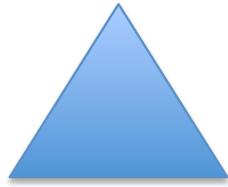


Presentation # 39875, Cavanagh & Greenes  
High on a Hill: Visualization, Spatial Reasoning, & Geometric Modeling

## Mystery Shapes



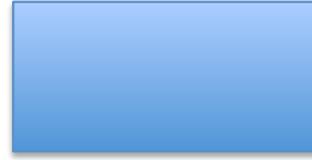
pentagon



triangle



square



rectangle

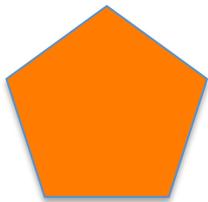
### Name my shape:

- I have one less side than a pentagon.
- All of my angles are the same size.
- All of my sides are the same length.

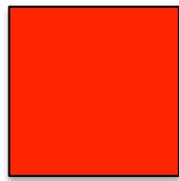
What shape am I?

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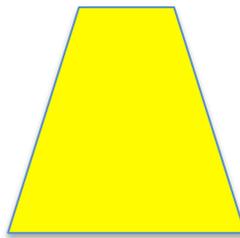
## Mystery Shapes



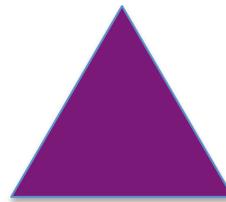
**A**



**B**



**C**



**D**



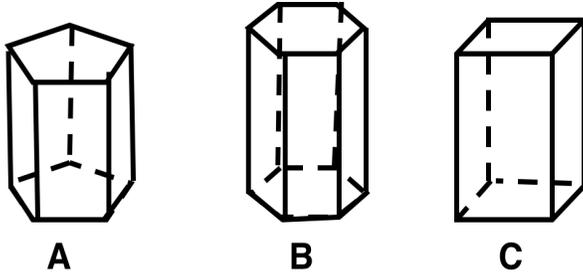
**E**

### Which shape am I?

- I have more than 3 sides.
- Two of my sides are the same length.
- My other two sides are the same length
- I am not a square.

Carole Greenes, Mary Cavanagh, Carol Findell

## X-Ray Vision Toughies



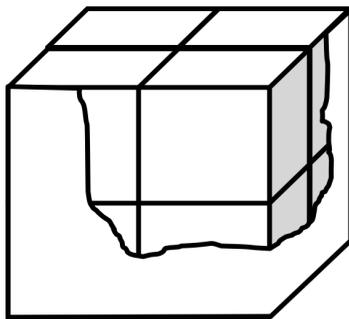
1. Which of these figures is made from 2 pentagons and 5 rectangles?
2. How many corners does it have?

---

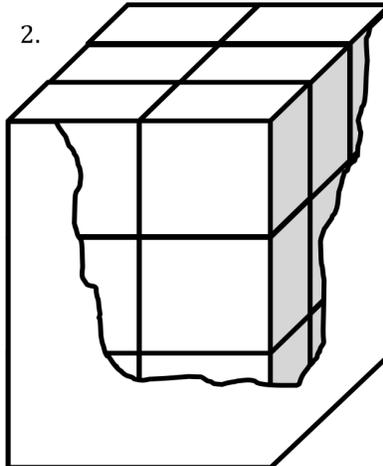
## You Can't See Everything

How can you figure out how many small cubes?

1.



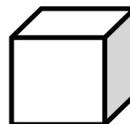
2.



Both of these blocks are made from unit cubes.

Parts of the blocks are covered.

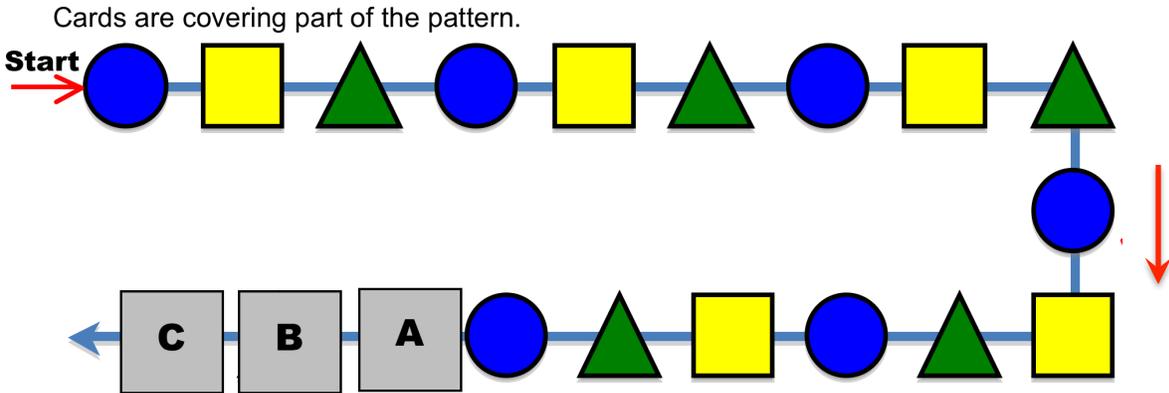
How many unit cubes are in each block?



Mary Cavanagh, Carole Greenes, Carol Findell

## Repeating Patterns

### Visualization



What shapes are under cards A? B? and C?

## Location and Position

This tower has three blocks.  
Use the clues to name the color of each block.

Clues:

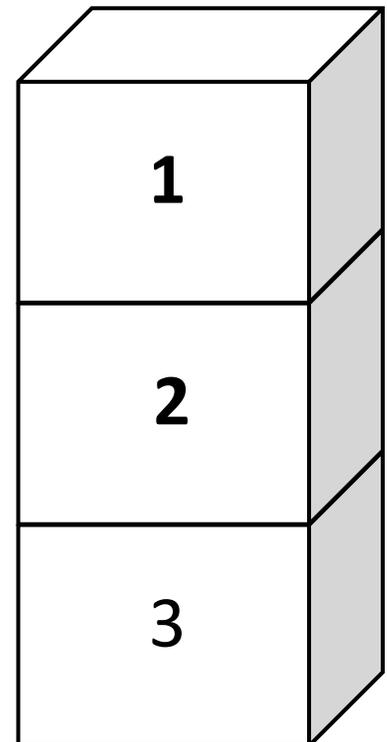
- The blocks are blue, green, or yellow.
- The blue block is in the middle.
- The yellow block is higher than the green block.

Block 1 is \_\_\_\_\_.

Block 2 is \_\_\_\_\_.

Block 3 is \_\_\_\_\_.

Mary Cavanagh, Carole Greenes, Carol Findell



## Dramatization And Spatial Exploration

### **OBJECTIVE**

To reinforce understanding of spatial terminology through body exploration of space

### **GROUP SIZE**

Whole Class

### **MATERIALS**

The story of “The Flood” (see DESCRIPTION)

### **DESCRIPTION**

The teacher narrates and dramatizes the story. The students are then directed to model the teacher’s actions as they behave like the “friendly giant” saving the peaceful village.

*Note:* The teacher should use exaggerated motions to emphasize the meaning of the capitalized words.

### ***The Flood***

Once upon a time, in a valley near a HIGH mountain, there was a beautiful little village. The people in the village were very happy. One day it started to rain. The rain came DOWN, and more rain came DOWN, and more rain came DOWN. The water in the village rose HIGHER and HIGHER and HIGHER. First the water came UP to their ankles. Then it rose HIGHER, UP to their knees; then HIGHER, UP to their waists. All of the people in the village were frightened. Even the boys and the girls and the puppies and the kittens were afraid.

Now it just so happened that on the TOP of the HIGH mountain near the village, there lived a friendly giant. What’s a good name for a friendly giant? (Have the students suggest a name.) That’s a good name for a friendly giant. (*Name*), the friendly giant, hurried to the village. When he stepped INTO the water, it was hard for him to move (slurp, slurp, slurp). Soon he reached the village. He didn’t know what to do. Then he had an idea. (*Name*) bent down, very slowly, and carefully PICKED UP the whole village and placed it ON TOP OF his head.

Let’s pretend we are all friendly giants. PICK UP the village, carefully. Put the village ON TOP OF your head. Now let’s get OUT OF all this water. It’s hard to walk IN water, so push hard with you legs. You won’t be able to go very fast. Take g-r-e-a-t b-i-g giant steps (slurp, slurp, slurp). Whew! We’re OUT OF the water. Now (*Name*) the friendly giant lifted the village UP OFF OF his head and put it DOWN on the ground. The village was safe. The people were very happy and so were the boys and the girls and the puppies and the kittens. They all thanked (*Name*) the friendly giant.

From *Big Math for Little Kids* Kindergarten ©2003 Carole Greenes, Herbert Ginsburg, Robert Balfanz, Pearson Education.

## **Hokey Pokey and Variations in a Circle: Spatial Development**

Verse 1 (High/Low):

Put your hands up high. Put your hands down low. Put your hands up high and shake them all about.

Do the hokey pokey and turn yourself around. That's what it's all about.

Verse 2 (Back/Front):

Put your backside in. Put your backside out. Put your backside in and shake it all about.

Do the hokey pokey and turn yourself around. That's what it's all about.

Verse 3 (Left/Right):

Put your right (left) foot in. Put your right (left) foot out. Put your right (left) foot in and shake it all about.

Do the hokey pokey and turn yourself around. That's what it's all about.

Verse 4 (Left/Right):

Put your right (left) hand in. Put your right (left) hand out. Put your right (left) hand in and shake it all about.

Do the hokey pokey and turn yourself around. That's what it's all about.

Verse 5 (To the Left/To the Right):

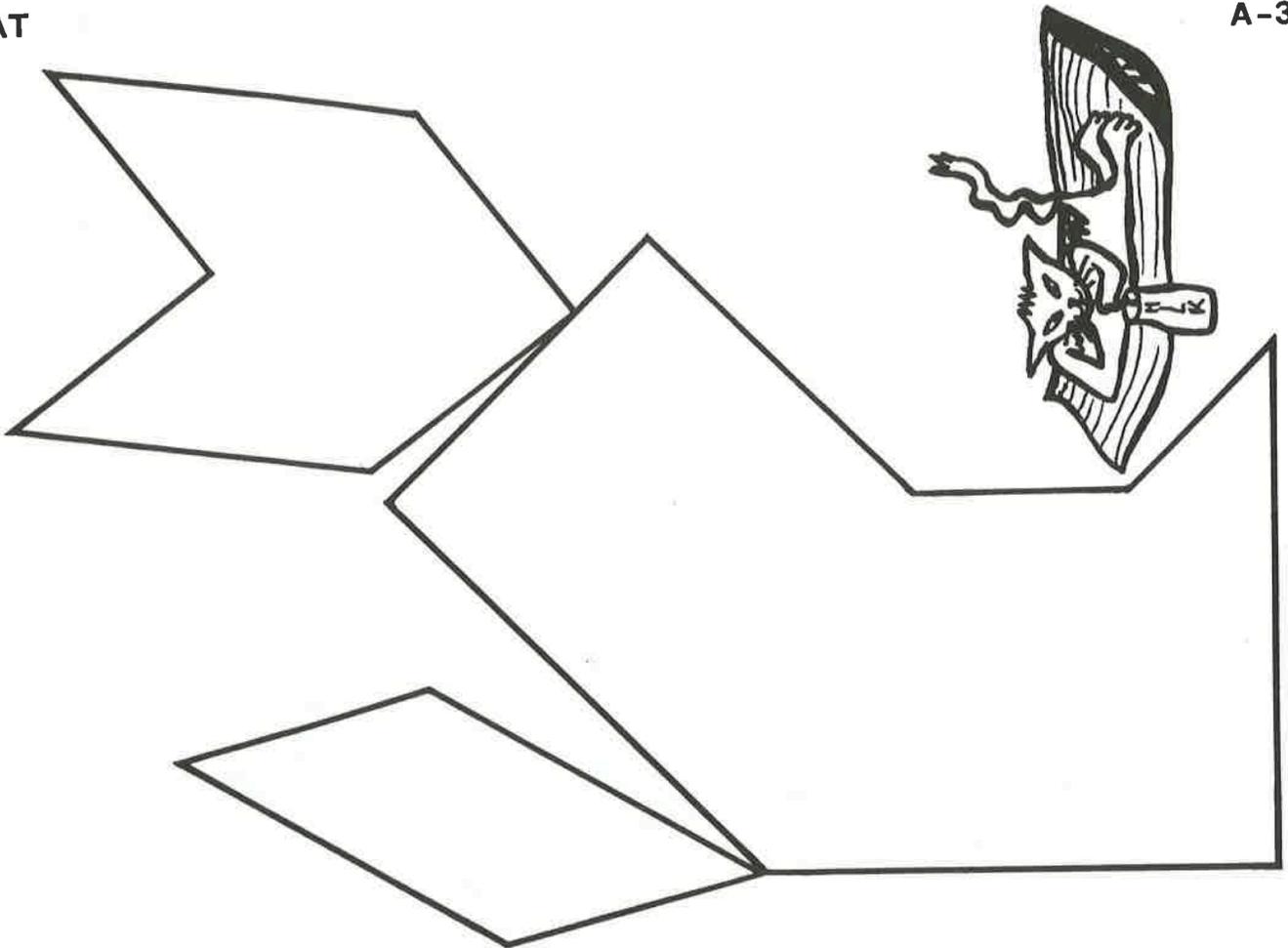
Tip your head to the left. Tip your head to the right. Tip your head to the left and twist it all about.

Do the hokey pokey and turn yourself around. That's what it's all about.

Carole Greenes & Mary Cavanagh

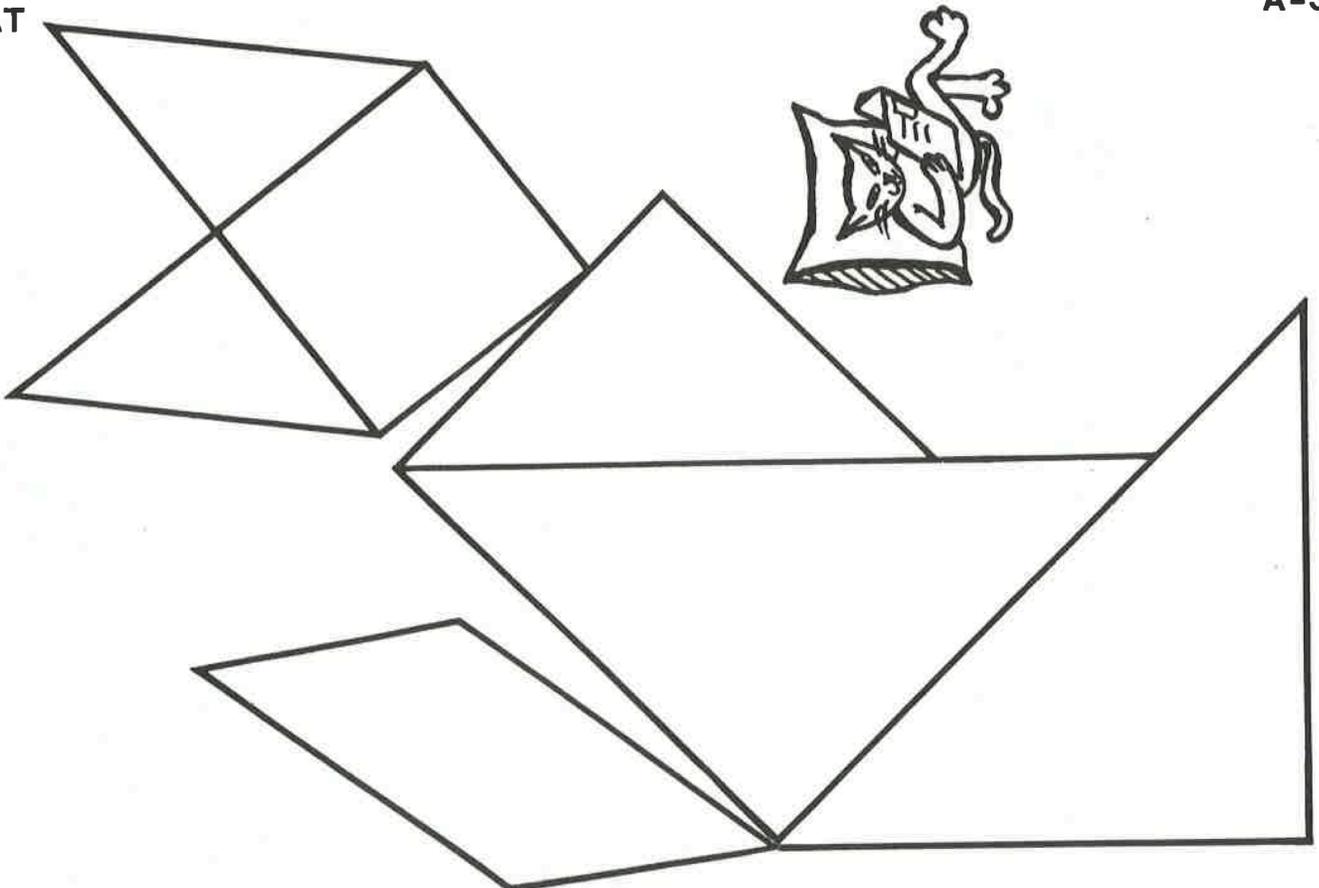
CAT

A-35



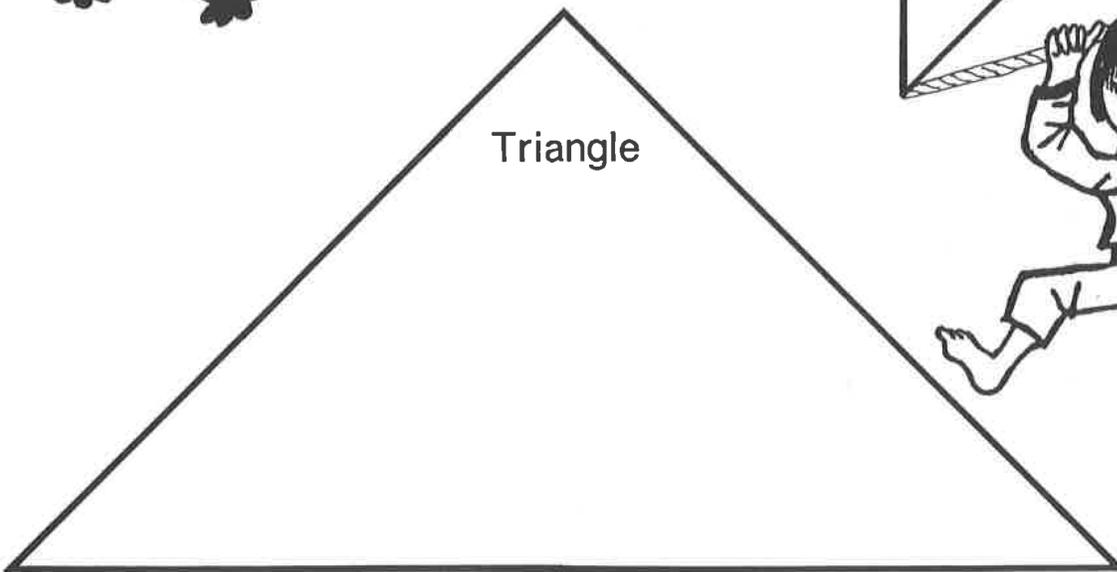
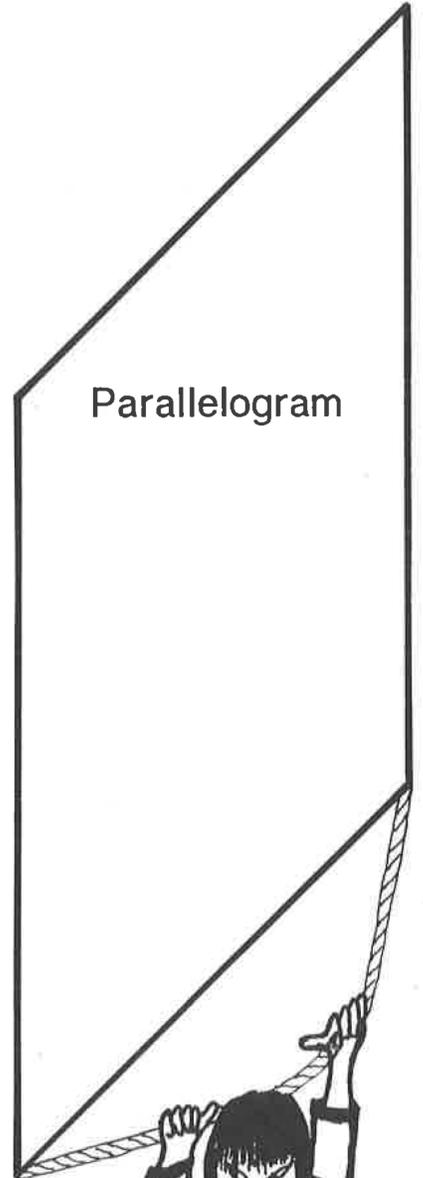
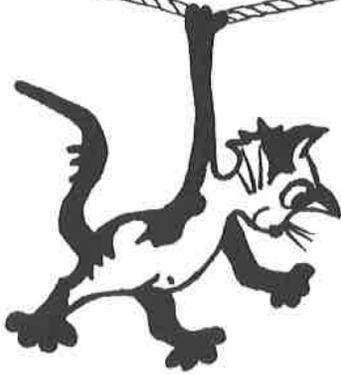
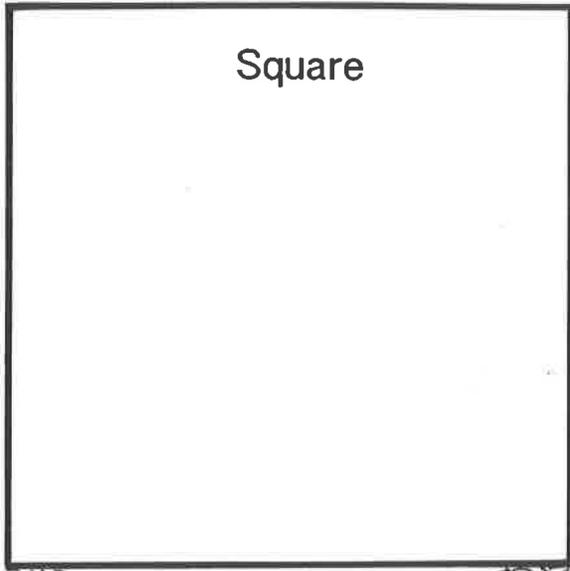
CAT

A-35



# FLYING SHAPES

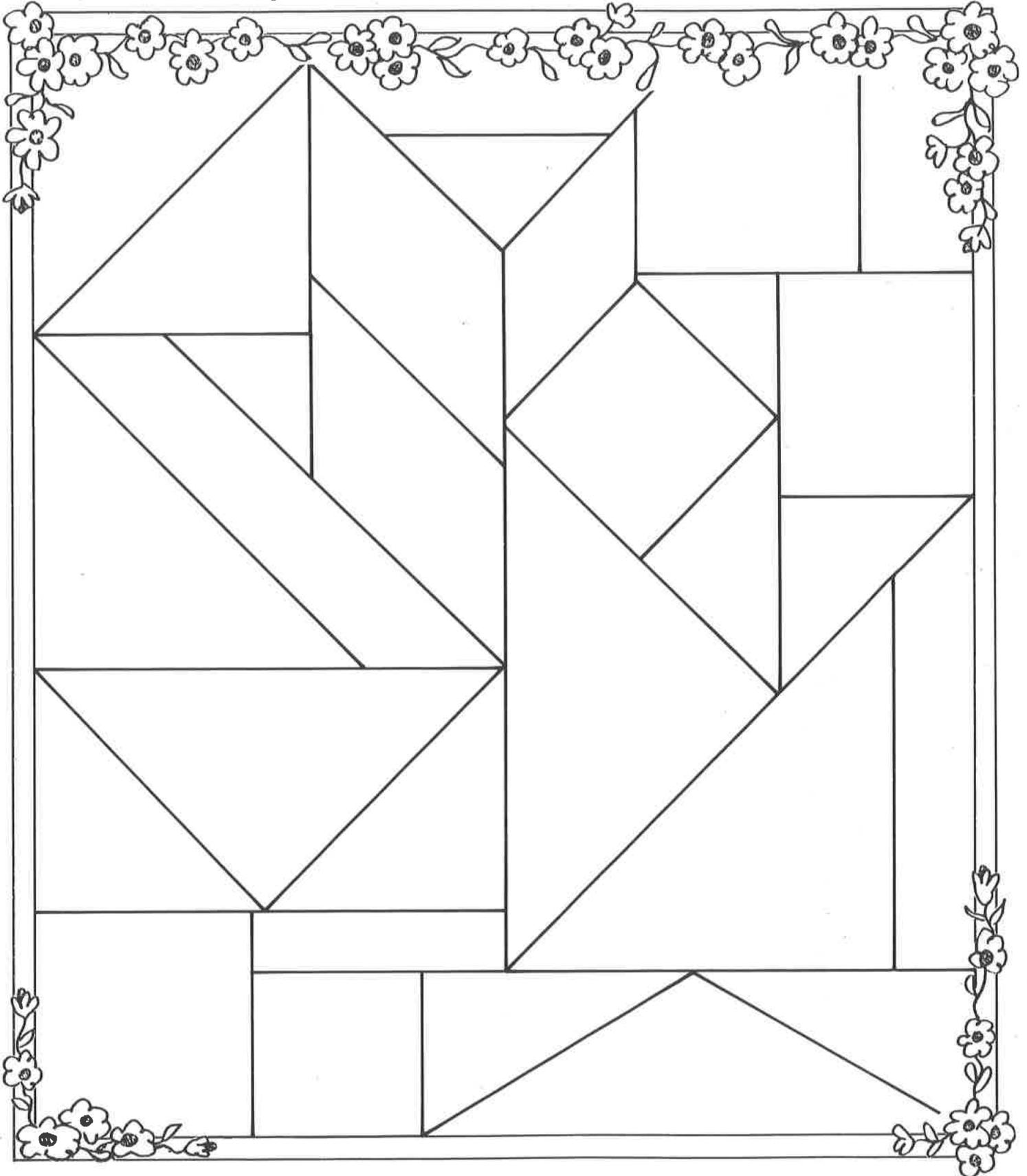
Use the two large triangles to cover each shape.



**CHALLENGE:** In each figure, draw a line to show the two triangles. Color them in different colors.

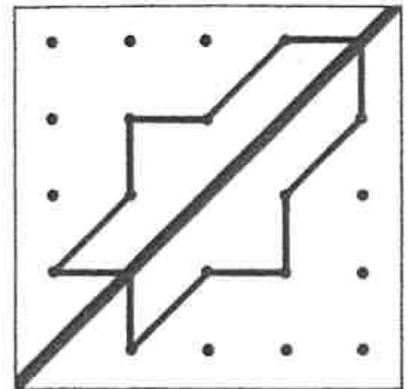
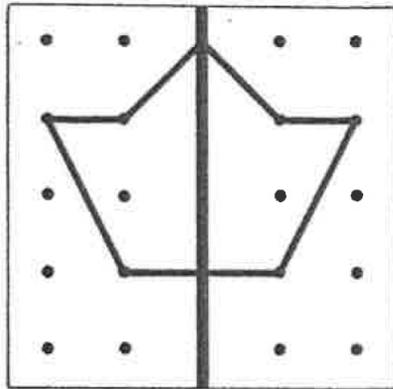
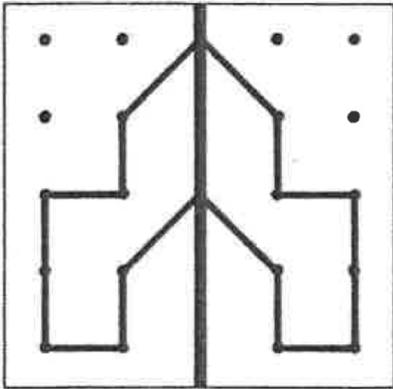
# hid-TAN PICTURE

Find the hidden tangram pieces. What did you make? Shade or color it.

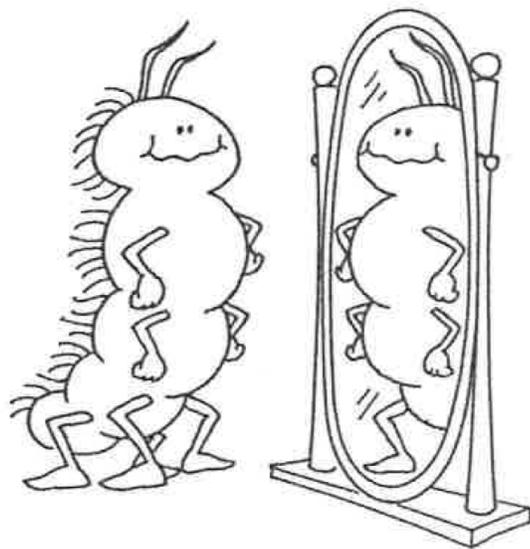
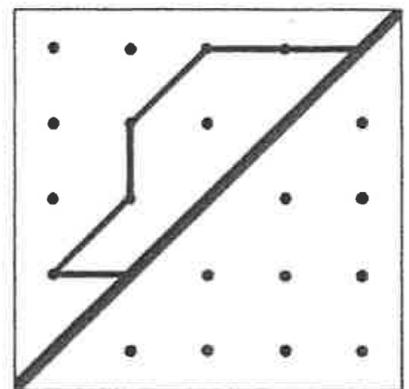
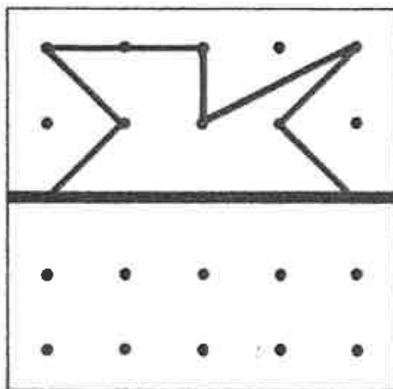
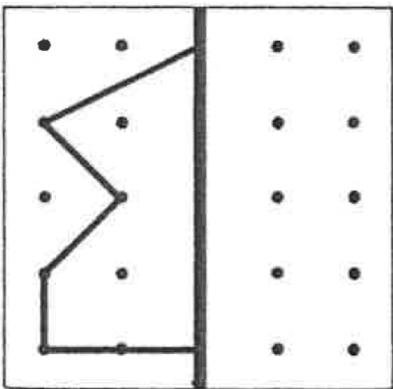


**CHALLENGE:** Make a hid-TAN picture and have a friend solve it.

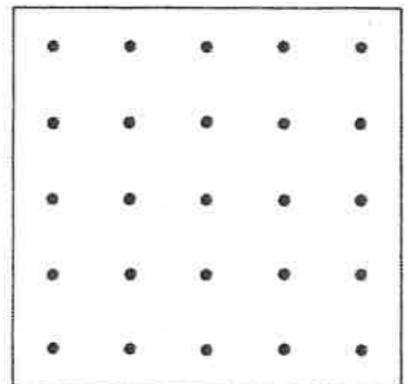
Put a mirror on the heavy black line.  
Do you see the matching part of each shape?



Draw the matching part of each shape.

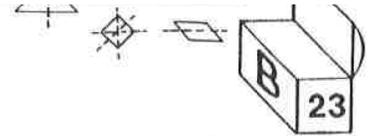


Your design



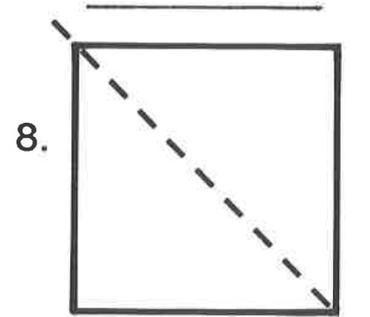
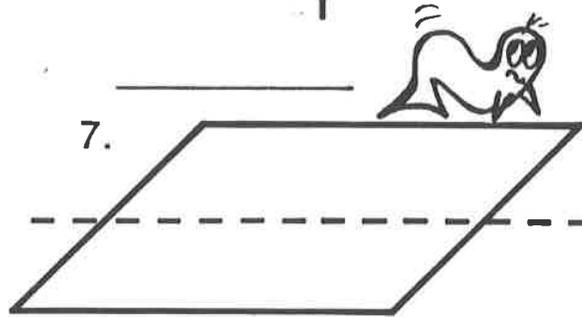
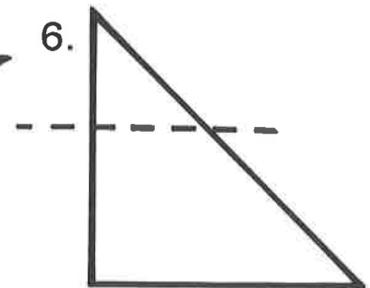
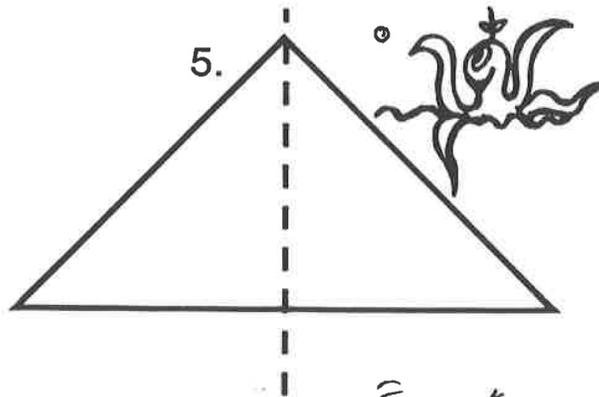
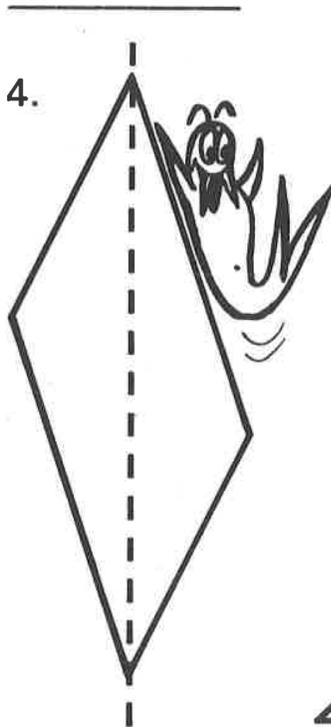
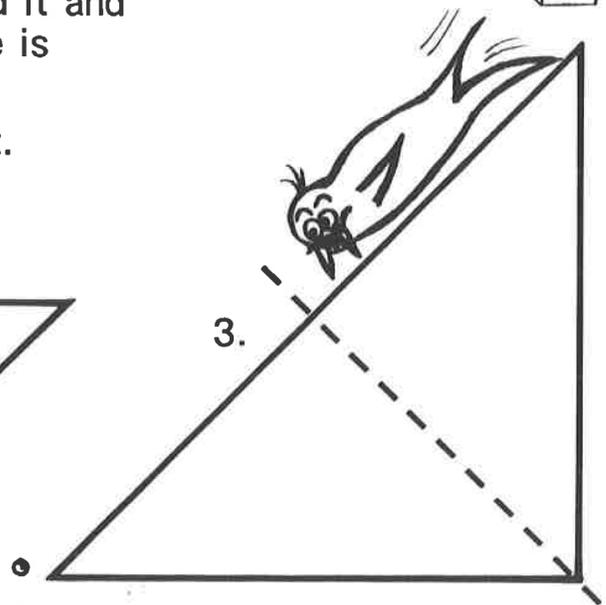
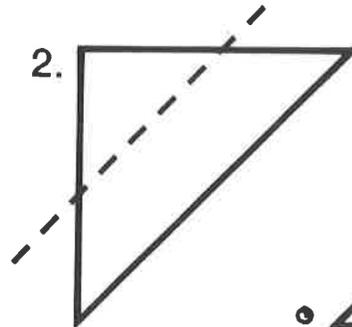
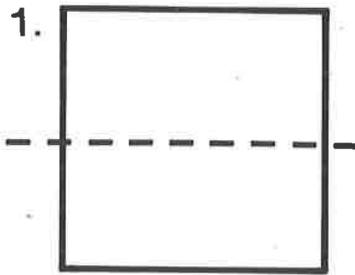
Mary Cavanagh

# LINES OF SYMMETRY



A figure is SYMMETRIC if you can fold it and make the two parts match. The fold line is called the LINE OF SYMMETRY.

Trace each tangram piece and cut it out.  
Is the dotted line a line of symmetry?  
(Answer YES or NO.)



9. Use two tangram pieces to make a shape. Trace the shape and show all the lines of symmetry.

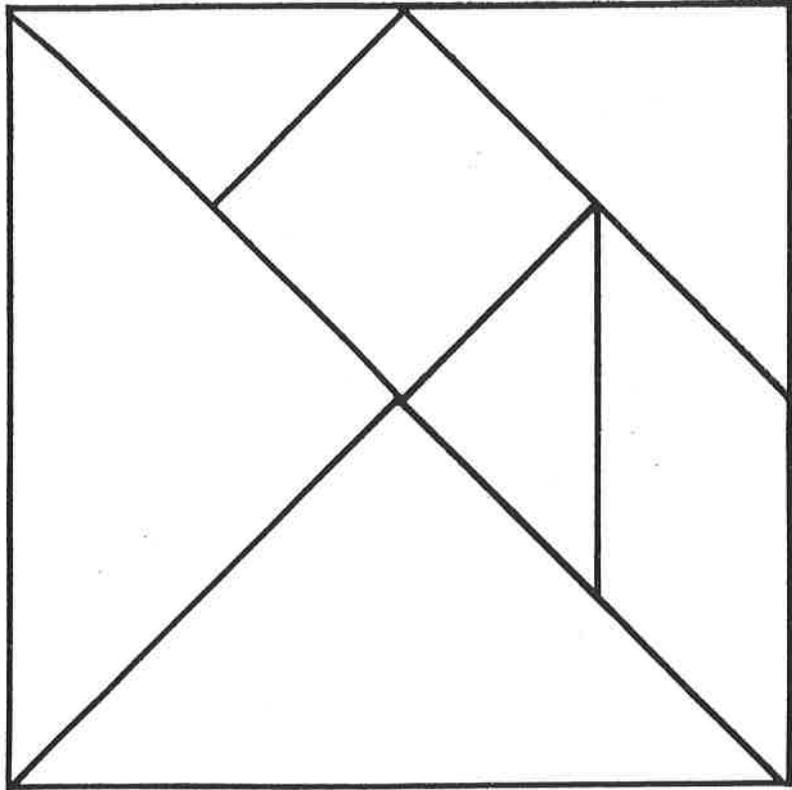
**CHALLENGE:** Using four or more tangram pieces, make a figure which has at least one line of symmetry. Trace the figure and show the line.

## TANGRAM PATTERN

To make a set of tangrams, cut out the seven pieces and store them in an envelope or plastic bag.

To make a more durable set, use this as a pattern to make pieces from heavy paper, cardboard, wood, or even floor tiles. (Warm tiles in an oven for easier cutting.)

Use solid colors.



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TANGRAM TREASURY, BOOK A, BY JAN FAIR, 1987 © CUISINAIRE COMPANY OF AMERICA, INC.

