

Reuse, Sewing New Things

Grades: 4-5

State Standards: Grade 4, Math; Measurement and Geometry 3.7 Students will know the definitions of different triangles (e.g., equilateral, isosceles, scalenes) and know their attributes. Grade 5, Math; Measurement and Geometry 2.1 Student will measure, identify and draw angles, perpendicular and parallel lines, rectangles, and triangles by using appropriate tools (e.g., straightedge, ruler, compass, protractor, drawing software)

Activity Time: 50 minutes

Key Words: Equilateral, Isosceles, quilt, reuse, scalene triangle

OBJECTIVE

In this lesson, students will learn about the natural resources used to make fabric and use their math skills to make a quilt square from reused fabric scraps or old magazines. In reusing fabrics and paper for new things, we minimize landfill impacts.

MATERIALS

Students:

- Ruler (one per student)
- Pen or pencil (one per student)
- Protractor (one per student)
- Scissors (one per student)
- Cardboard or card stock to make 8" by 8" square triangle pattern (one per student)
- Eight inch square cardboard or card stock for backing (one per student)
- Scraps of colored paper, greeting cards, old magazines or catalogs
- "Quilt Math" worksheet (one per student)
- Glue (one per student)
- 8 1/2" by 11" piece of paper (one per student)

Teacher:

- A variety of fabric scraps for quilt squares (scrap material and rags from home cut into squares)
- "Quilt Math" worksheet overhead
- "Quilt Square Example" overhead

BACKGROUND

There are many traditions of quilt making throughout the world. In the United States, factory-made blankets were not made until the industrial revolution (midnineteenth century). Prior to that, fabric was expensive to buy, so scraps of materials were reused and pieced together to make bedding. Historical and modern quilts are made from both new and used fabric. Used fabric from clothing items was meant to remind the viewer of the person who wore the clothes. There is a strong African American quilting tradition of making each quilt quite different, using bright contrasting colors and repeating patterns or stripes. Alice Walker from Berkeley is well-known as the author of the book *The Color Purple* and for her many beautiful quilts. Today, both natural and manmade fabrics are made from natural resources such as animals, plants, and fossil fuels. Fabric is cloth made of fibers. Natural fibers come from animals and plants, e.g., cotton, flax, wool, silk.

Manmade fabrics can be made from petroleum. Manmade fibers found in fabrics such as acrylic, rayon and polyester are made through a chemical process. When fabric is reused, the natural resources used to make the fabric are conserved and do not unnecessarily end up in landfills.

Vocabulary:

Equilateral: a triangle having all sides or faces that are equal.

Isosceles: a triangle having two equal sides.

Quilt: a bed coverlet of three layers: a top, middle, and bottom. The middle layer is a filling of wool, cotton, down, etc.

Reuse: extending the life of an item by reusing it again as it is or creating a new use for it.

Scalene: a triangle having all sides of unequal length.

Triangle: a plain figure that has three sides and three angles.

PROCEDURE

1. Ask the students what they know about fabric. What types of fabric can they name? Explain to the students that fabric is sometimes made from natural resources such as plants. For example, jeans are made from cotton.
2. Explain how people have historically reused scraps of fabric by sewing them together to make bedding or clothing.
3. Ask students whether they know anyone who makes quilts today.
4. Discuss how even though blankets are affordable, people still enjoy making their own quilts by reusing scraps of material they have saved.
5. Explain that when people reuse items such as fabric, they are conserving natural resources and creating less waste for our local landfill.
6. Tell the students that they will be making their own quilt squares out of reused fabric or reused paper.

Activity

1. Post the overhead of the student worksheet, and introduce the activity. Model how to make a cardboard square to use as the quilt square backing.
2. Ask students whether they can name different types of triangles. Write the names of each triangle on the board (e.g., equilateral, isosceles, scalene).
3. Draw an example of each triangle next to its name and ask students to describe the properties of each type.
4. Next, model how to make one triangle of a quilt square by reviewing the directions on the “Quilt Math” worksheet.

5. Pass out the “Quilt Math” worksheet and distribute the materials.
- 8.. Have the students complete the “Quilt Math” worksheet.
9. Ask the students to choose the best triangle they made and cut it out of their paper pattern when finished completing the worksheet. This triangle will be used as their triangle pattern.
10. Next have them cut out eight triangles from scraps of fabric or other material using their triangle pattern. Then glue the eight triangles onto the cardboard backing to form one complete quilt square. Explain that triangles of similar colors should touch only at the corners. Show the teacher overhead “Quilt Square Example” to model how the quilt square will look when it is completed.
11. When the students have completed their quilt squares, have them place each square on the classroom floor and tape the squares together to form a complete quilt.
12. Ask the students how much fabric has been saved because the classroom quilt is made from reused materials. Help students calculate the fabric or paper savings by multiplying the size of one quilt square by the total number of students in the class.

Discuss

1. Discuss with the students ways that their quilt squares could be used such as making clothing, curtains, etc.
2. Ask the students to share ideas about other projects where they could reuse fabric. Making quilts is one example of reusing materials and conserving resources.
3. Hang the reuse quilt on a wall in the classroom.
4. Ask students to write different ways they could use their fabric quilt squares at home or school. Have them brainstorm a list of materials they have at home that could be used in place of fabric to make a quilt.

ANALYSIS

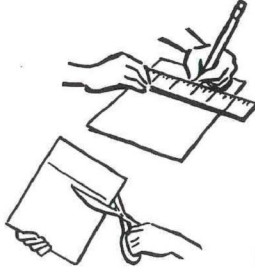
Through this process students can discuss their values with others and see how their actions can decrease the amount of material being landfilled and reduce human consumption of natural resources.



Student

Quilt Math

Directions: Using cardboard and fabric or reused paper, follow the directions and answer the questions to complete a reuse quilt square by using a ruler, protractor, pencil and scissors.



1. In this lesson, you will make a quilt square.
First, make an eight-by-eight-inch square out of cardboard for the backing.
Using your ruler, measure eight inches for the length and width and cut out the square. How wide and long is the square pattern?
_____ inches (It should be the same width and length).



2. Repeat this process to make a square out of a piece of paper. This will be used to make your quilt pattern.

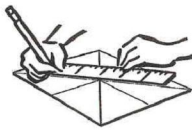


3. Divide the length or width of the paper square by two and show your result. _____ inches



4. Now measure this distance on the length of the square and draw a straight line through the square. Measure this distance on the width and draw a line through the square. Your original square should now be divided into four identical squares.

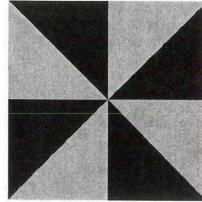
5. Make the four squares into eight triangles. These triangles will have two equal sides and one longer side.



6. To make the triangles, choose a square to start with. Measure forty-five degrees on your protractor and make a mark. Now go to opposite corner of the square, and measure forty-five degrees with your protractor. Make a mark. Now connect your two marks by drawing a line. Repeat on each square.

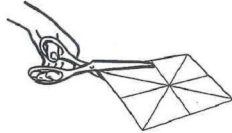


Your pattern should now have eight triangles and look like this:



7. Review the definitions for the three different kinds of triangles below and identify which type you have just made.

- **Scalene:** a triangle having three sides of unequal length.
- **Equilateral:** a triangle having all sides or faces that are equal.
- **Isosceles:** a triangle having two equal sides.



8. Now cut out one triangle and use this to measure eight fabric triangles that will become a quilt square.

9. Glue the fabric triangles on the cardboard backing.

Is this type of triangle an equilateral, scalene or isosceles triangle?

10. Describe how reusing fabric to make a quilt can help save natural resources.



Quilt Square Example

