Name: _____ Date: _____

Why Quilters Cut Squares in Half

Circle group

Look at a patchwork quilt. You will often see small squares split from corner to corner into two colors. These are called half-square triangles. A quilter makes one by cutting a square along its diagonal. This makes two triangles that match.

Each triangle is half the area of the square. Say a square of cloth is 6 inches on each side. Its area is 36 square inches. Area is length times width. Cut it on the diagonal. Each triangle covers 18 square inches. A triangle's area is half of its base times its height. Here the base and the height are both 6 inches.

Then a quilter sews a light triangle to a dark one along the long edge. They make a new square. It has one color on each side of a slanted line. Many patches in a row make pinwheels, zigzags and stars.

A quilter must plan the measurements. Cloth is joined with a seam allowance. It is usually a quarter inch. That strip of cloth goes into the stitching. If a quilter forgets it, the patches come out too small. So quilters often cut squares a bit big. Then they trim them. Good quilts need exact angles and areas. The math is part of the craft.

Questions

1. What is a half-square triangle?

_____

_____

2. What is the area of a square that is 6 inches on each side?

_____

_____

3. What is the area of each triangle after the cut?

_____

_____

4. What is a seam allowance?

_____

_____

5. Why do quilters cut squares a bit big?

_____

_____

6. What happens if a quilter forgets the seam allowance?

_____

_____

Words to know

diagonal: a straight line from one corner of a square to the opposite corner
area: the amount of flat space inside a shape
allowance: an extra amount set aside for a purpose
patchwork: cloth made from many small pieces sewn together

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Quilters Cut Squares in Half

Triangle group

Look closely at a patchwork quilt and you will often find small squares that are split corner to corner into two colors. These patches are called half-square triangles, and they hide a lot of geometry. A quilter can make one by cutting a square of fabric along its diagonal, which makes two triangles that match perfectly.

Each triangle has exactly half the area of the square. A square of fabric that measures 6 inches on each side has an area of 36 square inches, since area is length times width. Cut it on the diagonal and each triangle covers 18 square inches. A triangle's area is half of its base times its height, and here the base and height are both 6 inches.

Quilters then sew a light triangle to a dark one along the long edge. The two pieces join to form a new square, with one color on each side of a slanted line. Repeating the pattern across many patches creates pinwheels, zigzags and stars.

Planning requires care with measurements. Fabric is joined with a seam allowance, usually a quarter inch, which is the strip of cloth that disappears into the stitching. A quilter who forgets to count that strip will end up with patches that come out too small. Because of this, quilters often cut their squares a little larger than the finished size and trim them down afterward. Good quilts depend on exact angles and areas, and the math is part of the craft.

Questions

1. What is a half-square triangle?

_____

_____

2. What is the area of a square that is 6 inches on each side?

_____

_____

3. What is the area of each triangle after the square is cut on the diagonal?

_____

_____

4. What is a seam allowance?

_____

_____

5. Why do quilters often cut their squares a little larger than the finished size?

_____

_____

6. What would happen if a quilter forgot to count the seam allowance?

_____

_____

Words to know

diagonal: a straight line from one corner of a square to the opposite corner
area: the amount of flat space inside a shape
geometry: the part of math about shapes and sizes
allowance: an extra amount set aside for a purpose
patchwork: cloth made from many small pieces sewn together

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Quilters Cut Squares in Half

Square group

Examine a patchwork quilt closely and you will frequently discover small squares that have been divided from corner to corner into two contrasting colors. These patches, known as half-square triangles, conceal a surprising amount of geometry. A quilter can create one by slicing a square of fabric along its diagonal, which produces two triangles that match each other perfectly.

Each triangle possesses exactly half the area of the original square. A square of fabric measuring 6 inches along each side has an area of 36 square inches, since area equals length multiplied by width. After the square is cut along its diagonal, each triangle covers 18 square inches. A triangle's area is half of its base multiplied by its height, and in this case the base and the height are both 6 inches.

The quilter then stitches a light triangle to a dark one along their long edges, and the two pieces combine to form a new square that displays one color on either side of a slanted line. Repeating the arrangement across numerous patches produces pinwheels, zigzags and stars.

Planning demands careful attention to measurements. Fabric is joined with a seam allowance, typically a quarter inch, which is the narrow strip of cloth that vanishes into the stitching. A quilter who neglects to account for that strip will find that the finished patches turn out too small. For this reason, quilters often cut their squares slightly larger than the intended finished size and trim them afterward. A well-made quilt depends upon precise angles and areas, and the mathematics is an essential part of the craft.

Questions

1. What name is given to the small squares split corner to corner into two colors?

_____

_____

2. What is the area of a fabric square measuring 6 inches on each side?

_____

_____

3. What area does each triangle cover once the square has been cut on the diagonal?

_____

_____

4. How does the passage describe a seam allowance?

_____

_____

5. Why do quilters frequently cut squares slightly larger than the finished size?

_____

_____

6. What would be the result if a quilter neglected the seam allowance?

_____

_____

Words to know

diagonal: a straight line from one corner of a square to the opposite corner
area: the amount of flat space inside a shape
geometry: the part of math about shapes and sizes
allowance: an extra amount set aside for a purpose
patchwork: cloth made from many small pieces sewn together

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Why Quilters Cut Squares in Half

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Why Quilters Cut Squares in Half

Easier · 206 words · Flesch-Kincaid grade 3.5

1. A triangle made by cutting a square along its diagonal.
2. 36 square inches.
3. 18 square inches.
4. The strip of cloth, usually a quarter inch, that goes into the stitching.
5. The seam allowance uses some cloth, so they trim the patches later.
6. The patches come out too small.

Triangle: Why Quilters Cut Squares in Half

This passage · 245 words · Flesch-Kincaid grade 7.6

1. A triangle made by cutting a square along its diagonal.
2. 36 square inches.
3. 18 square inches.
4. The strip of cloth, usually a quarter inch, that disappears into the stitching.
5. The seam allowance uses up some cloth, so they trim the patches down afterward.
6. The finished patches would come out too small.

Square: Why Quilters Cut Squares in Half

Harder · 264 words · Flesch-Kincaid grade 10.8

1. Half-square triangles.
2. 36 square inches.
3. 18 square inches.
4. The narrow strip of cloth, typically a quarter inch, that vanishes into the stitching.
5. The seam allowance consumes some cloth, so they trim the patches down afterward.
6. The finished patches would turn out too small.