

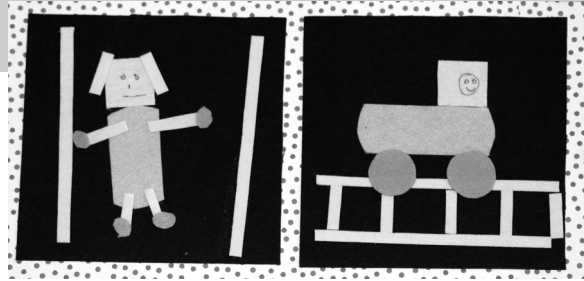
Teaching Mathematics in Early Childhood

ACTIVITY 5.1

The Magnificent Shape Quilt

Materials

- The following materials are needed for this activity:
- Felt squares, 6×6 inches, cut from felt in bright colors
- Small geometric shapes, in standard and nonstandard configurations, cut from bright colors of felt with a self-adhering backing
- Puffy paint, to use to write each child's name on the finished quilt squares



Description

Each child can experiment with positioning shapes to create an individual collage. Older preschool and kindergarten children should be encouraged to arrange and rearrange their shapes until they are satisfied with the result. At this point, the backing can be removed and the shapes mounted to the felt squares. (Younger children may be more interested in the process of mounting the shapes to the backing than in creating a specific piece of artwork.) As children engage in the process of creating their quilt squares, they may observe the ways in which shapes fit together to create larger shapes. Children may also create symmetrical or linear patterns, form representational images, or simply design a random shape collage. From a mathematics perspective, the conversation that accompanies the activity is a critical component; therefore, teachers should plan for an adult to be seated with the children as they work on their designs. Once the squares are completed, each child's name can be added with puffy paint. The quilt squares can be whip-stitched together or mounted to a backing to create a class quilt.

Quilts provide a fascinating array of geometric representations for children to study. It is helpful if children have the opportunity to examine quilt designs, either on actual quilts or in photographs, before they work on this project. Calendars, books, and Internet web sites are good sources of photographs of quilts. Many children's books have a quilt theme and provide an excellent connection to this activity. A list is provided in the integrated curriculum section of this chapter.

Because this activity uses geometry as a creative endeavor, there is no specific math question to solve; however, mathematical problems may arise from teacher comments or questions. For instance, during the exploration process, the teacher might ask children what they could make with four triangles, two rectangles, a circle and a triangle, and so forth.

Math Discussions

Many excellent topics of conversation should emerge during this project. Children who are just learning the names of shapes should have this vocabulary reinforced by the teacher. During the activity, children should be encouraged to experiment with placing some shapes so that they touch other shapes, although the final design should, of course, be the child's choice. When children combine shapes, this should be discussed. The teacher might say, "What happened when you put a square and a triangle together?" The child may reply that she created a house, and the teacher can agree while adding that in geometry that shape is called a "pentagon." Teachers should also look for symmetrical relationships that children may create. Some children may begin with a

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central shape and then branch out, in a symmetrical fashion, from that starting point. Other topics of conversation might be items that are the same shape, but a different size; how shapes look when they are turned (rotated), or flipped; and the types of lines that form the edges of the shapes.

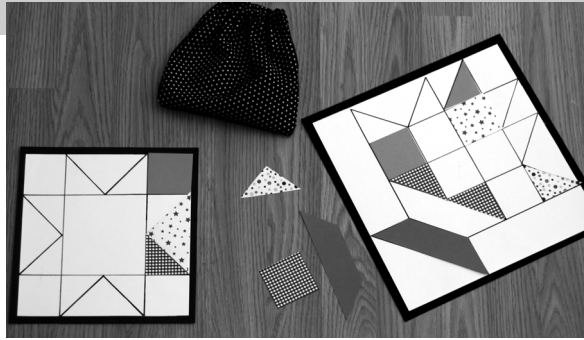
ACTIVITY 5.2

Quilt Bingo

Materials

The following materials are needed for this activity:

- Quilt-square game board for each child, created by tracing quilt designs that feature geometric shapes onto paper and mounting them to poster or tag-board
- Shapes that match all those used on the game boards, made by cutting the shapes from heavy-weight, colored paper and laminating (scrapbook paper is a good source)
- Grab bag, to hold the shapes



Description

This activity coordinates with the previous quilt activity and may serve as a precursor to it. Children take turns passing the grab bag and drawing shapes to match those on their game boards. The matching process encourages children to focus on the attributes of the shapes, especially when they are searching for a particular shape to complete their boards. In the process of playing the game, children may observe how particular shapes are combined to create interesting patterns.

Math Discussions

Once again, the discussions that occur during this activity are a critical component of the learning. Without the accompanying math talk, children may match shapes, but not learn their names or notice the patterns that they create. A main focus of the conversation should be on the attributes of the various shapes. For example, if a child is looking for a triangle, the teacher might ask whether it will have straight or curved sides, and how many points it will have. After several teacher-led clues, children may begin on their own to look for particular attributes.

In this activity, the mathematical problem is how to use the attributes of shapes to find particular shapes in the grab bag and then match them to the board. In many cases, children will need to use transformations to fit shapes into their proper spaces. Teacher scaffolding may be necessary, especially when flips are involved.

This activity also provides an excellent opportunity to talk about transformations. As children draw shapes from the grab bag, at first they may not be able to visualize where the shape can fit on their game boards. The teacher may need to scaffold, such as suggesting that the child turn the shape and look at it again. Other children can be brought into the conversation. For example, the teacher might say, “Jay, can you see a place where Margaret’s shape will fit on her board? What does she have to do to make it fit?” Conversations such as this help children not only to visualize the results of transformations but also to learn the accompanying terminology.