

Activity 3



ACTIVITY

Sorting & Classifying Quadrilaterals

Overview

Students review what they have learned about quadrilaterals, and use the information to sort and classify quadrilaterals in a variety of ways.

Skills & Concepts

- ★ classify quadrilaterals
- ★ measure length with accuracy

You'll need

- ★ Different Kinds of Quadrilaterals (attached)
- ★ Sorting Quadrilaterals (attached)
- ★ Paper Quadrilaterals (attached)
- ★ Venn Diagram Mat (attached)
- ★ The Logic of Quadrilaterals (extension- attached)
- ★ scissors

Instructions for Sorting & Classifying Quadrilaterals

1. Discuss the term quadrilateral and solicit agreement that a quadrilateral is a 4-sided polygon. Then work with student input to list several examples of different quadrilaterals.
2. Read and discuss the name and description of each shape on the with students Different Kinds of Quadrilaterals sheet . Below are some possible questions. Then go over the True or False on the bottom half of the page.
 - What is the difference between a rhombus and a square?
 - Why do people say that a square is a special kind of rectangle?
 - Would it be fair to say that a square is a special kind of rhombus? Why?
 - Is a trapezoid also a parallelogram? Why or why not? (No, because it only has 1 pair of parallel sides.)
 - Why is a rhombus classified as a parallelogram? (Because it has 2 pairs of parallel sides opposite each other.)
 - Is a rhombus also a kite? Why or why not? (Yes, because it has two pairs of adjacent sides that are congruent; in fact, all 4 of its sides are congruent.)
 - Are there any other quadrilaterals that could be called kites? Which one(s), and why? (A square is also a kite because it has two pairs of adjacent sides that are congruent.)
 - Which one of these shapes could be given the most names? Why? (A square, because it can also be called a quadrilateral, a kite, a parallelogram, a rectangle, and a rhombus!)

Activity 3 Sorting & Classifying Quadrilaterals (cont.)

3. Have students label each shape with the name that describes it most exactly and specifically. Once labeled, have students cut out the shapes. When finished, check over the labels together using the Different Kinds of Quadrilateral sheets.

4. Next, give the studenta Venn Diagram Mat, and explain that they are going to sort their shapes in a variety of ways. Listed below are various prompts for sorting. As students sort, have them explain their reasoning and anything they notice.





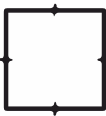

1. Quadrilaterals/Trapezoids
2. Trapezoids/Parallelograms
3. Parallelograms/Rectangles
4. Rectangles/Rhombuses
5. Kites/Rectangles
6. Kites/Parallelograms

Extension

- Give students each a copy of The Logic of Quadrilaterals. The diagram on this sheet illustrates the relationships between the various quadrilaterals in a very succinct way. Students are asked to label each of the shapes, and then answer a series of questions designed to help them think about how the shapes have been placed in relation to one another, and why. After reviewing the instructions together, have students complete the sheet independently. Then discuss.

Different Kinds of Quadrilaterals

A *Quadrilateral* is any polygon with 4 sides

| | | |
|---|--|--|
|  <p>trapezoid a quadrilateral with exactly 1 pair of parallel sides</p> |  <p>parallelogram a quadrilateral with 2 pairs of parallel sides opposite each other</p> |  <p>rectangle a parallelogram with 4 right angles</p> |
|  <p>rhombus a parallelogram with 4 congruent sides</p> |  <p>square a parallelogram with 4 congruent sides and 4 right angles</p> |  <p>kite a quadrilateral with two pairs of adjacent sides that are congruent</p> |

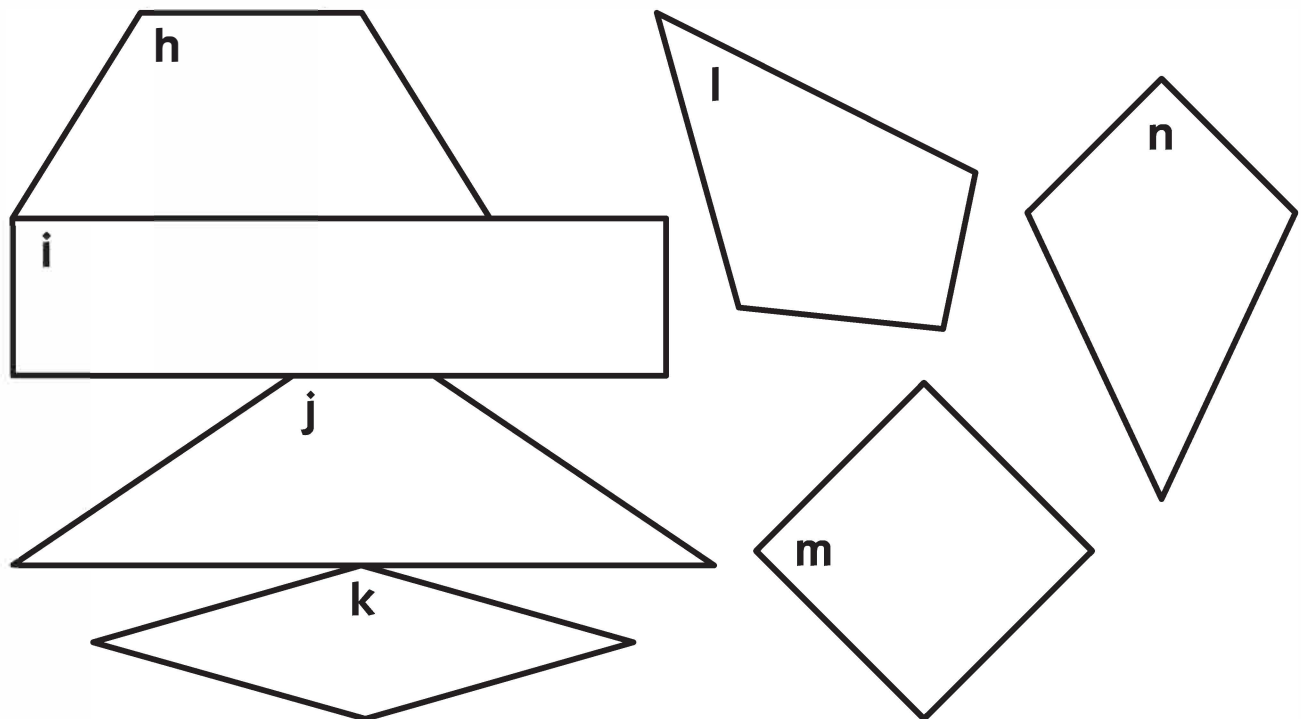
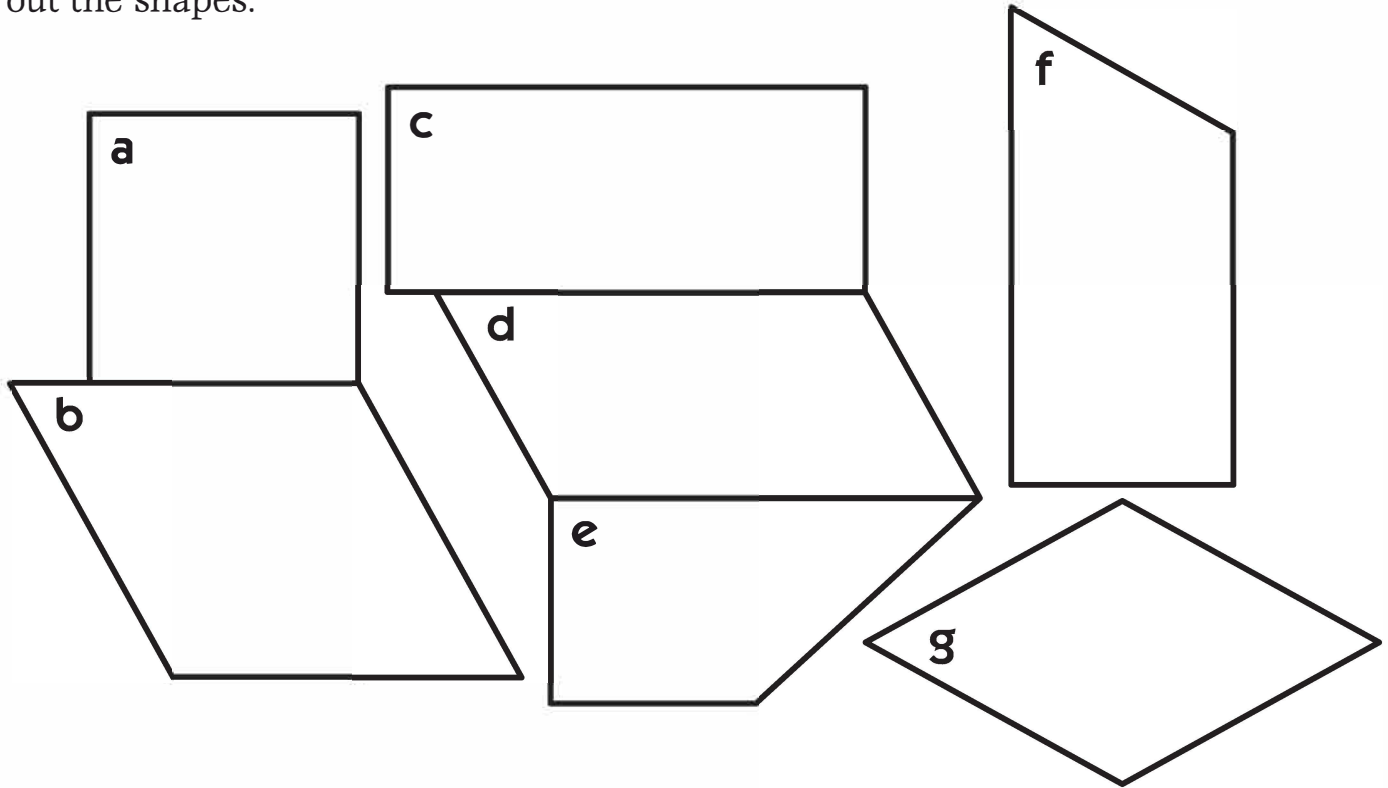
True or false?

- 1 This shape is a quadrilateral.
- 2 This shape is a trapezoid.
- 3 This shape is a rhombus.
- 4 This shape is a parallelogram.
- 5 This shape is a rectangle.

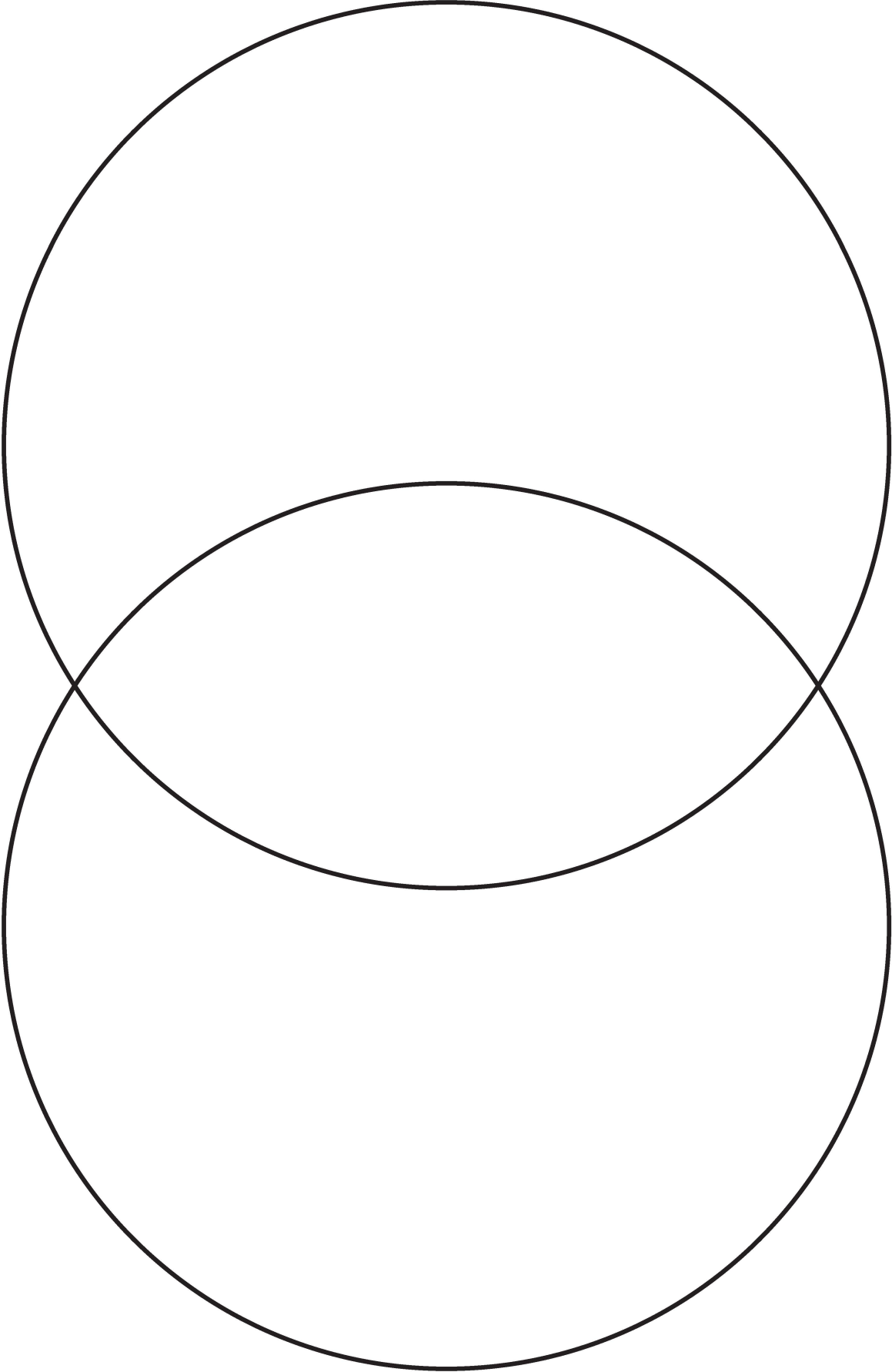


Paper Quadrilaterals

Label each quadrilateral with the most specific name you can find for it. Then cut out the shapes.

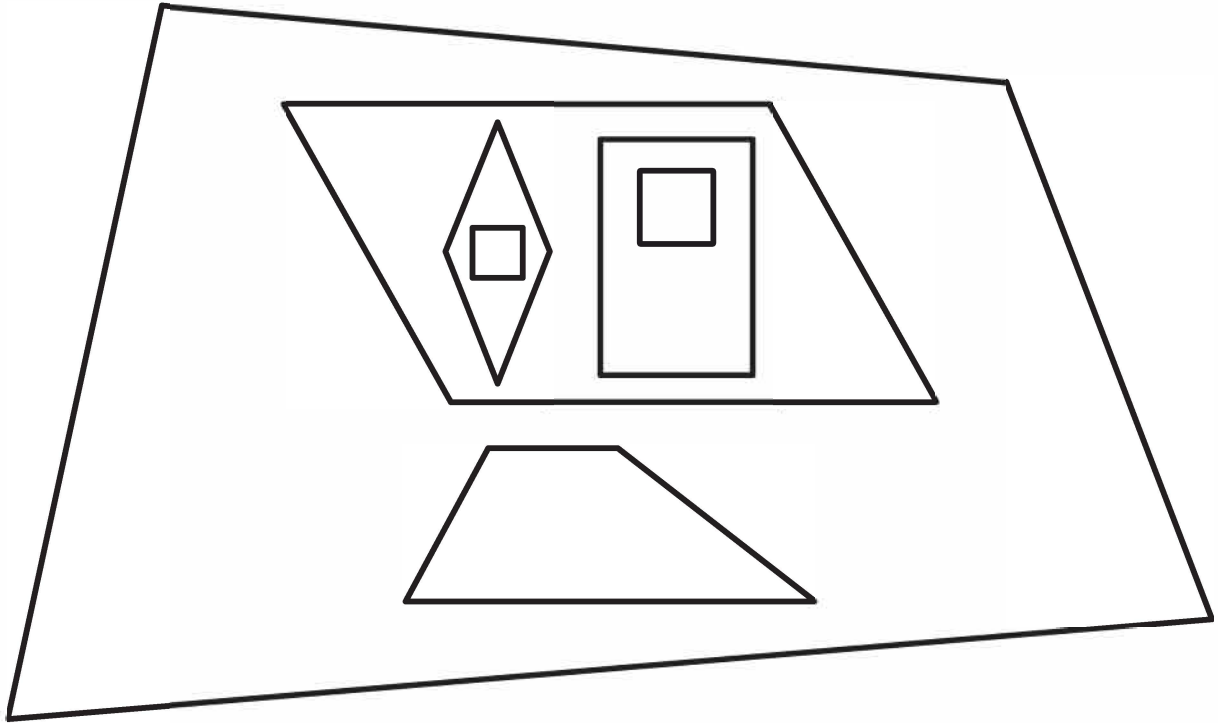


Venn Diagram Mat



The Logic of Quadrilaterals

1 Label each shape in this diagram with the name that describes it most exactly.



2 Why is the trapezoid inside the quadrilateral but outside the parallelogram?

3 Why are there a rhombus and a rectangle inside the parallelogram?

4 Why are there two squares, one inside the rhombus and one inside the rectangle?

5 Write at least 2 other observations to explain why the shapes in this diagram have been placed where they are in relation to each other.