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Student book page 268 — Lesson 30, Recognizing and Drawing Shapes, Introduction

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Objective
To recognize plane figures and cubes

1 Introduction
Define plane figures with the class. Then look at the examples of triangles and quadrilaterals on the student book page. Point out that rectangles and squares are quadrilaterals with specific characteristics. Then look at the pentagon and hexagon. Tell students that these are just one example of each shape. Define a solid figure as one that is not flat and look at the cube as an example. Go over a cube's characteristics with the class.
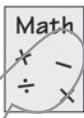
Think About It
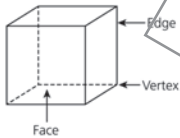Students should be able to identify two plane figures or cubes in the classroom, drawing them and giving them the correct name.

Common Core State Standard
2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Connections to Standards for Mathematical Practice
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.

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2 Focused Instruction

First, students will recognize that a rectangle can be describes as both a quadrilateral and a rectangle because a rectangle is a type of quadrilateral.

Next, students will draw a plane figure with six sides, recognizing that a plane figure is a flat figure that is closed.

Conclude the Focused Instruction section by having students answer three questions about shapes.

Vocabulary

angle: a figure formed where two sides of a plane figure meet

cube: a solid figure with six square faces

edge: the place where two faces meet in a solid figure

face: the side or base of a solid figure

hexagon: a plane figure with six sides and six angles

pentagon: a plane figure with five sides and five angles

plane figure: a flat shape made up of straight sides and angles

quadrilateral: a plane figure with four sides and four angles

rectangle: a quadrilateral with opposite sides that are the same length and four square corners

side: a straight line that makes up part of a plane figure

solid figure: a figure that is not flat

square: a quadrilateral with four equal sides and four square corners

vertex: the corner where edges meet in a solid figure; plural *vertices*

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2 Focused Instruction — Lesson 30

How many sides does the shape have? ___4___

How many angles does it have? ___4___

Choose the word that describes the shape with this number of sides and angles.

triangle (quadrilateral) pentagon hexagon

> You can describe some shapes using more than one name.

Are the corners of this figure square or not square?

___square___

What is true about the opposite sides of the figure?

__They are the same length.__

Look at your answers to the last two questions. What is another name that describes Cora's shape?

___rectangle___

Use a description to draw a shape.

➤ Draw a plane figure that has 6 sides and 6 angles.
What is a plane figure?

__a figure that is flat and has sides that meet at angles__

What are sides? ___straight edges of a figure___

What are angles? ___the places where sides meet___

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2 Focused Instruction — Lesson 30

Draw your plane figure in the space below.
Accept any hexagon.

What is the plane figure you drew called? ___hexagon___

What is true about the number of sides and the number of angles in a plane figure?

__They are always the same.__

> Can you draw a plane figure with 3 sides and 4 corners? With 6 sides and 3 corners?

Use what you know about recognizing and drawing shapes to answer these questions.

1 Draw a plane figure that has 4 sides and 4 angles.
Accept any quadrilateral.

2 A plane figure has 5 sides and 5 angles. What is the name of the plane figure?

___pentagon___

3 How many square faces make up a cube? ___6___

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③ **Guided Practice**   Lesson 30

Solve the following problems.

1 What is a name for this plane figure?

> You can name a plane figure by the number of sides and angles.

Answer _____ quadrilateral

2 Draw a plane figure that has 5 angles.

Accept any pentagon.

> How many sides will the plane figure have?

3 Look at the solid figure below.

Part A What is the name of this figure?

Answer _____ cube

Part B Draw the face of this solid figure.

> How many sides does one face have?

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④ **Independent Practice**   Lesson 30

Solve the following problems.

1 Which of these plane figures are quadrilaterals? Mark the correct column for each plane figure.   **DOK 2 2.G.1**

	Quadrilateral	Not a Quadrilateral
		✓
	✓	
		✓
	✓	
		✓
	✓	

2 How many square faces does a cube have?   **DOK 2 2.G.1**
   A 1
   Ⓑ 6
   C 8
   D 12

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③ **Guided Practice**

Students should complete the Guided Practice section on their own. Offer assistance as needed, pointing out the reminder and hint boxes along the right side of the page.

④ **Independent Practice Answer Rationales**

1 A quadrilateral is defined as a shape with 4 sides. Count the number of sides on the shapes for each answer choice to determine whether or not they have 4 sides. The second, fourth, and sixth figures are quadrilaterals because they each have 4 sides and 4 angles. The first, third, and fifth figures are not quadrilaterals. The first is a triangle, the third is a pentagon, and the fifth is a hexagon.

2 A cube is a solid figure that it is made up of top and bottom squares and 4 square sides. Choice B is correct because a cube has 6 faces that are squares. Choice A is incorrect because this would just be a flat square. Choice C is incorrect because 8 represents the number of vertices on a cube, not the number of faces. Choice D is incorrect because 12 represents the number of edges on a cube, not the number of faces.

3 A shape with 3 sides and 3 angles is a triangle. Triangles can look different, as long as they have 3 sides. Students should have drawn any type of triangle.

4 The first figure is a trapezoid, which has 4 sides. The two triangles each have 3 sides, and the square has 4 sides. These four figures all have less than 5 sides. The middle figure is a hexagon, which has 6 sides.

5 **PARTS A, B, AND C** The students should recognize the individual shapes within the figure, even if they share sides with another shape. Color the triangle red, the irregular pentagon green, and the remaining shapes orange because they are hexagons.
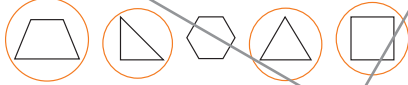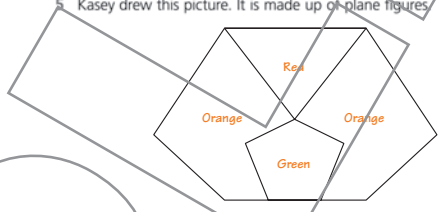

Extension Activity

Cut out examples of triangles, quadrilaterals, pentagons, and hexagons. Give each student a figure and have the class get into groups based on the figures. Repeat the activity, giving students cut outs of rectangles, squares, and quadrilaterals that are not rectangles or squares.