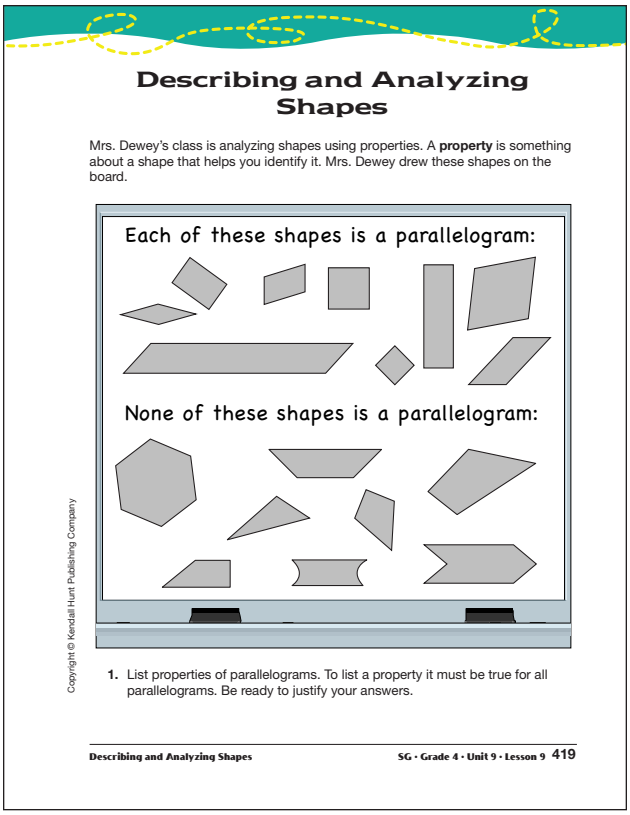


Describing and Analyzing Shapes

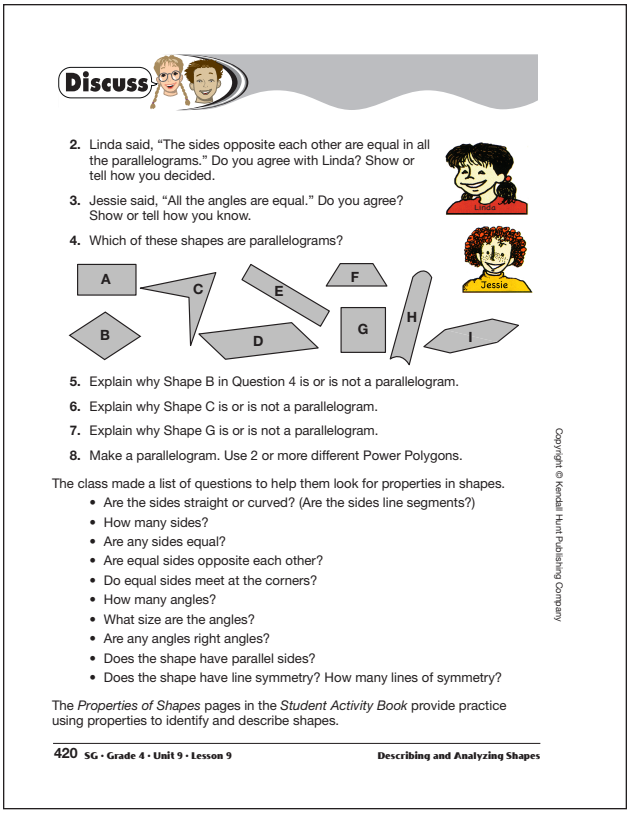
Mrs. Dewey's class is analyzing shapes using properties. A **property** is something about a shape that helps you identify it. Mrs. Dewey drew these shapes on the board.

Each of these shapes is a parallelogram:

None of these shapes is a parallelogram:

1. List properties of parallelograms. To list a property it must be true for all parallelograms. Be ready to justify your answers.

***Student Guide* - Page 419**



Discuss

2. Linda said, "The sides opposite each other are equal in all the parallelograms." Do you agree with Linda? Show or tell how you decided.
3. Jessie said, "All the angles are equal." Do you agree? Show or tell how you know.
4. Which of these shapes are parallelograms?

Linda

Jessie

A B C D E F G H I

5. Explain why Shape B in Question 4 is or is not a parallelogram.
6. Explain why Shape C is or is not a parallelogram.
7. Explain why Shape G is or is not a parallelogram.
8. Make a parallelogram. Use 2 or more different Power Polygons.

The class made a list of questions to help them look for properties in shapes.

- Are the sides straight or curved? (Are the sides line segments?)
- How many sides?
- Are any sides equal?
- Are equal sides opposite each other?
- Do equal sides meet at the corners?
- How many angles?
- What size are the angles?
- Are any angles right angles?
- Are any angles right angles?
- Does the shape have parallel sides?
- Does the shape have line symmetry? How many lines of symmetry?

The *Properties of Shapes* pages in the *Student Activity Book* provide practice using properties to identify and describe shapes.

***Student Guide* - Page 420**

Student Guide

Describing and Analyzing Shapes

Questions 1–8 (SG pp. 419–420)

1.* See Figure 6 in lesson Part 2.

2.* Linda is correct. See lesson Part 2. 3.* Jessie is incorrect. See lesson Part 2.

4. A, B, D, E, and G are parallelograms.

5. B is a parallelogram because it has four straight sides, with two equal, parallel sides. It has two pairs of equal angles.

6. C is not a parallelogram. Possible responses: C does not have two pairs of equal, parallel sides. It does not have two pairs of equal angles.

7. G is a square and also a parallelogram. All its sides and angles are equal, so it has two pairs of equal sides that are parallel, and two pairs of opposite equal angles.

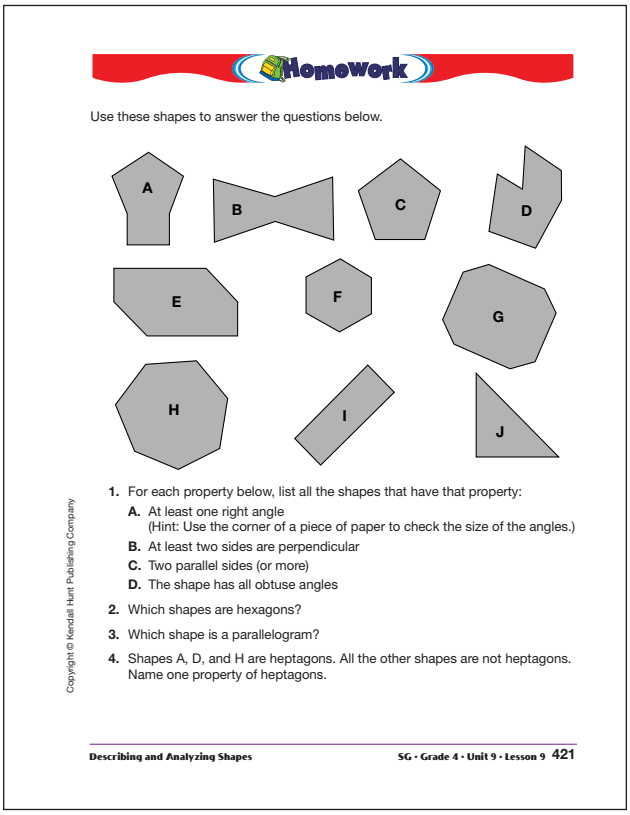
8.* Shapes will vary. See Figure 8 in lesson Part 2.

***Answers and/or discussion are included in the lesson.**

Homework

Questions 1–4 (SG p. 421)

1. **A.** A, E, I, J
   B. A, E, I, J
   C. A, B, E, F, G, I
   D. C, F, G, H
2. B, E, F
3. I
4. Heptagons have seven straight sides.



Homework

Use these shapes to answer the questions below.

A B C D E F G H I J

1. For each property below, list all the shapes that have that property:
   - **A.** At least one right angle (Hint: Use the corner of a piece of paper to check the size of the angles.)
   - **B.** At least two sides are perpendicular
   - **C.** Two parallel sides (or more)
   - **D.** The shape has all obtuse angles
2. Which shapes are hexagons?
3. Which shape is a parallelogram?
4. Shapes A, D, and H are heptagons. All the other shapes are not heptagons. Name one property of heptagons.

Describing and Analyzing Shapes SG • Grade 4 • Unit 9 • Lesson 9 421

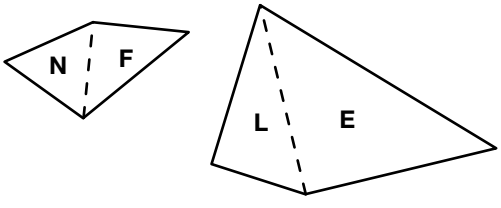
***Student Guide* - Page 421**

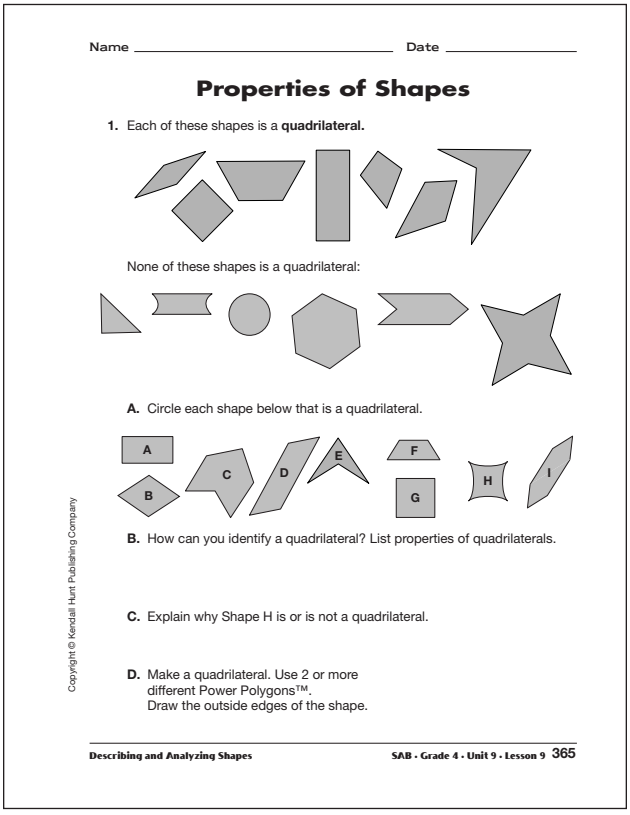
Student Activity Book

Properties of Shapes

Questions 1–5 (SAB pp. 365–369)

1. **A.** A, B, D, E, F, and G should be circled.
   B. Quadrilaterals have four straight sides and four corners.
   C. H is not a quadrilateral because its sides are not straight.
   D. Shapes will vary. Possible shapes:





Name _____ Date _____

Properties of Shapes

1. Each of these shapes is a **quadrilateral.**

None of these shapes is a quadrilateral:

A. Circle each shape below that is a quadrilateral.

A B C D E F G H I

B. How can you identify a quadrilateral? List properties of quadrilaterals.

C. Explain why Shape H is or is not a quadrilateral.

D. Make a quadrilateral. Use 2 or more different Power Polygons™. Draw the outside edges of the shape.

Describing and Analyzing Shapes SAB • Grade 4 • Unit 9 • Lesson 9 365

***Student Activity Book* - Page 365**