

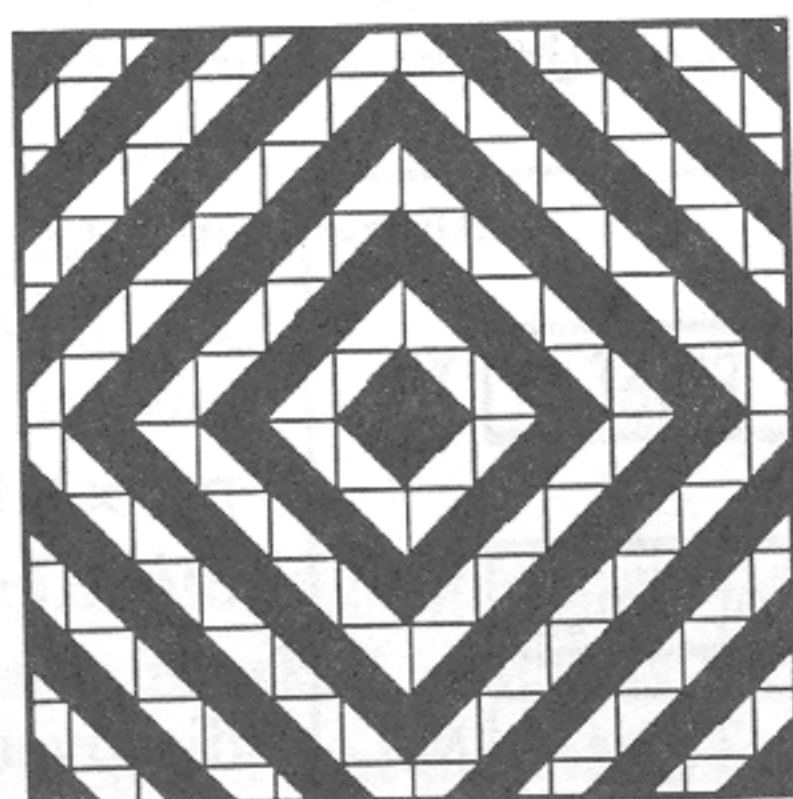
## Quilting: More Than Meets the Eye

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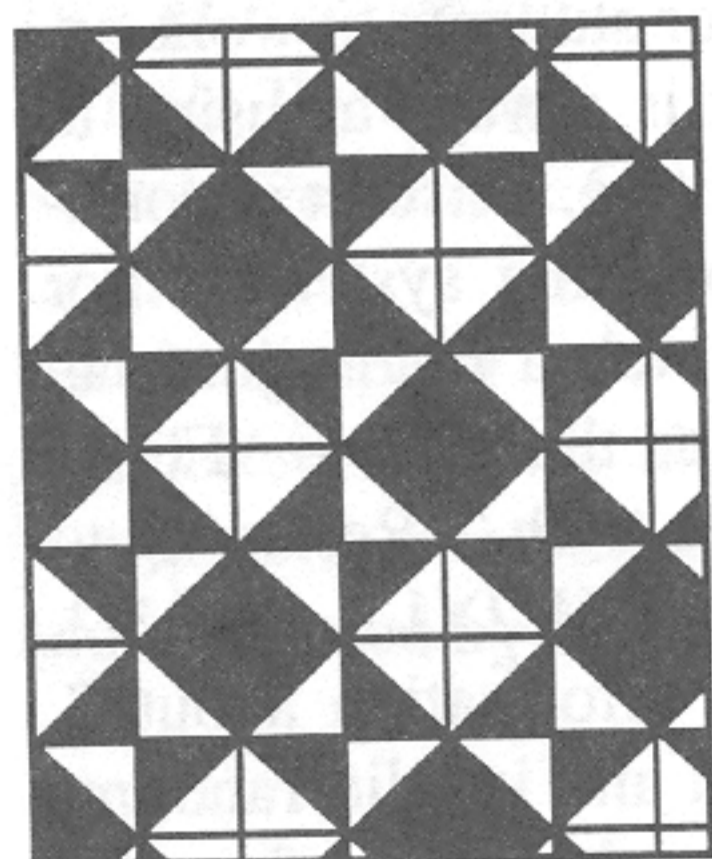
At first glance a quilt may appear to be just pieces of fabric sewn together. Upon closer inspection you may notice its colors, stitching, and patterns.

*"From the earliest grades, the curriculum should give students opportunities to focus on regularities in events, shapes, designs and sets of numbers. Children should begin to see that regularity is the essence of mathematics."* (NCTM Standards, 1989A p. 60)

In the lower grades (K-3), students usually get their first experiences with patterns through auditory, physical, and linear patterns. Auditory patterns could be iterations, for example, "Clap, Tap, Stomp", a song that builds like "I Know An Old Lady Who Swallowed a Fly," or a story that repeats such as *Brown Bear, Brown Bear* by Eric Carle. An example of a physical pattern is an arrangement of students in a Sit, Sit, Stand configuration. Linear patterns can be created by stringing macaroni or beads onto a string or constructing a paper chain. Experiences with a Hundreds Chart, or with arranging pattern blocks, beans or buttons, can also provide worthwhile experiences with patterns.



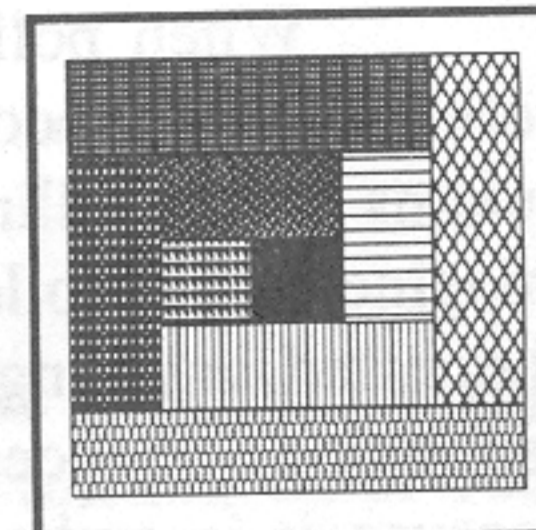
Quilts provide an excellent way to introduce two-dimensional patterns. Quilting is more than material and batting. Quilt construction uses counting techniques, tessellations, and measurement. Some pattern concepts include repeat, reflect, slide, flip, turn, skip, rotate, as well as symmetry, parallel, and perpendicular, all of which are good vocabulary words for young students to grasp. People of all ages and backgrounds are fascinated by quilts.



Most quilts that you see are comprised of one basic block that is reproduced and either translated, reversed, or rotated to achieve different effects. For example, a simple block could be a square divided diagonally into two triangles, one light and one dark. These blocks can be combined in many different ways to construct a quilt, as shown in the the two quilts above. Also, if more than one basic block is used, you can make interesting variations (see bottom of page 11).

The first author has used quilting and quilt patterns with students at levels K-4 to broaden their knowledge of

patterns and as a vehicle to link quilting to other areas of the curriculum. For example, the log cabin pattern shown to the right was created during the Lincoln presidential campaign. Its name is in honor of Abraham Lincoln's humble beginnings. The pattern is created by sewing rectangular material strips around a center square, as shown here. The first log cabin quilts were made of fabric scraps from various articles of clothing and other recycled material. Different quilts are created by manipulating the basic block, which is simply a variation on the square divided diagonally. When made using log cabin blocks, the top quilt pattern in the left column is called "Barn-Raising."



Wallpaper scraps provide good material for making log-cabin quilts. Students can sort the strips into dark and light and measure and cut strips of the desired lengths. After gluing down a center square, students place strips around the center in a coiling fashion to create the blocks. Students can work in groups of four to see how many variations can be produced by combining four blocks.

Quiltmaking raises mathematical questions as well. If a piece of material must be 1/4" larger on each side to provide a seam allowance, how much material of each color must be purchased? How much material is "wasted" for scraps and or seam allowances versus the actual quilt top? How many different geometric shapes can be found within a given quilt?

Traditionally, each piece of material was cut out individually and sewn together to form the top. Today, modern quilters use various devices and methods to increase their accuracy and to save time. These include using a special plastic guide mat with a grid, a ruler and a rotary cutter. The rotary blade looks like a very sharp pizza cutter. Quilters can cut up to six thicknesses of fabric quickly and accurately. Given a piece of fabric, what is the best method to use to produce a given number of shapes using the fewest cuts?

After the material is cut, quilters often use a speed-piecing or strip-quilting technique. In a split rail quilt several pieces of fabric are sewn together, ironed and then cut to a given length. The long rectangle in the picture is cut horizontally into pieces which are arranged in a pattern of horizontal,

