

## Pattern Blocks and Pattern Block Frames

### Materials Needed

Pattern Blocks (all blocks of the same shape are the same color)  
Pattern Block Frames

### Purpose of Activities

As they use the Pattern Blocks and Pattern Block Frames children are actively engaged in mathematics that is both fun and meaningful. When they discover that some combinations of pieces can replace others, that a frame can be filled in more than one way, or that a different number of blocks can fill the same frame, students gain confidence in their ability to solve problems and do mathematics.

Manipulating Pattern Blocks to fit the cutout design of each frame helps students to develop spatial reasoning. For example, in one arrangement the trapezoid may be used with the long side down, whereas in a different one, the short side may be down.

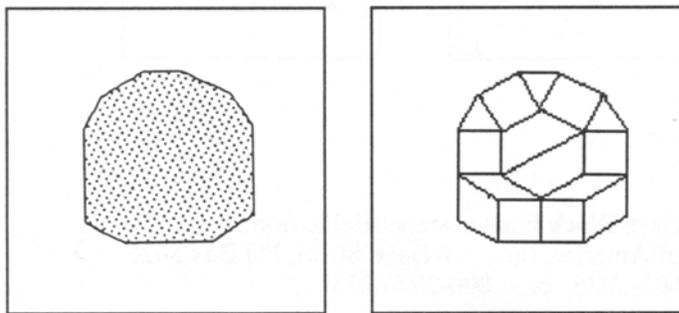


Over time, students can generalize from (A) to (B) below:

- (A) The trapezoid hasn't changed; only its position in space has changed.
- (B) All of the shapes remain the same no matter how they are positioned.



Combining pieces allows young children to begin to acquire an understanding of geometric spatial relationships in designs. By combining two or more shapes to create a new shape, students gain insight into the ways pieces fit together and how geometric shapes are related. While using Pattern Blocks and Pattern Block Frames, children can also begin to develop an intuitive sense about area, perimeter, shapes within shapes, fractions, geometric relationships, and number.



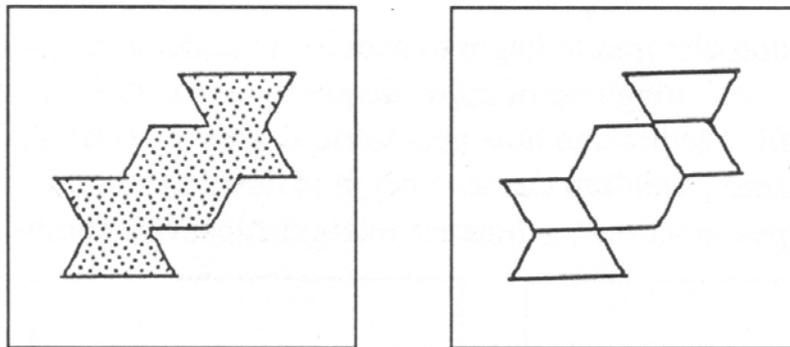
## **Beginning the Activity**

Introduce the Pattern Blocks and the Pattern Block Frames by allowing students to experiment freely with them. Place them in a designated area where children can choose to explore with them for short periods of time over several days. The information you gather as you observe will help you engage in a meaningful discussion later. Use questioning techniques aimed at stimulating students to engage in reflective reasoning about problems and to encourage further experimentation. For example, if you notice a child filling the frames only one way, you could ask, "How could you fill the frame a different way?" or, when you notice that the children have become familiar with the blocks, you could call the children's attention to the relationships among the blocks by asking, "How could you make the same shape as a yellow hexagon using different blocks?"

As students continue to work with the Pattern Blocks and Pattern Block Frames, you may want to focus their thinking by asking questions such as the following:

- How could you fill the same frame again using fewer pieces? How could you fill the same frame using more pieces? Would you like to show me?
- How many colors did you use? Can you fill the same frame using fewer colors? Can you fill the same frame using more colors? Do you want to try that?
- Do you think you can use the same pieces but arrange them in a different way? Do you want to try it?

If you are working with older children you may want to introduce the concept of symmetry by showing the children some symmetrical designs. Then you may want to ask, "How would you make your design symmetrical?" (Give students mirrors to check their designs.)



Pattern Blocks and Pattern Block Frames are available from:  
Cuisenaire Company of America, Inc. 10 Bank Street, PO Box 5026  
White Plains, NY 10602-5026 or 800-237-0338