

NAME _____

DATE _____

Home Connection 28 ★ Activity



NOTE TO FAMILIES

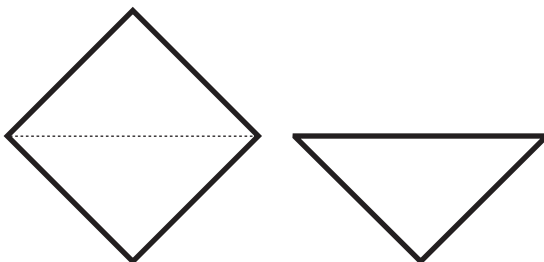
Origami is a traditional Japanese paper folding art, and a beautiful application of geometric principles. In this Home Connection, students fold and analyze two origami figures. We have included some paper squares to start with, but you can make these figures with any size squares. If origami becomes an interest for you or your child, you can find many books and Web sites on the topic. Be sure to have your child complete the worksheet that goes with this activity.

Origami Instructions

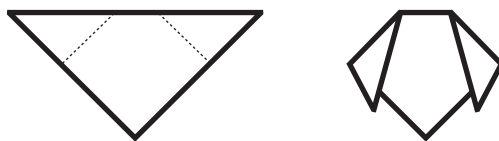
In this Home Connection, you will make 2 origami figures: a dog and a house. For each figure, you will need to cut out one of the squares on page 87. You might want to trace the squares and make some extra ones before you begin. It is helpful to have the square colored on one side and white on the other.

Dog

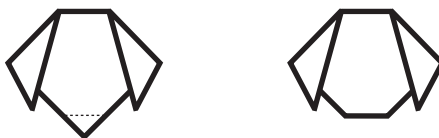
- 1** Fold the square in half by folding one vertex to meet the opposite vertex.



- 2** Fold the two top-most vertices down to make ears as shown.



- 3** Fold the bottom-most vertex to make a nose as shown.

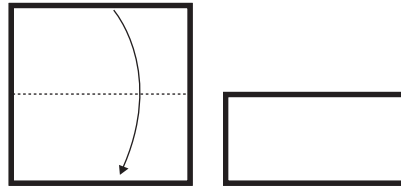


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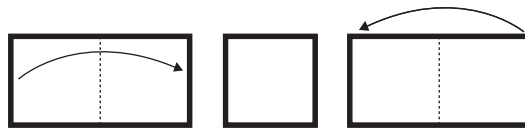
Home Connection 28 Activity (cont.)

House

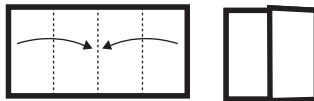
1 Fold the square in half.



2 Then fold in half again and unfold to create a crease down the middle.



3 Fold each edge to the center crease.



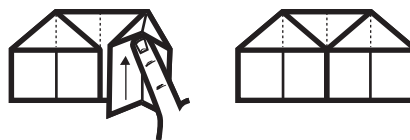
4 Place your finger in the left flap to open it.



5 Keep opening the left flap until it looks like this, and then fold.

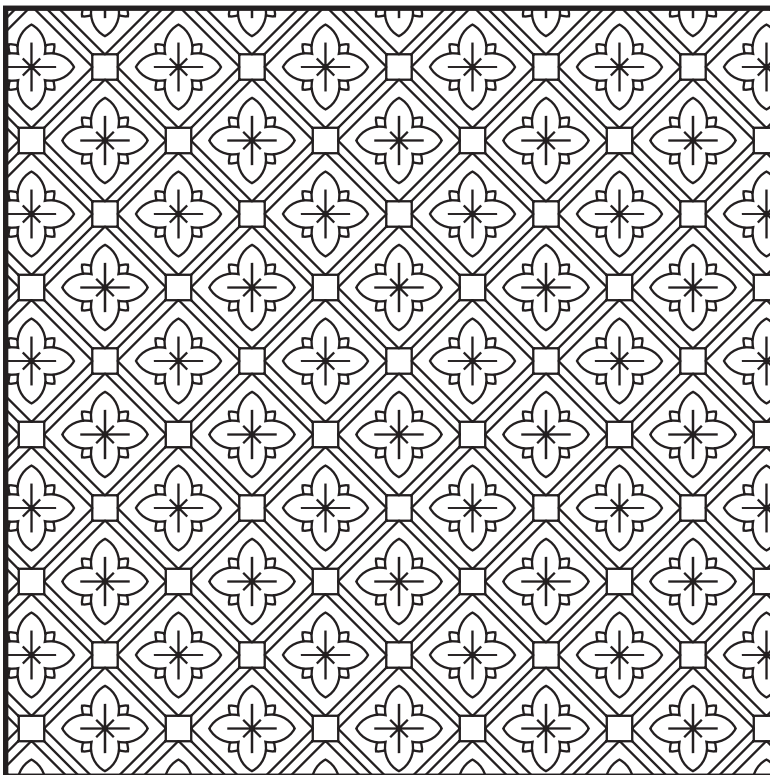
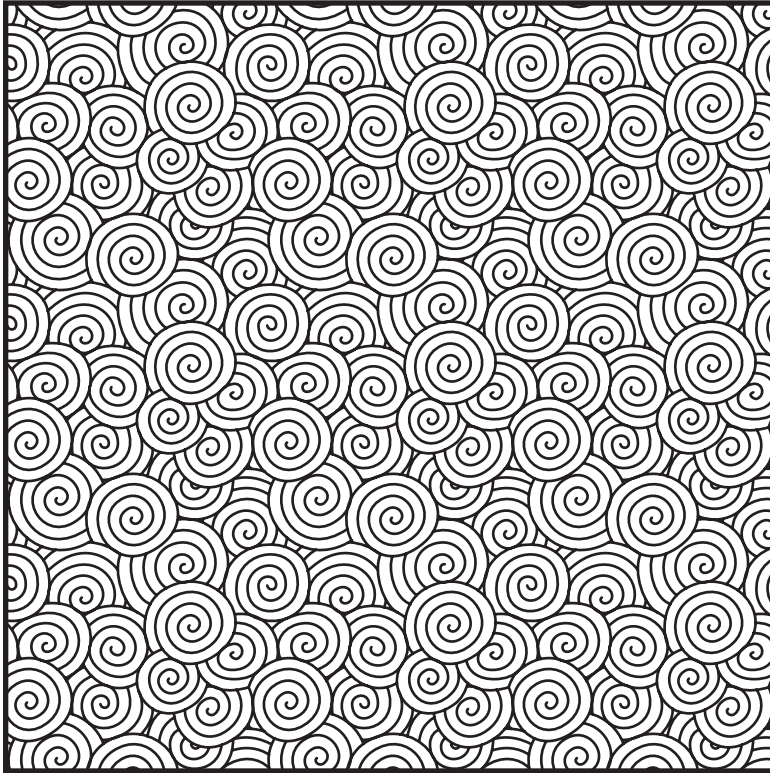


6 Now do the same to the right flap to make this house:



Home Connection 28 Activity (cont.)

Origami Squares



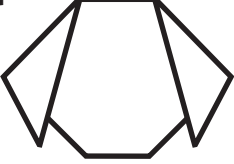
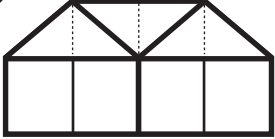
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Home Connection 28 ★ Worksheet

Use your origami house and dog to answer the following questions.

1 What geometric observations can you make about the dog and the house? Use drawings, words, and labels to describe your observations.

<p>a</p> 	<p>b</p> 
---	--

2 How would you describe an origami shape over the phone to an older relative (parent, grandparent, aunt, uncle, cousin)? Pick one of the shapes and describe it in words in the space below.

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Home Connection 29 ★ Activity

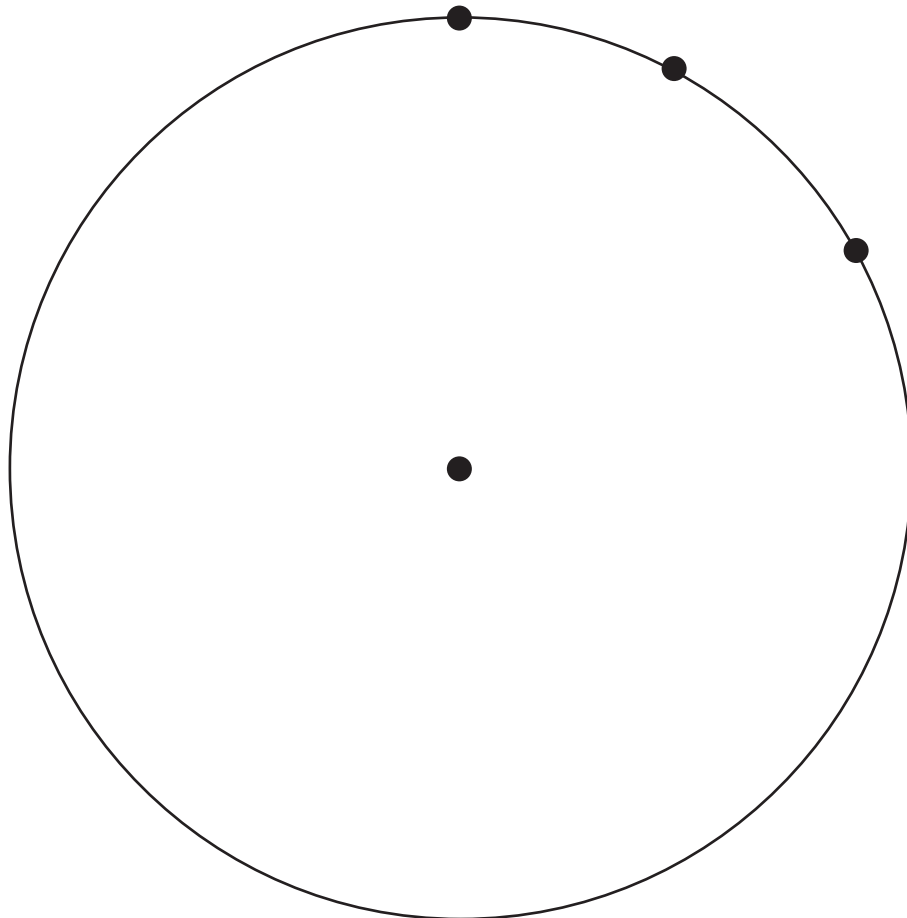


NOTE TO FAMILIES

Traditional circular clocks are highly mathematical. In this assignment, students will explore patterns on such clocks, as well as among the angles formed by the clock hands. Use page 94 to review the different kinds of angles if you need to refresh your memory.

Clock Making Puzzle

- 1 Make a clock face out of the circle below. You are given a dot at the center and dots where the 12, 1, and 2 belong. First, write in the 12, 1, and 2.
- 2 The puzzle is to figure out where the dots for numbers 3 through 11 should be placed. You can figure it out any way you want. For example, you can cut out the circle, fold the circle, draw on the circle, trace the circle, or any other idea you have.
- 3 Label and decorate your finished clock.



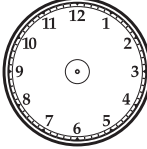
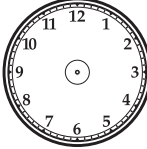
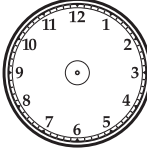
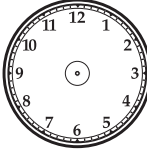
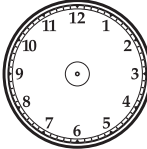
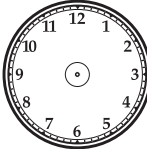
NAME _____

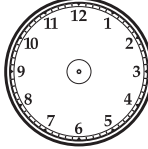
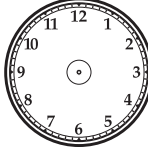
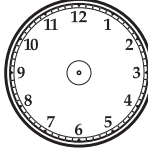
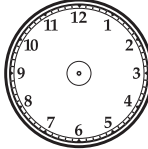
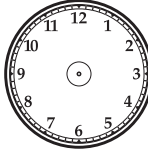
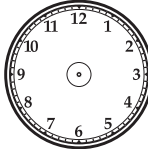
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Home Connection 29 ★ Worksheet

Clock Angles

1 For each time below, draw in the correct position of the hour and minute hands. Then describe the angle formed by the hands using the words *zero*, *acute*, *right*, *obtuse*, or *straight* to describe the angle. Look at page 94 if you can't remember what these words mean.

time	clock	angle
1:00		
2:00		
3:00		
4:00		
5:00		
6:00		

time	clock	angle
7:00		
8:00		
9:00		
10:00		
11:00		
12:00		


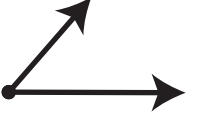





CHALLENGE

2 What patterns do you notice in the angles above? You can write on the back of this page.

(Continued on back.)

Clock Angles Guide

Angle	Example	Definition
zero		measures exactly 0 degrees
acute		measures between 0 and 90 degrees; smaller than a right angle
right		measures exactly 90 degrees; a square corner
obtuse		measures between 90 and 180 degrees; larger than a right angle
straight		measures exactly 180 degrees

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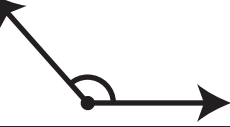

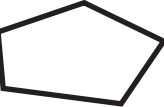
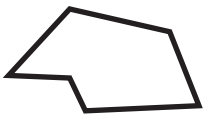
Home Connection 30 ★ Worksheet



NOTE TO FAMILIES

When studying geometry, it is important to understand and be able to use precise language for describing and comparing shapes. In this assignment, students illustrate certain terms and use their understanding of geometry words to draw shapes with different combinations of attributes. We include the vocabulary guide below to refresh your memory and help students remember what the words mean

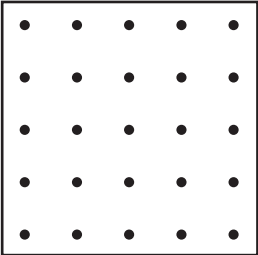
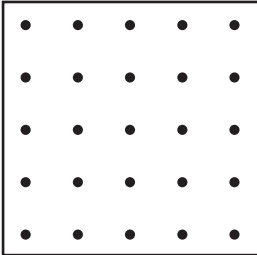
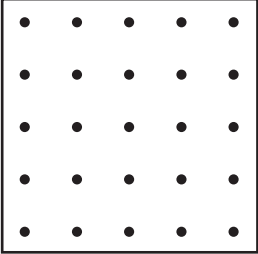
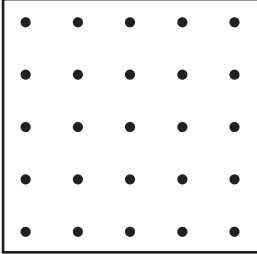
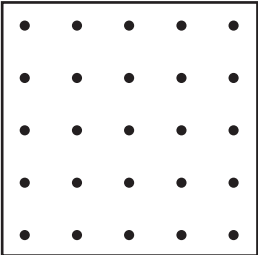
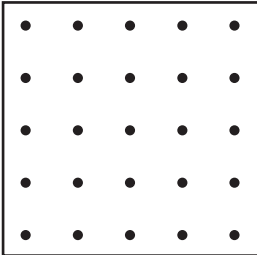
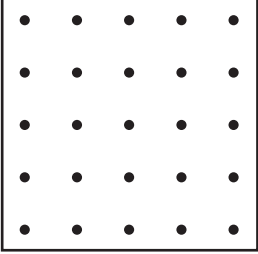
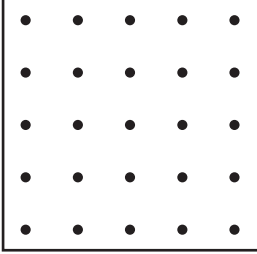
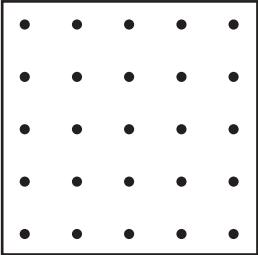
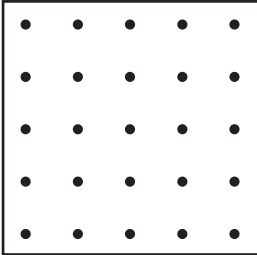
Guide to Geometric Terms

Term	Definition	Example
parallel lines	two or more lines that run in either direction and never cross	
perpendicular lines	two or more lines that cross at right angles	
right angle	an angle that measures exactly 90 degrees	
acute angle	an angle that measures between 0 and 90 degrees	
obtuse angle	an angle that measures between 90 and 180 degrees	
quadrilateral	a closed shape with 4 sides	
pentagon	a closed shape with 5 sides	
hexagon	a closed shape with 6 sides	

(Continued on back.)

Drawing 2-Dimensional Figures

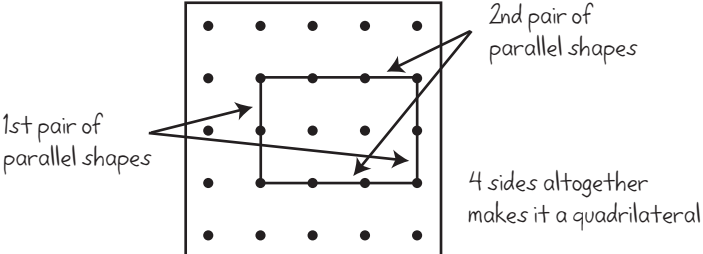
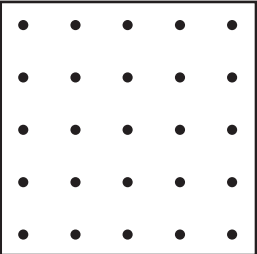
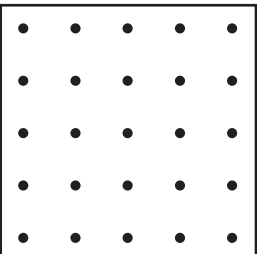
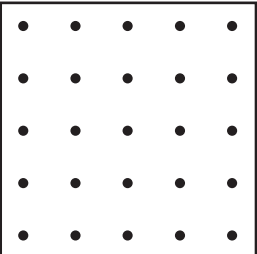
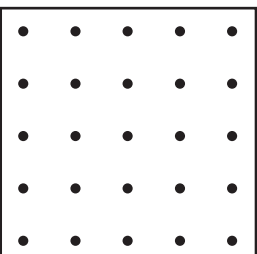
1 Draw *at least two examples* of each term below. If you can't remember what the words mean, look at the guide to geometry terms on page 95.

Term	Your Drawings	
a parallel lines		
b perpendicular lines		
c right angle		
d obtuse angle		
e acute angle		

(Continued on next page.)

Home Connection 30 Worksheet (cont.)

2 Draw at least one shape that matches each description below. For each shape, use arrows and words to show how your shape matches the description.

Description	Your Shape
<p>example <i>A quadrilateral with 2 pairs of parallel sides</i></p>	
<p>a <i>A quadrilateral with only 1 pair of parallel sides</i></p>	
<p>b <i>A pentagon with exactly 1 right angle and exactly 1 acute angle</i></p>	
<p>c <i>A hexagon with exactly 1 pair of perpendicular sides</i></p>	
<p>d <i>A hexagon with exactly 1 pair of parallel sides</i></p>	

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Home Connection 31 ★ Worksheet



NOTE TO FAMILIES

This assignment gives students practice locating points on a coordinate grid, which helps them make graphs. It also asks questions that tap into their understanding of geometry words and principles. A list of key terms is provided to help you and your child if you can't remember what a word means.

Guide to Geometry Terms

Term	Definition	Example
acute angle	an angle that measures between 0 and 90 degrees	
congruent	exactly the same size and shape	
line of symmetry	a line that divides a shape into two parts that are mirror images of each other	
obtuse angle	an angle that measures between 90 and 180 degrees	
parallel sides	sides of a shape that could run in either direction and never cross	
pentagon	a closed shape with 5 sides	
quadrilateral	a closed shape with 4 sides	
right angle	an angle that measures exactly 90 degrees	
trapezoid	a 4-sided shape with 1 pair of parallel sides	

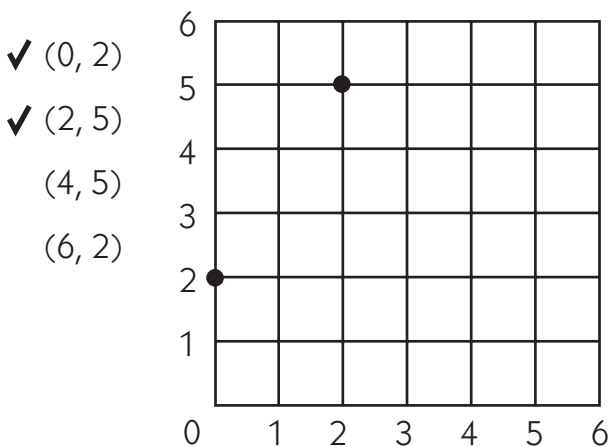
(Continued on back.)

Home Connection 31 Worksheet (cont.)

Plotting Points

Plot each set of points on a grid, and then connect the dots in the order you plotted them. When plotting each point, remember to go over the first number of spaces and then up the second number of spaces. Then label the shape you made on the grid to answer each set of questions. You can look up the *italicized* words on page 99 if you can't remember what they mean. Page 99 also has a list of shape names to choose from.

1a Plot these points on the grid below. The first two are done for you as an example.



b Connect the points in the order you plotted them.

c What is the name of this shape? _____

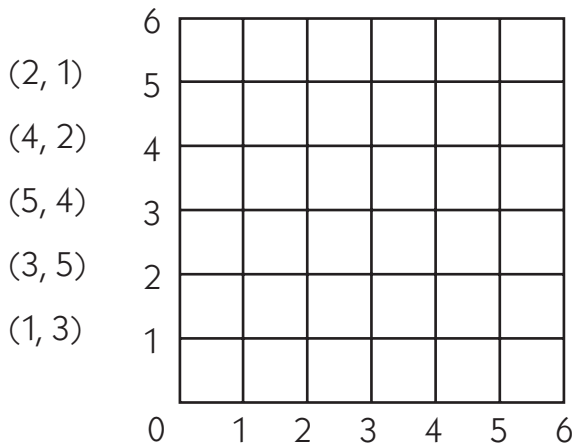
d Draw in any *lines of symmetry* the shape has.

e Use arrows and words to label any pairs of *parallel sides* this shape has.

(Continued on next page.)

Home Connection 31 Worksheet (cont.)

2a Plot these points on the grid below.



b Connect the points in the order you plotted them.

c What is the name of this shape? _____

d Draw in any *lines of symmetry* the shape has.

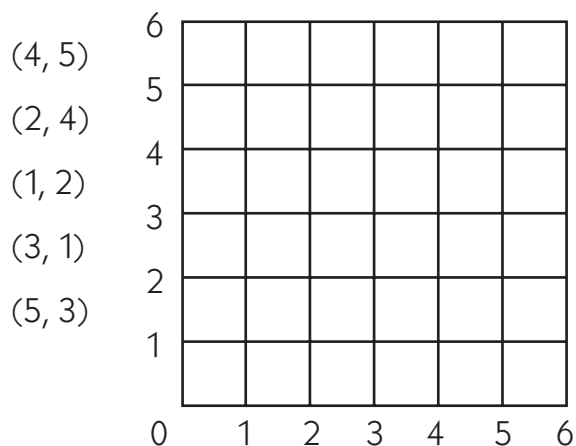
e Label all of the angles to show whether they are *right*, *acute*, or *obtuse*.

(Continued on back.)

Home Connection 31 Worksheet (cont.)

3a Look at the points and the grid below. Ramona says she can tell this shape is going to be a *quadrilateral* before she even plots them and connects them. Explain why you agree or disagree with her before you plot points and connect them. If you disagree with her, say what shape you think this will be and explain why you think that.

b Plot these points on the grid below.



c Connect the points in the order you plotted them.

d What is the name of this shape? _____

e Draw in any *lines of symmetry* the shape has.

f Pedro says this shape is *congruent* to the figure you drew in part 2. Explain why Pedro is correct.







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Home Connection 32 ★ Worksheet

3-Dimensional Shapes

Look around your house to find an example of each of the 6 shapes listed below. In each box, name or describe the object you found and draw a picture of it.

1 cone 	2 prism 
3 cube 	4 pyramid 
5 cylinder 	6 sphere 

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Home Connection 33 ★ Worksheet



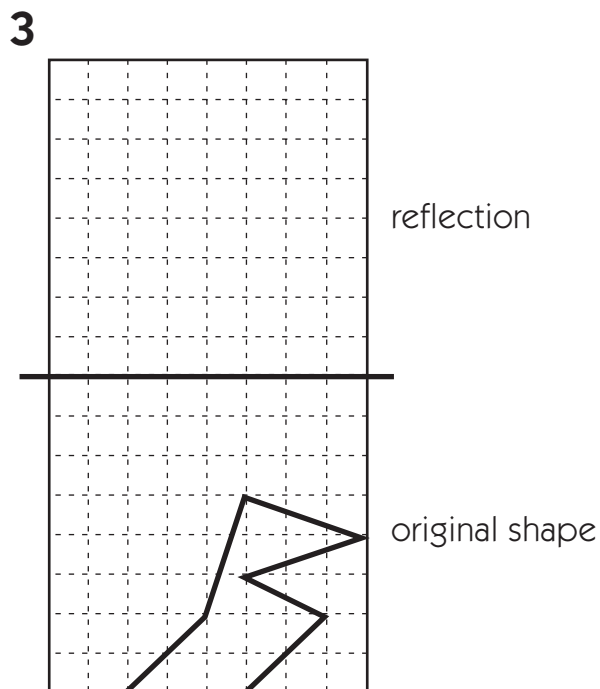
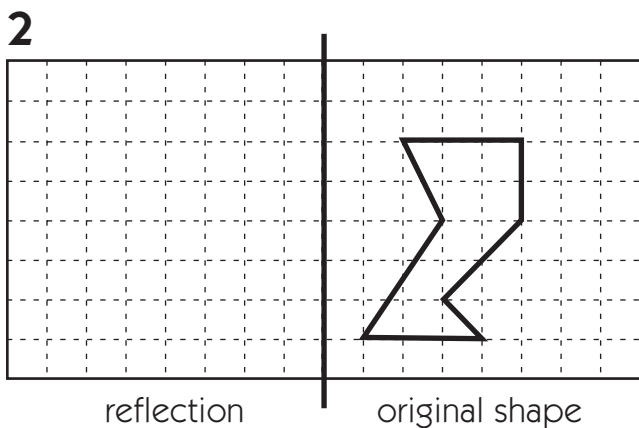
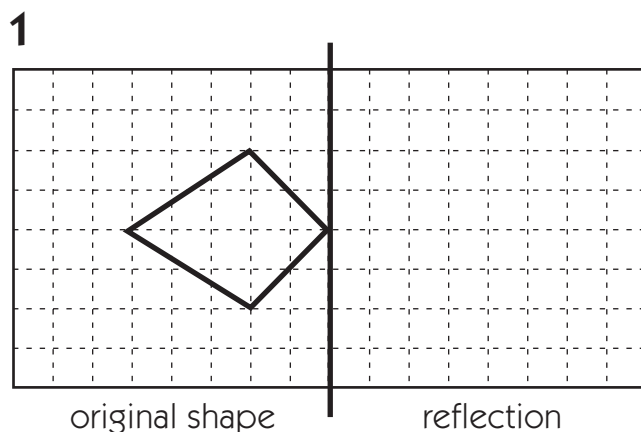
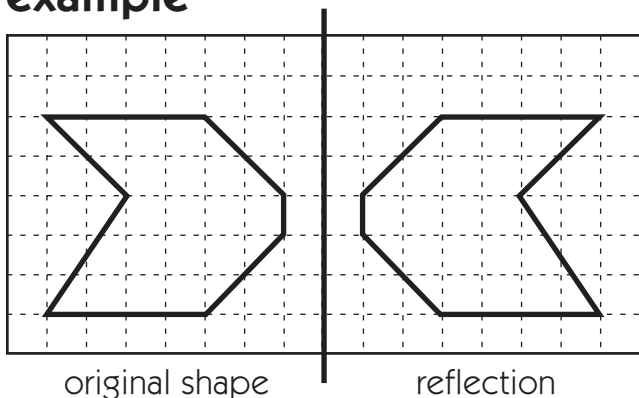
NOTE TO FAMILIES

In this assignment, students draw reflections of different shapes. A reflection is a mirror image, a flipped version of a shape.

Mirror, Mirror

Draw the reflection of each shape over the line. The first one is done for you as an example.

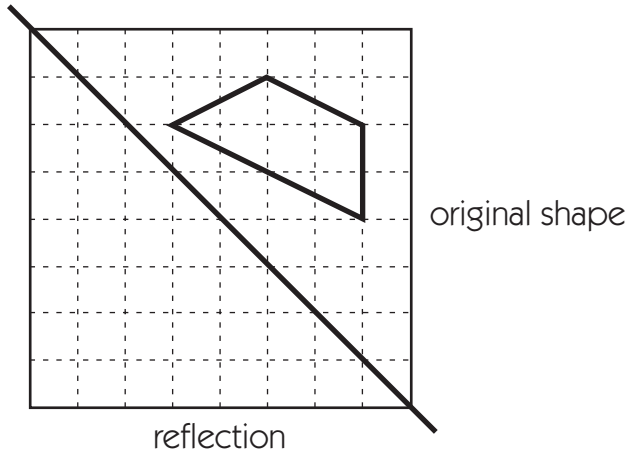
example



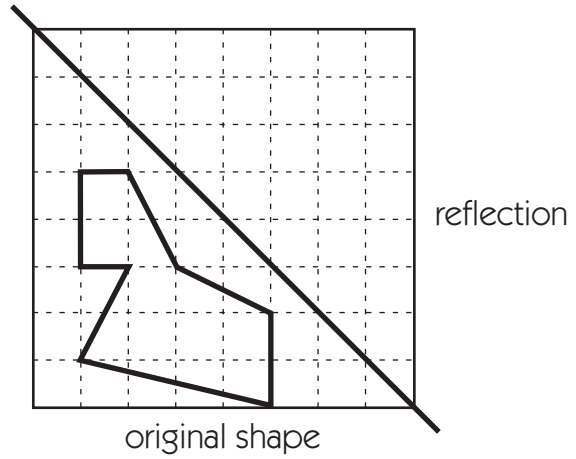
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Home Connection 33 Worksheet (cont.)

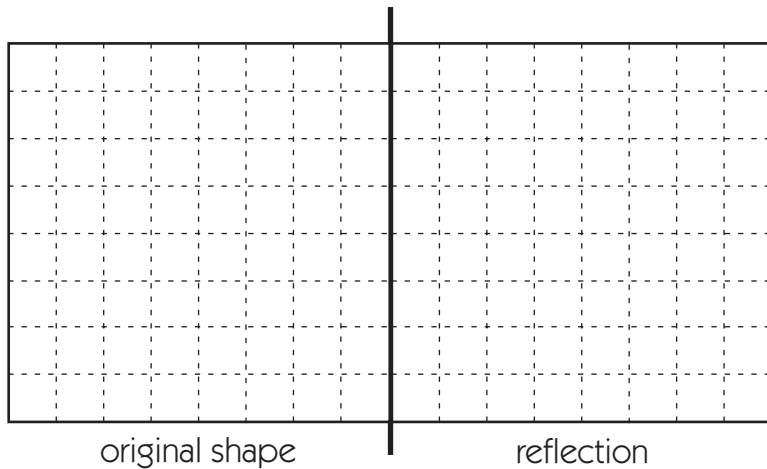
4



5



6a Draw your own shape below on the left side of the reflecting line.



b Give this page to a family member and ask him or her to draw the reflection of your shape over the line.

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Home Connection 34 ★ Activity

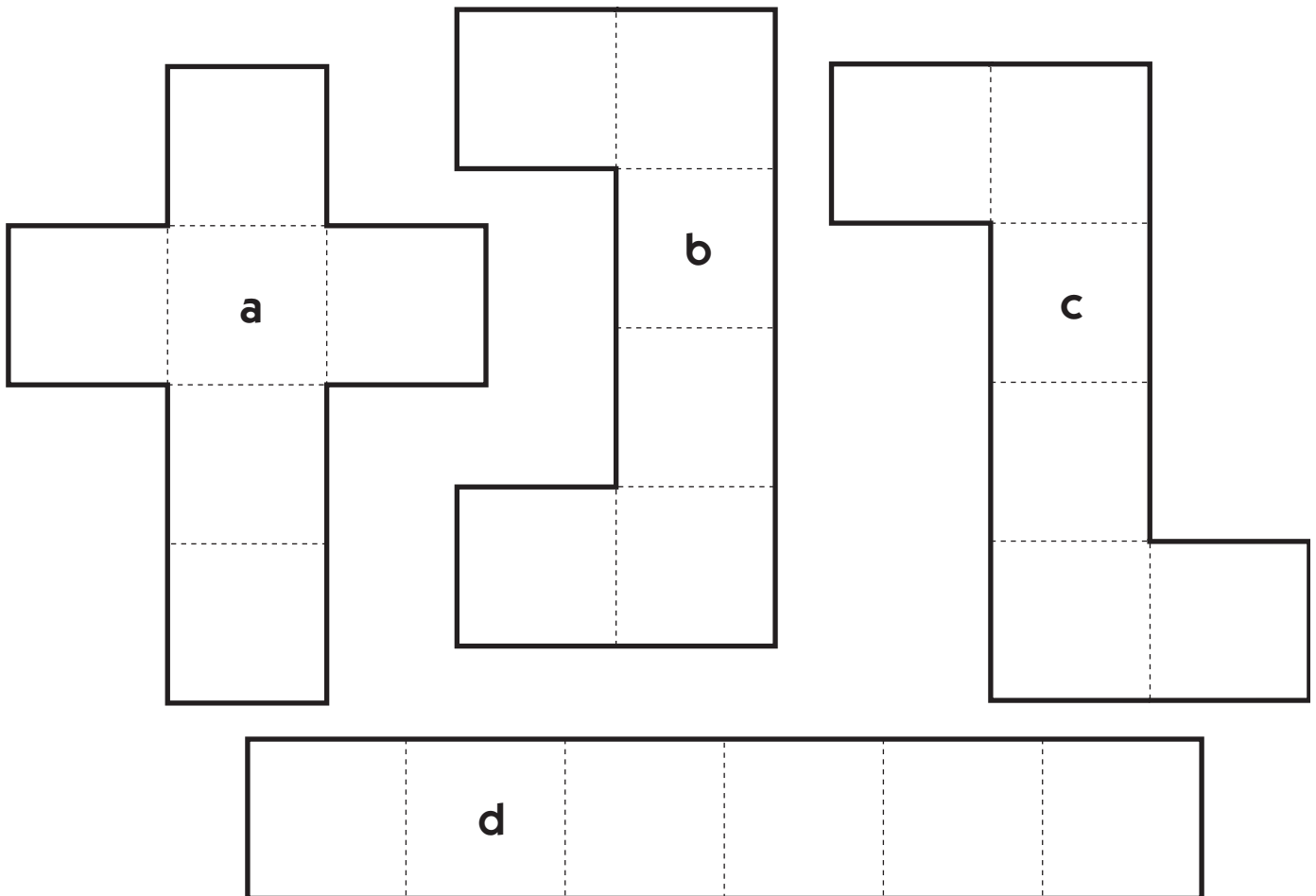


NOTE TO FAMILIES

In this assignment, students explore nets, which they have been working with in class. A net is a 2-dimensional pattern that, when folded, creates a 3-dimensional figure. In today's assignment, students will determine whether or not different nets will form cubes. This type of activity has been shown to increase students' spatial visualization skills.

Net Work

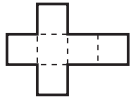
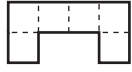
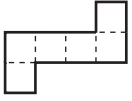

- Below are 4 nets consisting of 6 squares each. Before doing Steps 2 and 3, predict which of the 4 nets will fold into cubes. Record your predictions on the worksheet.
- Cut out each of the nets along the heavy black lines. Do not cut the 6 squares apart.
- Fold along the dashed lines to see which nets actually form a cube.



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Home Connection 34 ★ Worksheet

Net Work

				
<p>1 Make an X in the boxes below the nets you predict will fold into a cube.</p>				
<p>2 Make an X in the box below the nets that really did fold into a cube.</p>				
<p>3 For each net that cannot be folded into a cube, explain why it can't.</p>				

(Continued on back.)

Home Connection 34 Worksheet (cont.)

4 Draw a new net of 6 squares (different from the ones you just folded) that can be folded into a cube.

5 Draw a new net of 6 squares (different from the ones you just folded) that cannot be folded into a cube. Explain why it cannot be folded into a cube.

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Home Connection 35 ★ Worksheet

Letter Symmetry

1 Draw the lines of symmetry on each letter (if there are any). Then write each letter in the appropriate box below. The first letter is done for you as an example.

A C F G H M O S X Y

a 0 lines of symmetry

b 1 line of symmetry

A

c 2 lines of symmetry

(Continued on back.)

Home Connection 35 Worksheet (cont.)

2 Determine how many rotational symmetries each letter has. Then write each letter in the appropriate box below. The first letter is done for you as an example.

A C F G H M O S X Y

a rotational symmetry of order 1

A

b rotational symmetry of order 2

**CHALLENGE**

3 Write a word that has a line of symmetry.

4 Write a word that has rotational symmetry of order 2.