & Google Slides

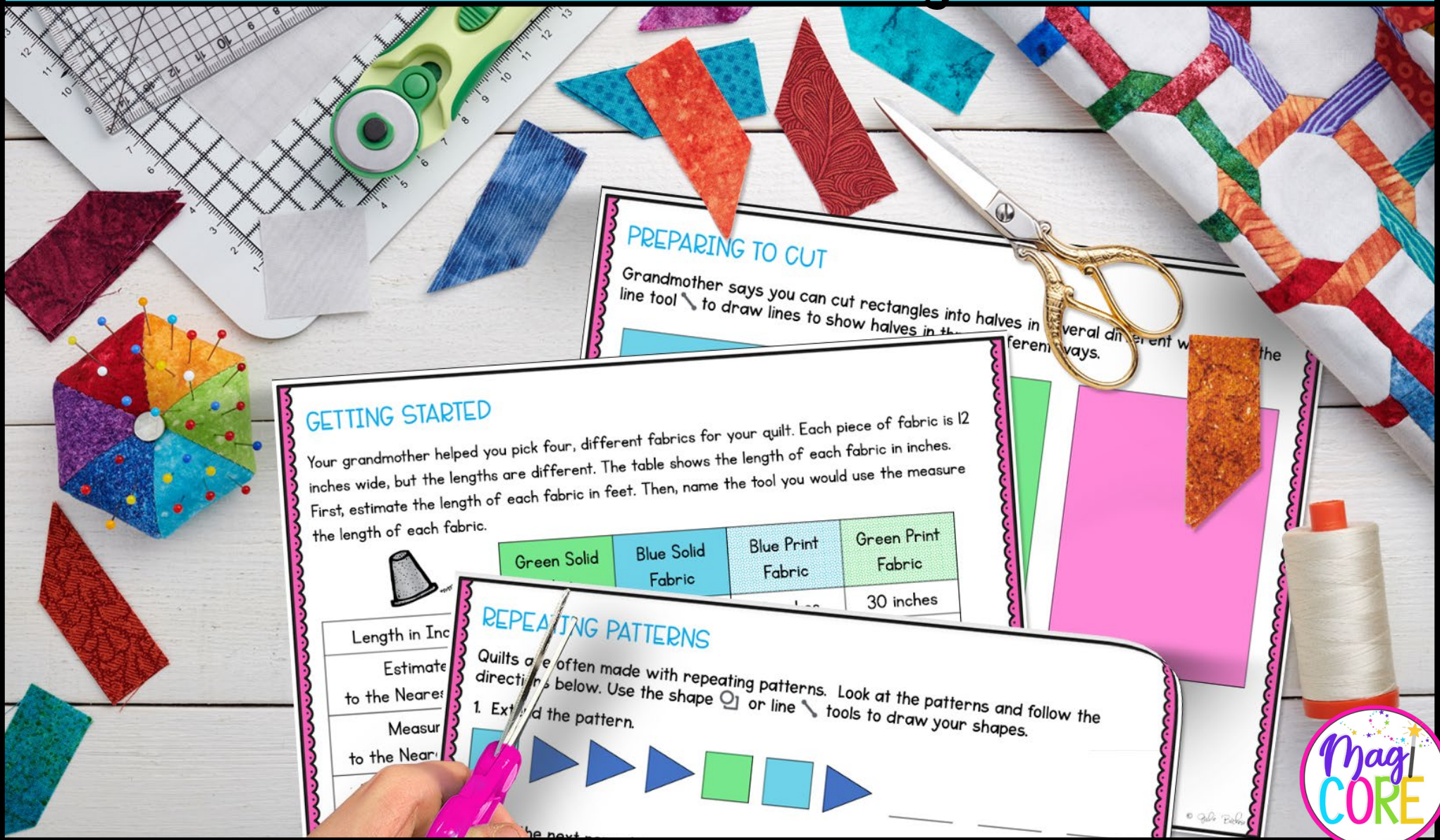


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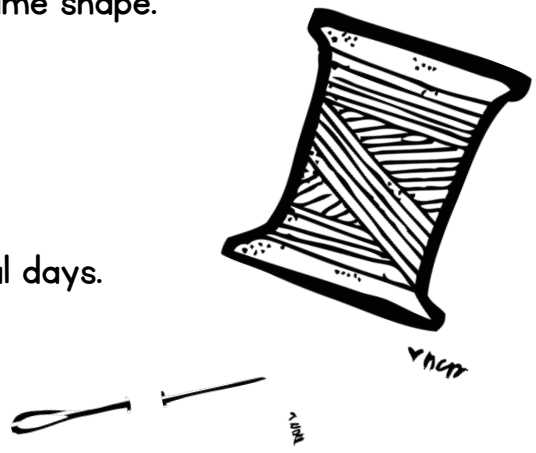
FOR THE TEACHER

MEASURE TWICE, CUT ONCE, is a project-based learning task that involves using Measurement and Geometry to solve problems related to quilt making. It addresses the following 2nd grade CCSS standards:

- 2.MD.A.1 Measure the length of an object by selecting and using appropriate tools.
- 2.MD.A.2 Measure the length of an object twice, using length units of different lengths for the measurements; describing how the two measurements relate to the size of the unit chosen.
- 2.MD.A.3 Estimate lengths.
- 2.MD.A.4 Measure to determine how much longer one object is than another, express in terms of a standard unit.
- 2.MD.B.5 Use addition and subtraction within 100 to solve word problems.
- 2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram.
- 2.MD.D.9 Generate measurement data by measuring lengths of objects. Show measurements by making a line plot.
- 2.MD.D.10 Draw picture graphs/bar graphs to represent data.
- 2.GA.1 Recognize/draw shapes w/specific attributes. Identify triangles, quadrilaterals, pentagons, hexagons, cubes.
- 2.GA.2 Partition a rectangle into rows and column of same sized squares.
- 2.GA.3 Partition circles/rectangles into 2, 3 and 4 equal shares, describe shares using the words halves, thirds, half of, a third of, etc. Recognize that equal shares do not need to have the same shape.

DIRECTIONS

1. Assign students to work alone or in small groups.
2. Preview the activity with your students.
3. Allow students class time to complete the activity. This can span over several days.
4. Students have an opportunity to complete optional extra challenge activities.
5. Students will complete the self-evaluation reflection and evaluation rubric.
6. Allow students an opportunity to share their completed projects.
7. Put students' finished quilt pieces together to create a class quilt.



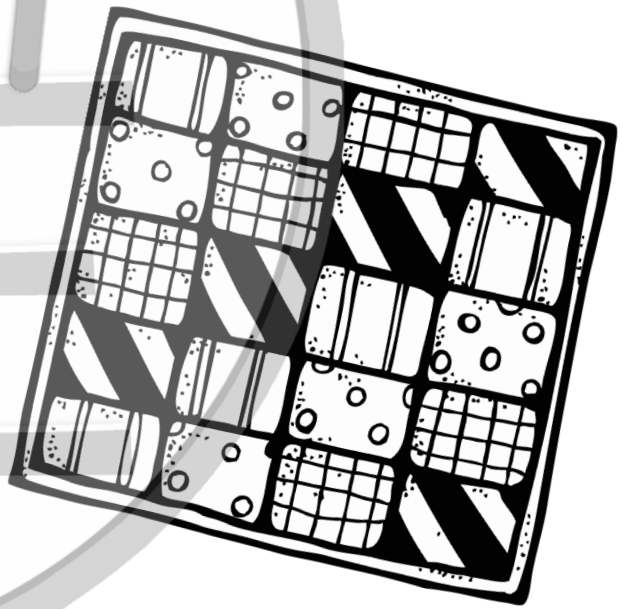
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MEASURE TWICE, CUT ONCE

Your grandmother is a master quilter. She wants to teach you about the history and art of quilt making. Follow the directions in this packet and you will learn about quilt making as you practice many fun math skills, like geometry and measurement. When you are done, you will be ready to make your own quilt.

HERE ARE YOUR TASKS:

- Read through the entire packet before beginning.
- Read the informational slide about quilt making.
- Follow directions for creating a pattern for your quilt.
- Measure, cut and compare lengths of fabric.
- Classify and sort shapes by attribute.
- Complete and extend patterns.
- Identify and draw lines of symmetry.
- Prepare and design your pattern.
- Solve quilting word problems.
- Create a line plot and a bar graph based on data.
- (Optional) Complete the challenge pages.
- Complete the self-reflection and evaluation rubric.



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WHAT IS QUILT MAKING?

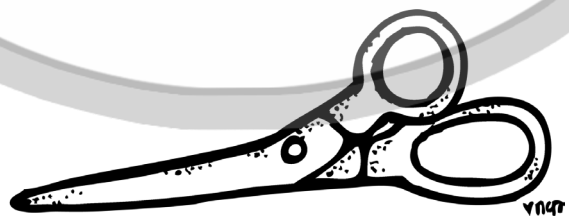
Do you have a special quilt or blanket? Most people have that one, cozy blanket that they want to sleep with every night. If you are lucky, yours is a quilt that was made by someone special who loves you very much.

Quilt work has been discovered dating back to ancient times. The craft came to America with the early settlers. Back then, quilts were made for only one purpose. They provided warmth. People used them on beds, but they also used them to cover windows and doors to help keep out the cold.

The early Americans used only worn clothing to make their quilts. Women taught their daughters to quilt. Girls often made many quilts by the time they were grown. Quilts were even made for soldiers and hospitals during wartime.

Quilts were sewn together by hand until 1846 when the sewing machine was invented. Soon, more and more colorful fabrics became available. People started creating different patterns for their quilts and began using them to decorate their homes.

Quilt making has an important role in our country's history. They tell a part of the American story. Quilting has taught generations of people practical sewing and measurement skills. Today, many people, young and old, enjoy quilting as a creative hobby.



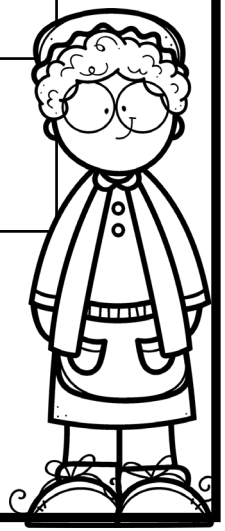
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GETTING STARTED

Your grandmother helped you pick four, different fabrics for your quilt. Each piece of fabric is 12 inches wide, but the lengths are different. The table shows the length of each fabric in inches. First, estimate the length of each fabric in feet. Then, name the tool you would use the measure the length of each fabric.



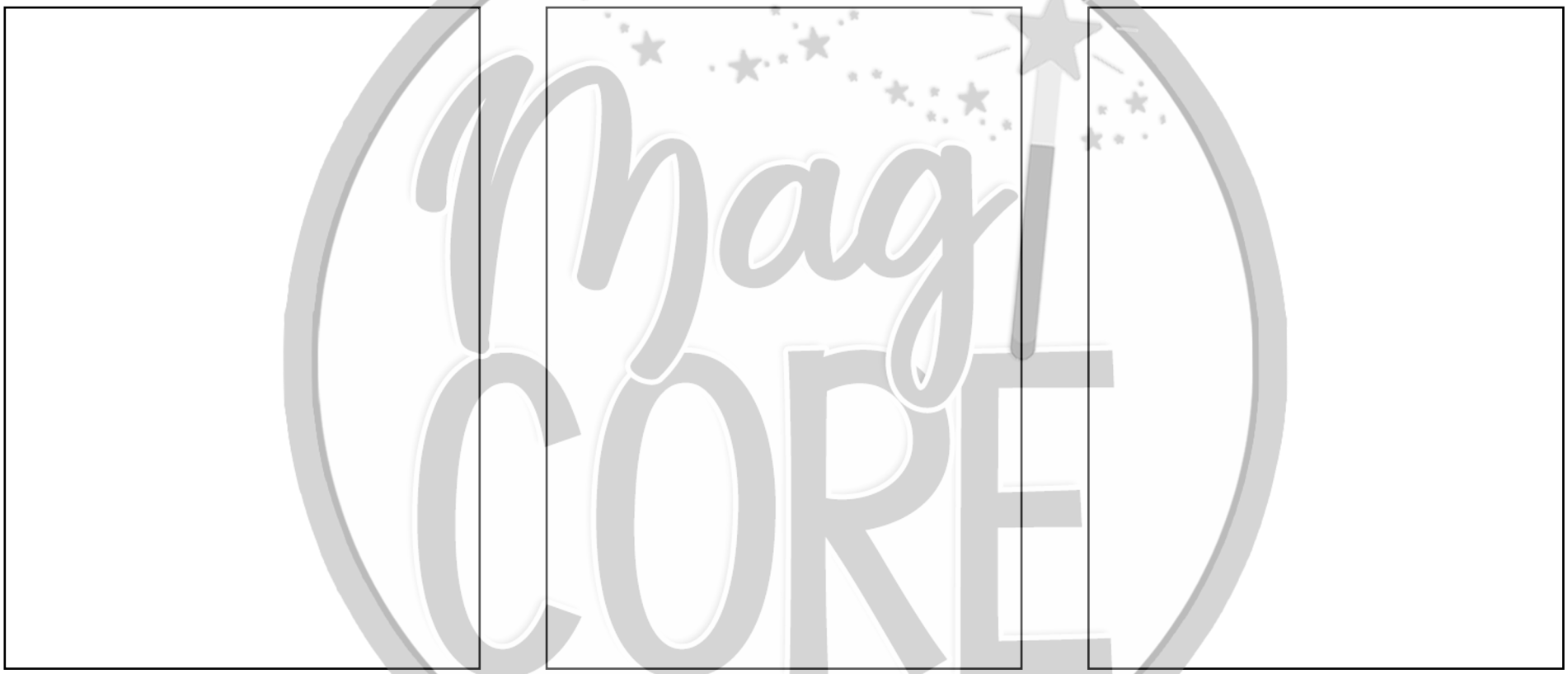
	Green Solid Fabric	Blue Solid Fabric	Blue Print Fabric	Green Print Fabric
Length in Inches	24 inches	12 inches	18 inches	30 inches
Estimate to the Nearest Foot				
Measure to the Nearest Foot				
Tool I Will Use to Measure the Length				



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PREPARING TO CUT

Grandmother says you can cut rectangles into halves in several different ways. Use a ruler or straightedge and draw lines to show halves in three different ways.



QUILTING

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REPEATING PATTERNS

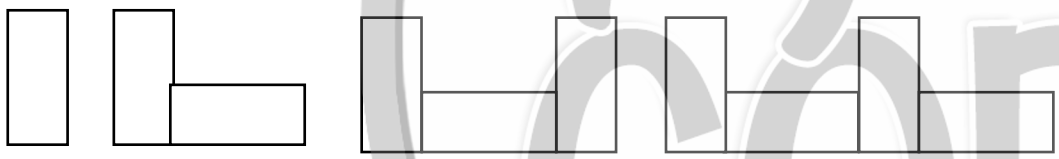
Quilts are often made with repeating patterns. Look at the patterns and follow the directions below.

1. Extend the pattern.

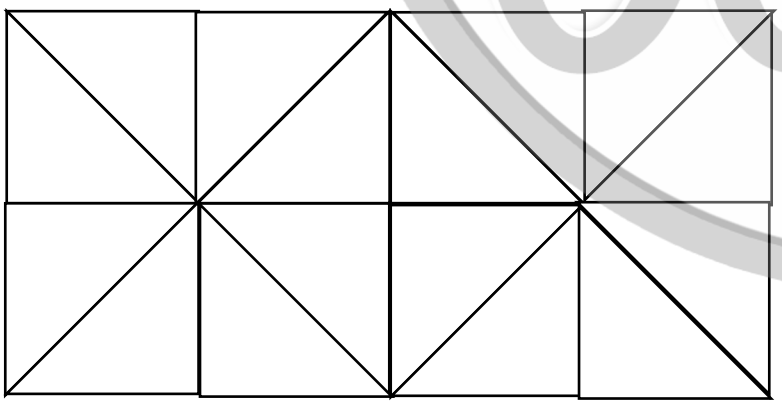


_____ _____ _____

2. Add the next repeat to the growing pattern.



3. Add the next 16 triangles to extend the pattern.



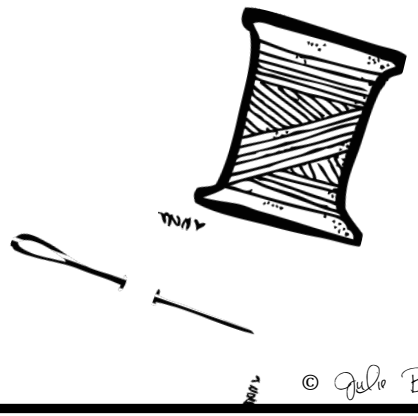
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MEASURING FABRIC

The table shows the number of pieces of each fabric you need to make your quilt. Calculate the total number of inches you need for each fabric.

	Green Solid Fabric	Blue Solid Fabric	Blue Print Fabric	Green Print Fabric
Length in Inches	12 inches	24 inches	18 inches	30 inches
Number of Pieces	3	2	1	2
Total Number of Inches				

Write the fabric names in order from shortest to longest. Use the total number of inches.



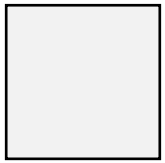
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DRAWING AN ARRAY

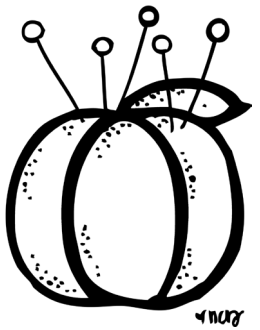
Let's find out how many 6-inch squares you will get from the solid green fabric.

1. How many green 6-inch squares will you cut from one piece of solid green fabric?

2. Grandmother has 3 pieces of green fabric. Let's see how many pieces you can cut from all her solid fabric. Draw an array using green squares to show your answer. The first square is drawn for you.



3. Show the total number of squares using addition.



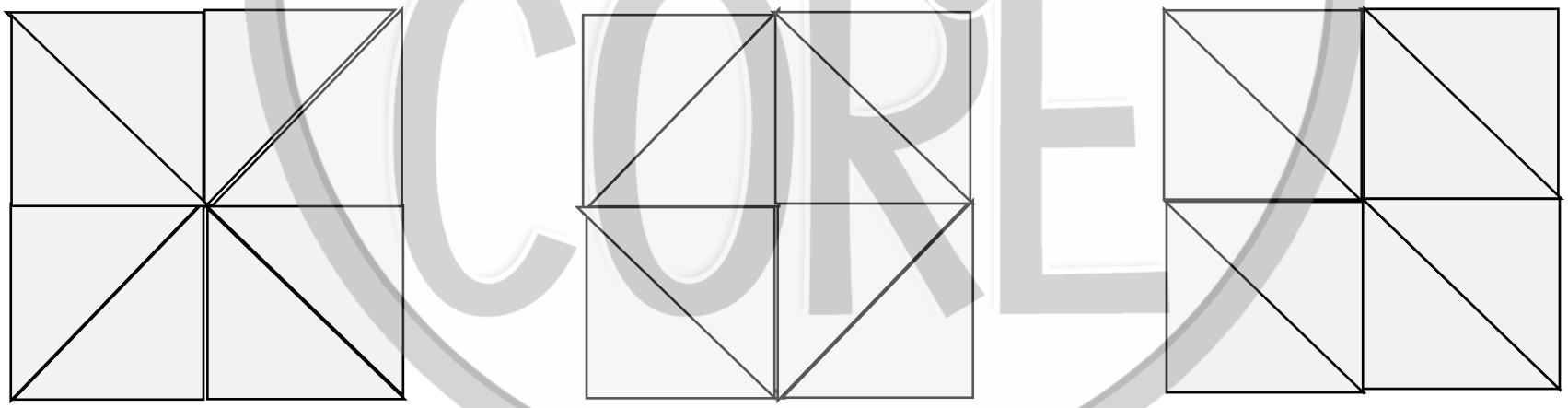
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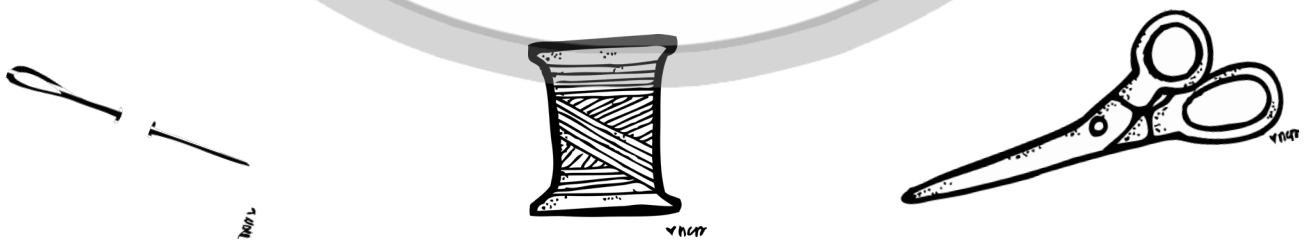
MAKING TWO PATTERNS

Now that all your triangles are cut, it is time to arrange them into two different patterns. You must make two squares that are made with 8 triangles each. There are many ways you can place your triangles. Below are a few ideas to help you get started.

Once you have your two patterns arranged. You will glue them to white paper. Be sure each pattern makes a square. When the glue dries, you can trim away the extra white paper.

Have fun and be creative!



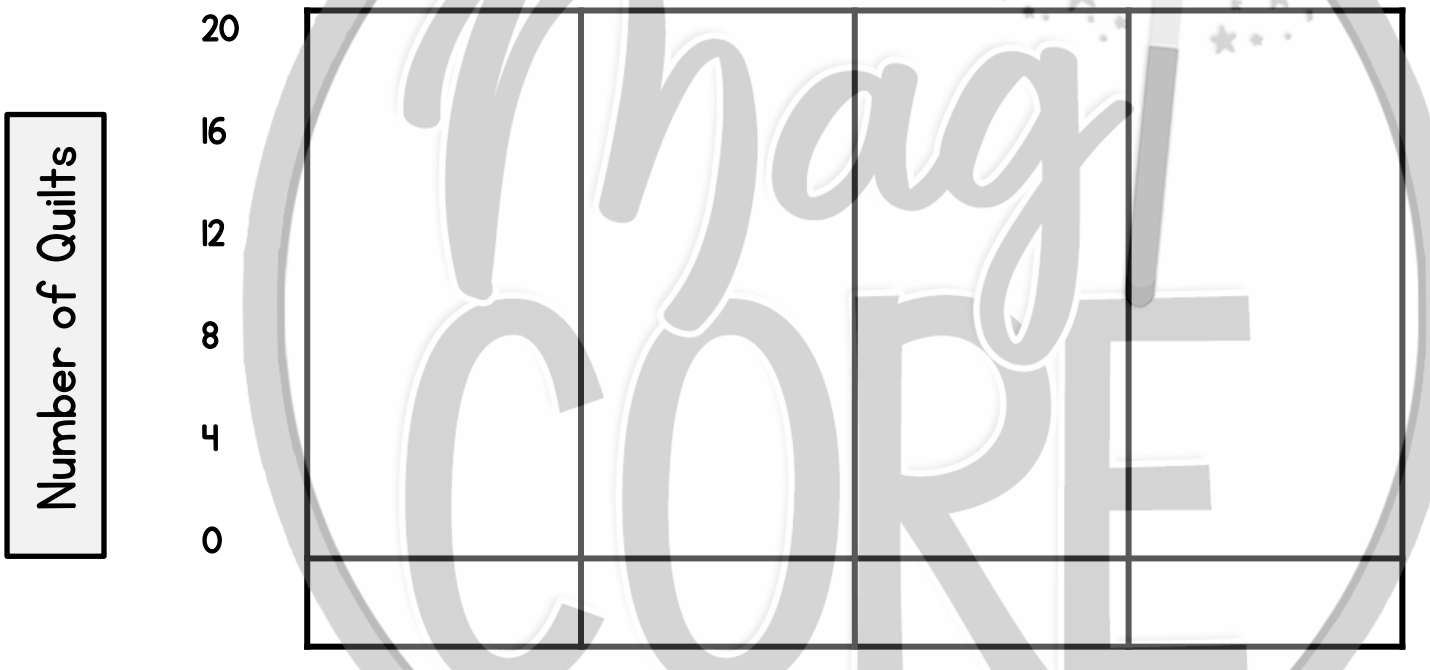


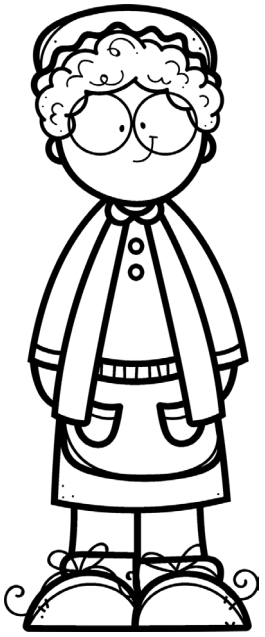
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CHALLENGE 1-GRANDMOTHER'S QUILTS

Quilts Made for Charity	
Lap Size	17
Twin Size	12
Full Size	10
Queen Size	6

Grandmother makes quilts for charity. The table shows quilts of different sizes she made this year that she donated to hospitals and homeless shelters. Use the data to create a bar graph that shows how many quilts she made.





Label the columns with the quilt sizes in the boxes below each bar.

How many quilts did Grandmother make for charity this year? Show your thinking.

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MEASURE TWICE, CUT ONCE

SELF REFLECTION: Write a reflection of your experience with this project. How did you feel about the math problems and activities? Explain what you found easy to do and any difficulties you had while working on this project. Did you enjoy this activity? Why or why not?

Rate This Project

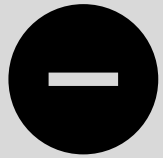
Circle the statement you most agree with.

I am ready for something harder. | It was just right. | I found this very challenging.

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RUBRIC

SELF-EVALUATION RUBRIC: Highlight or shade the parts of the rubric that express how you rate yourself on this Project Based Learning Activity.

		
I felt very confident about the math in this project.	I felt pretty good about my ability to complete the math in this project.	I felt a lot of the math in this project was too hard for me to do alone.
I understood all of the math and did not need help to complete the problems.	I understand most of the math but needed a little help to solve some of the problems.	I understood some of the math but needed help to complete most of the problems.
I easily used many strategies to solve the math problems efficiently.	I needed some help to determine the best strategies for solving the math problems.	I had trouble understanding the best way to solve many of the math problems.
I feel I am ready for a harder math project.	I feel I would like to spend more time practicing similar math problems.	I feel I need assistance to work on similar math problems.

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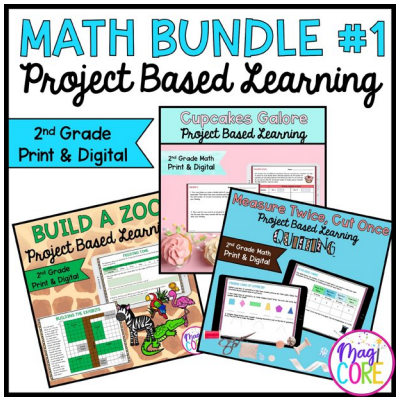
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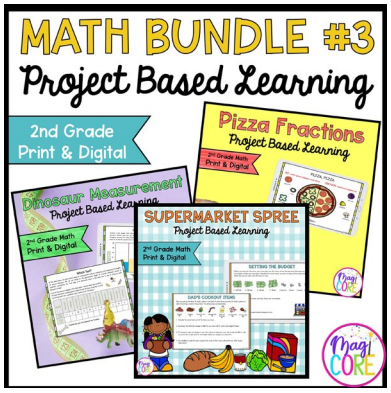
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