

## Explore & Discover: **From Little to Big**

### **Focal Point**

**Geometry – Describing and analyzing properties of two-dimensional shapes.**

Reproduce a figure from a reduced size pattern or template. Match shapes with different sizes and the same orientation.

### **Materials**

- Pattern blocks

### **Instructions**

Tell the students to look carefully at the first design on the left and to take the pattern blocks needed. Then they are to copy the design, making a similar design on the right in the outline provided, repeating for each design.

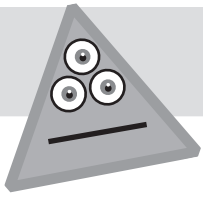
### **Guided Learning**

1. What method did you use to fill in the large outlines?



### **Explore More with PB!**

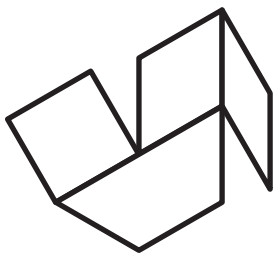
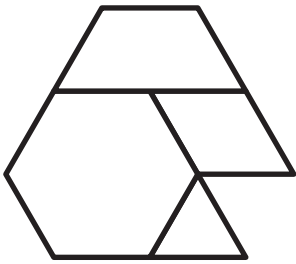
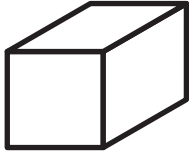
On the board or on an overhead projector, present additional designs, drawing or using overhead pattern blocks. Ask the student to copy the design on a blank page. Students may create their own designs on the overhead projector for classmates to copy at their desks.



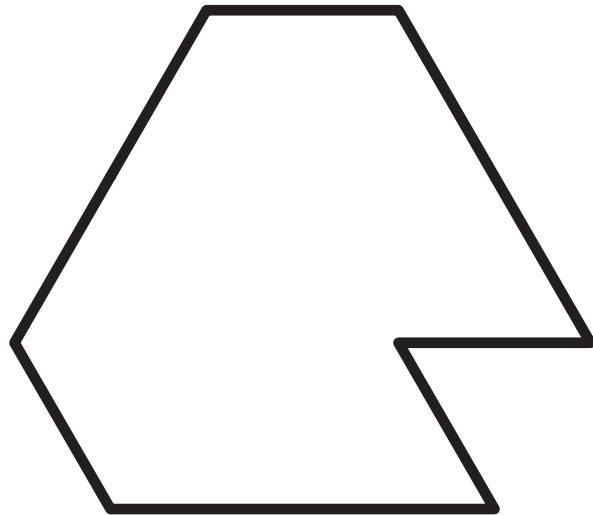
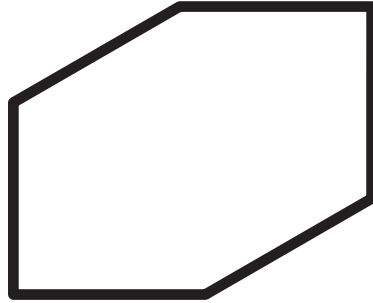
# From Little to Big

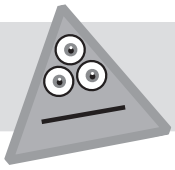
Name: \_\_\_\_\_

**LOOK**



**COPY**





## Explore & Discover: **Kites**

### Focal Point

**Geometry – Describing and analyzing properties of two-dimensional shapes.**

Investigate two dimensional shapes by covering the shapes with various combinations of pattern block pieces.

### Materials

- Pattern blocks

### Instructions

Ask the student to place the blocks on the kites, one at a time, in order (Kite A, B and then C). They can cover Kite D in any manner they choose. Have them record the number of each kind of block used for Kite D.

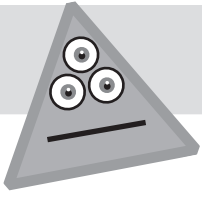
### Guided Learning

1. Which kite needed the fewest blocks? The most?
2. Why do the number of triangles vary?
3. Can you make a kite with no triangles?
4. Can you make a kite with only red blocks?



### Explore More with PB!

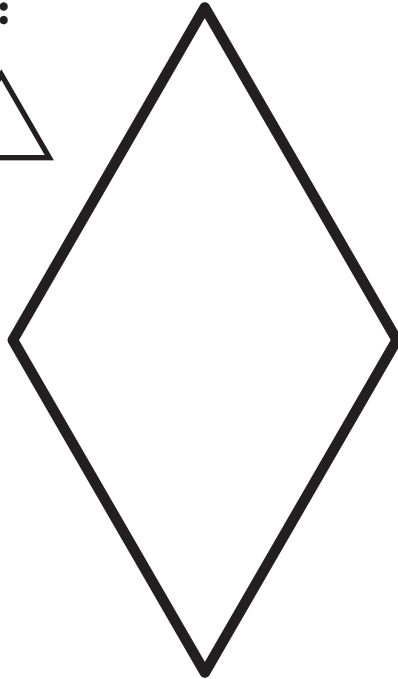
Students may use overhead pattern blocks to show their kites. Discuss the different arrangements of the blocks. Discuss the different ways students covered Kite D.



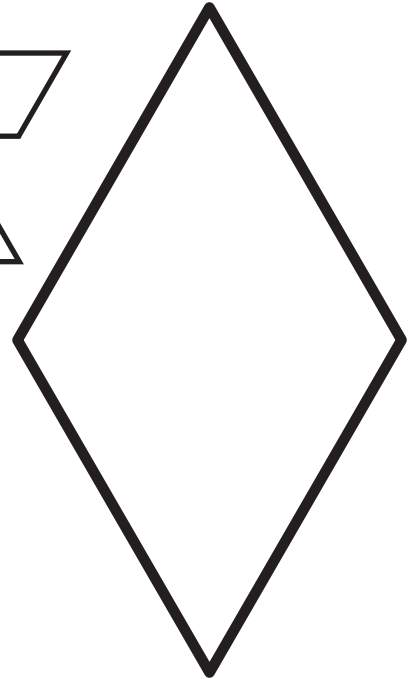
# Kites

Name: \_\_\_\_\_

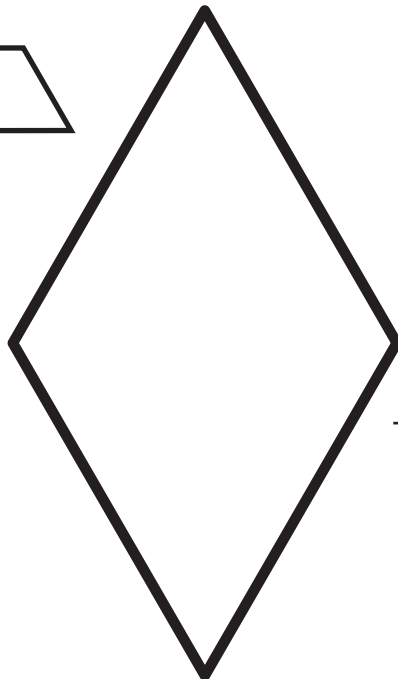
**COVER WITH:**



**Kite A**



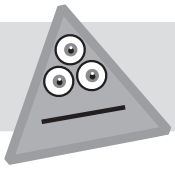
**Kite B**



**Kite C**



**Kite D**



## Explore & Discover: **What's Missing?**

### **Focal Point**

#### **Geometry – Composing and decomposing geometric shapes.**

Predict what is needed and verify the prediction, recognizing that mathematical ideas need to be supported by evidence. Explore guesses using manipulative materials.

### **Materials**

- Pattern blocks

### **Instructions**

Ask students to take the number of blocks shown. Ask them to guess which piece is missing before placing the blocks on the picture. Then they may cover the design and find the missing piece.

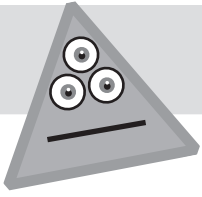
### **Guided Learning**

1. Which piece is missing?
2. How do you know?
3. Was your prediction correct?



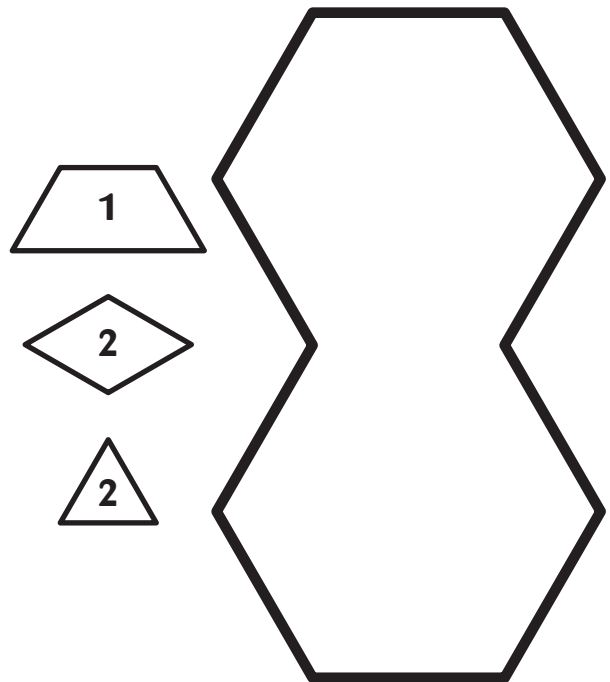
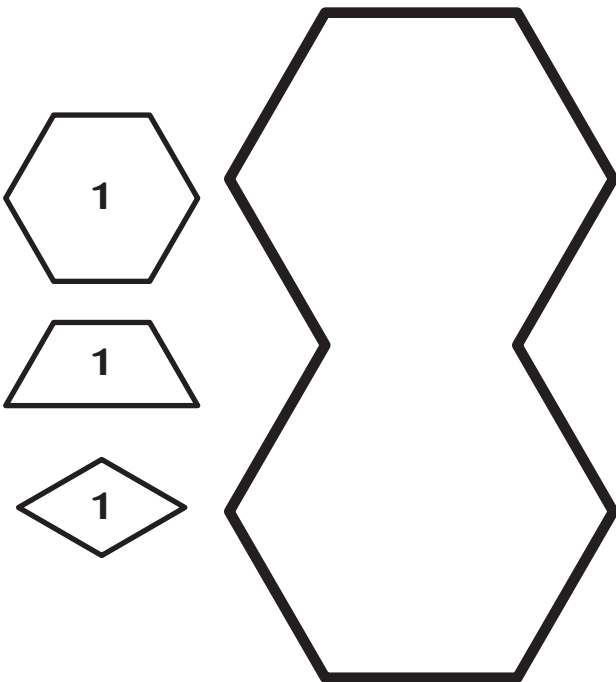
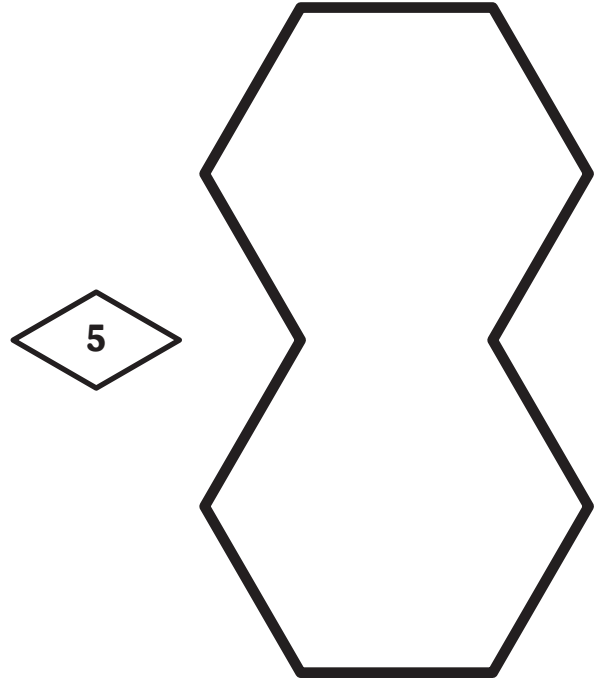
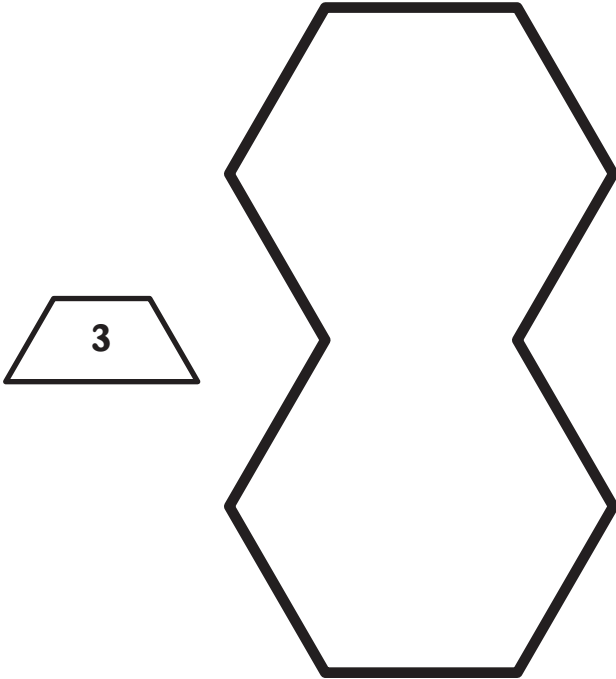
### **Explore More with PB!**

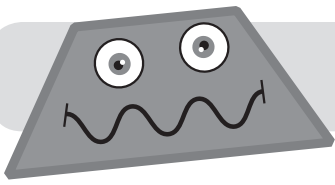
Ask a student to show an outline of a figure she has designed to a partner and list the blocks she used minus one. The partner then guesses the missing piece before placing the blocks in the new outline.



# What's Missing?

Name: \_\_\_\_\_





# Number & Operations: Trading Triangles

## Focal Point

**Number and Operations – Developing an understanding of whole number relationships, including grouping in tens and ones.**

**Geometry – Composing and decomposing geometric shapes.**

## Materials

- Pattern blocks
- Colored pencils or crayons

## Instructions/Guided Learning

Ask the students to cover design A exactly with the pattern blocks shown by the solid lines and to cover design B with triangles only.

1. How many triangles did you use altogether?

Now have students remove a rhombus from design A and remove the triangles from B that were in the place of the rhombus.

2. How many triangles replaced the rhombus?

Next, have them remove a trapezoid from design A and remove the triangles from design B that were in the place of the trapezoid.

3. How many triangles replaced the trapezoid?

4. How many triangles do you need to cover the entire design?

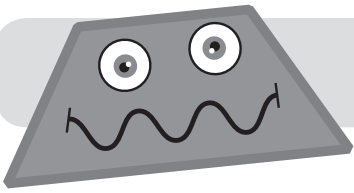
5. How many triangles would replace a hexagon?

Tell the students to use 10 triangles and make an original design in space C and outline it. Then have them make the same design in space D, but with fewer pattern blocks of any shape.



## Explore More with PB!

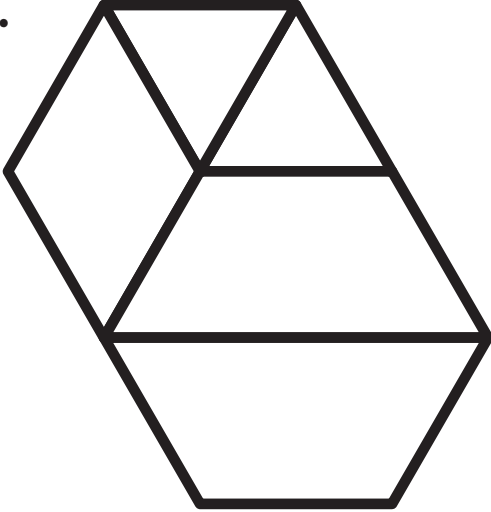
Ask students to try to make a design using the fewest possible pieces (without using triangles) that can be covered exactly with 10 triangles. Have them verify their design by covering it with 10 triangles.



# Trading Triangles

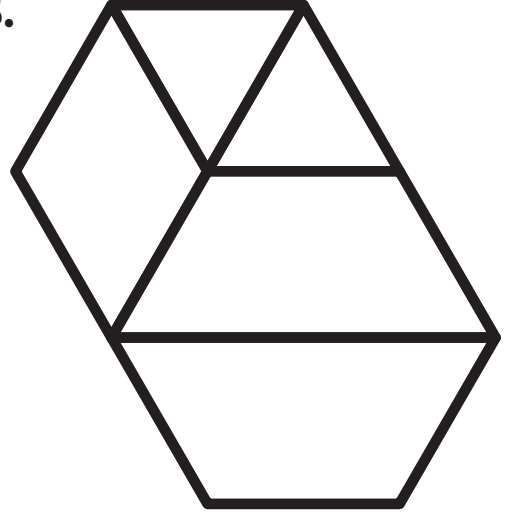
Name: \_\_\_\_\_

A.







B.

cover with 

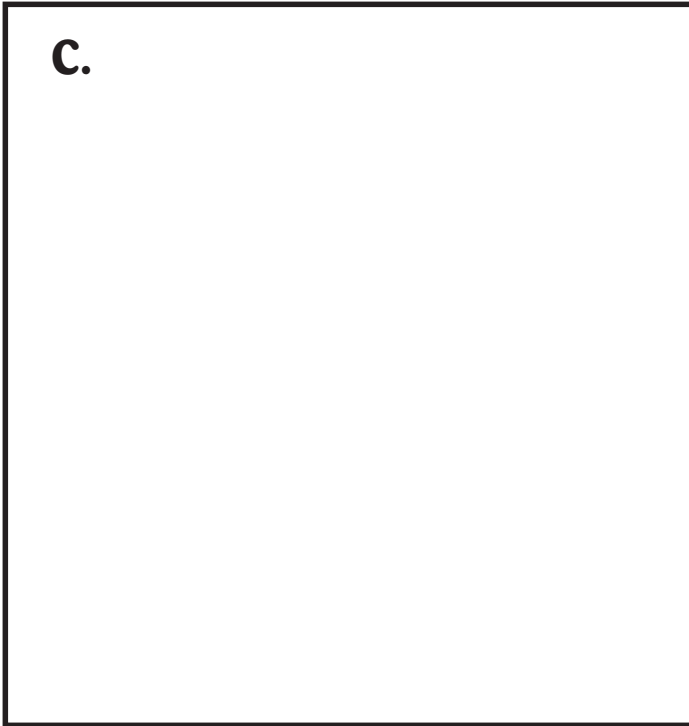


 = \_\_\_\_\_ 

 = \_\_\_\_\_ 

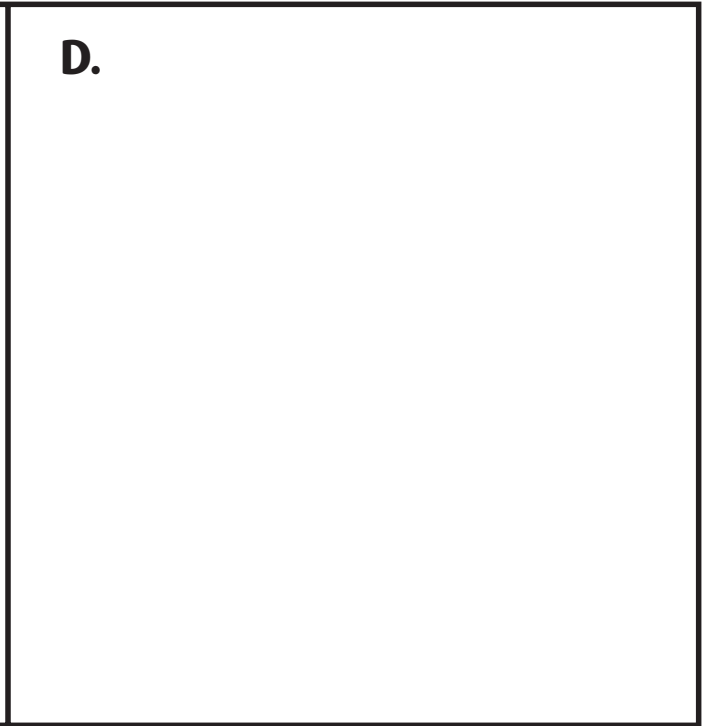
 = \_\_\_\_\_ 

C.



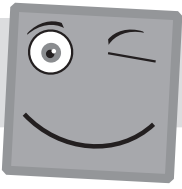
**your own design**

D.



**your own design**





# Geometry: Building Squares

## Focal Point

**Geometry – Describing and analyzing properties of two-dimensional shapes.**

Reinforce properties and characteristics of a square. Construct and extend numeric and/or geometric patterns. Reinforce counting sets of objects greater than one and less than 20.

## Materials

- 16 squares

## Instructions

Students will work in pairs or in groups of three or four. Students are constructing square numbers by using blocks to build larger and larger squares.

Tell the students that squares have four sides of equal length and four corners. Build a square that has a side of two orange blocks on the overhead or draw it on the board.

Ask students to count the number of blocks in the new square and then record the number in a space on their worksheet. Now have them build a square with a side of three orange blocks and trace around the outside, recording the total number of blocks needed. Finally, have them build a square with a side of four orange blocks and trace around the outside, once again recording the total number of blocks needed.

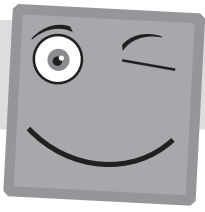
## Guided Learning

1. How many blocks are on each side of each figure?
2. How many blocks are needed to complete each figure?



## Explore More with PB!

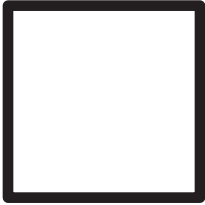
Ask students to work in groups and make a square with a side of 4 blocks. Ask them how many orange blocks are needed. How many orange blocks are on each side? Challenge question: Is there any relationship between the number of blocks on a side and the total number of blocks needed for each figure?



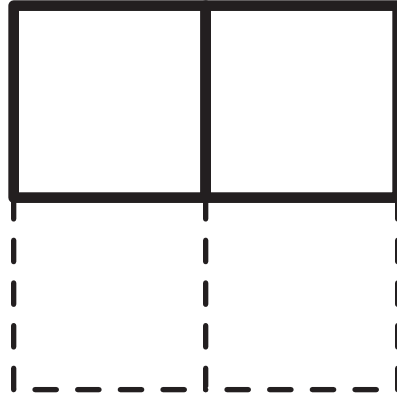
# Building Squares

Name: \_\_\_\_\_

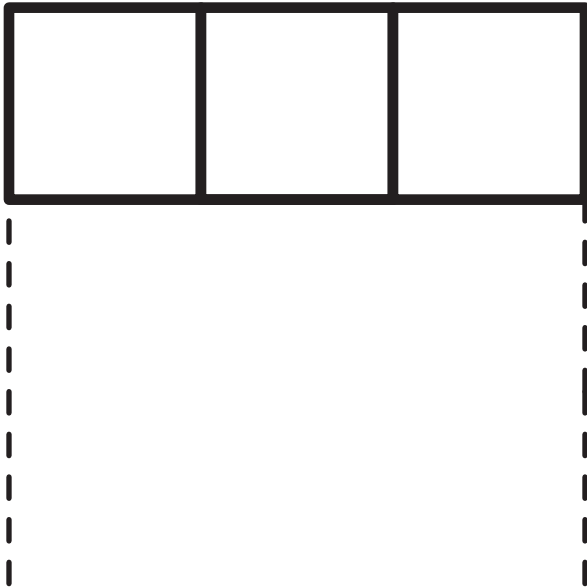
## HOW MANY SQUARES?



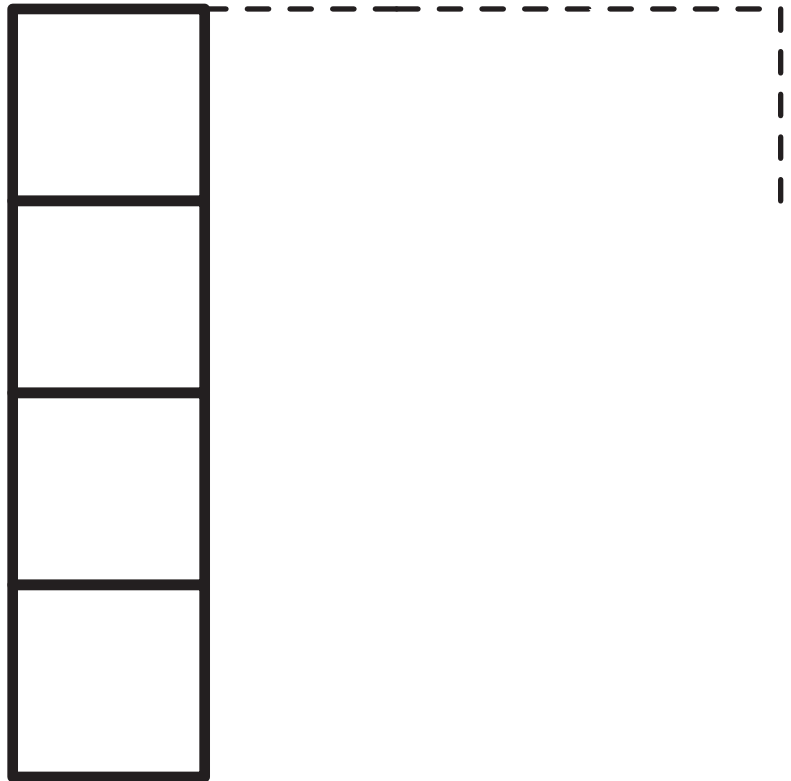
1



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_