Grade 4 Mathematics
Geometry: Lesson 7

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol ( ) by them.

Purpose of Lesson 7:
- In this lesson, the tutor and the students will
  - ✓ identify and draw line segments representing vertical, horizontal, intersecting, parallel, and perpendicular lines on dot paper; and
  - ✓ draw right angles and angles greater than (>) and less than (<) 90° on dot paper.

Equipment/Materials Needed:
- Copies of Student Sheet 109
- Paper and pencils
- Chalkboard

Preparations before beginning Lesson 7:
- Run one copy of Student Sheet 109 for each student.
- Have paper and pencils available.
- You should cover Lesson 2 of Geometry before beginning this lesson.

Lesson 7: Geometry

Say:

> **In this lesson, you will review some of the geometry terms that you have studied so far. You will use dot paper to draw figures. What is the difference in a line and a line segment?** (A *line* is a string of points that goes on forever at each end. A *line segment* is part of a line that has two endpoints.) **A line segment can be used to represent types of lines because you cannot draw the entire line. You are going to draw line segments on the dot paper.**

ᘯ   Give students Student Sheet 109.

Say:

> **This is a sheet of dot paper. Tell me some things you notice about the dot paper.** (There are 12 squares and 25 dots in each square. Each square has five rows of five dots.

Say:

> **In Square 1, draw a horizontal line segment. Remember to think "horizon." How could you describe your line segment?** (My line segment goes across the box. It connects the dots in one row**.) In Square 2, draw a vertical line segment. How could you describe your line segment?** (My line segment goes down the box. It connects the dots on one column.) **In Square 3, draw a line segment that is neither horizontal nor vertical. Describe your line segment.** (My line segment crosses more than one row and one column, but it is straight.)
> **You have also learned about parallel and perpendicular lines. What are parallel lines?** (lines that never cross or intersect and that are always the same distance apart) **In Square 4, draw two parallel line segments representing two parallel lines. In Square 5, draw two different line segments. In Square 6, draw two different parallel line segments.**
> **What are perpendicular lines?** (lines that intersect at right angles) **In Square 7, draw two perpendicular line segments. How can you check to make sure that they are perpendicular?** (Take the square corner of a piece of paper and see if it fits the angle.) **In Square 8, draw 2 different perpendicular line segments. In Square 9, draw 2 line segments that intersect, but are not perpendicular line segments. Describe your line segments.** (The line segments cross, but do not form right angles.)
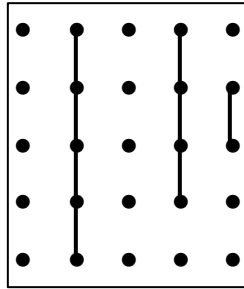
What is a right angle? (an angle that measures 90°) **In Square 10, draw a right angle. In Square 11, draw an angle that is greater than 90°; and, in Square 12, draw an angle that is less than 90°.**

Answers for Student Sheet 109: Drawings will vary, but here are examples.

1.
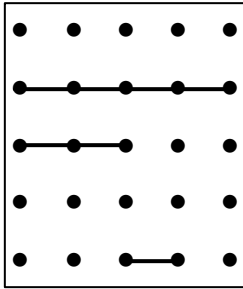
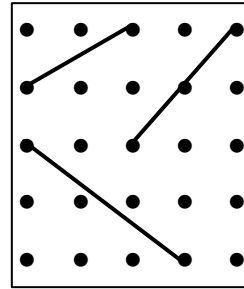2.
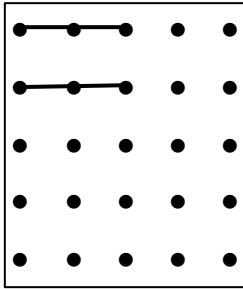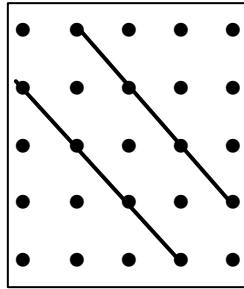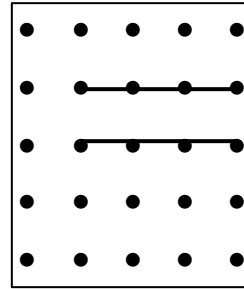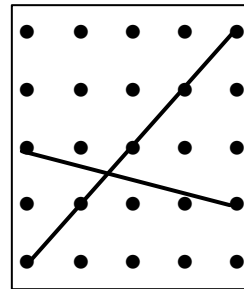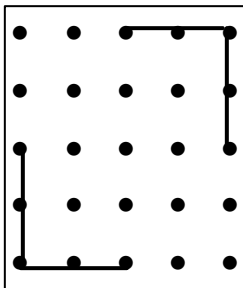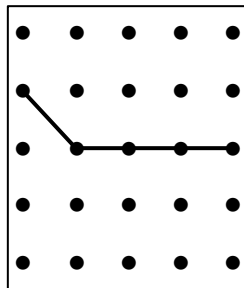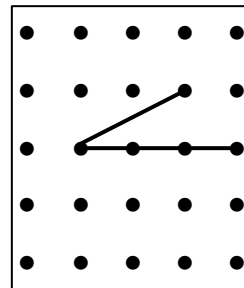
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4.

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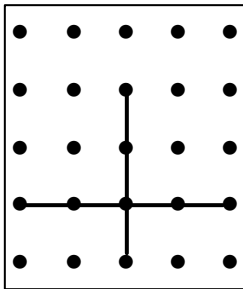
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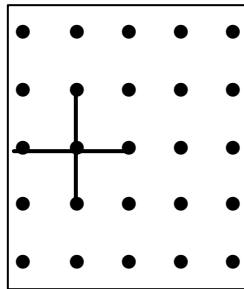
9.

10.

11.

12.

◦ Have one student summarize today's lesson. Sketching geometric figures can help students focus on the properties of the figures.

Student Sheet 109 (Geometry: Lesson 7)

Dot Paper

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2.

3.

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5.

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7.

8.

9.

10.

11.

12.