

Lines, Line Segments, and Rays

GET READY to Learn

Farmers often plant crops like corn in rows. The rows resemble line segments.



MAIN IDEA

I will identify, describe, and classify lines, line segments, and rays.

New Vocabulary

line

ray

endpoint

line segment

parallel

intersecting

perpendicular

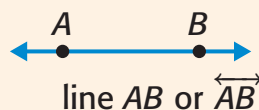
KEY CONCEPTS

Lines, Rays, Segments

Words

A **line** is a straight set of points that extend in opposite directions without ending.

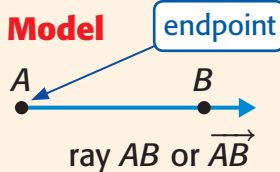
Model



Words

A **ray** is a part of a line that has one **endpoint** and extends in one direction without ending.

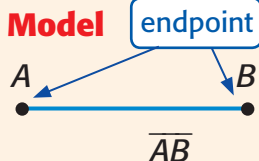
Model



Words

A **line segment** is a part of a line between two endpoints.

Model



EXAMPLES

Identify Lines, Rays, or Line Segments

Identify each figure.



The figure extends in opposite directions without ending. Line XY or \overleftrightarrow{XY} .



This figure has one endpoint and extends in one direction without ending. Ray AB or \overrightarrow{AB} .

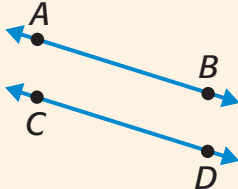
You can describe lines, rays, and line segments by the way they meet or cross each other.

Remember
 The symbol \parallel means parallel. The symbol \perp means perpendicular. The symbol \sphericalangle means right angle.

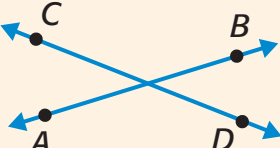
KEY CONCEPTS

Types of Lines

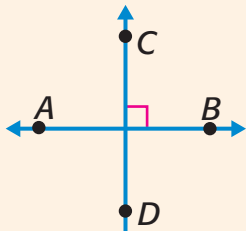
Words **Parallel** lines are always the same distance apart. They do not meet.

Model  line AB is parallel to line CD
 $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$

Words Lines that meet or cross each other are called **intersecting** lines.

Model  line AB intersects line CD
 \overleftrightarrow{AB} intersects \overleftrightarrow{CD}

Words Lines that meet or cross each other to form right angles are called **perpendicular** lines.

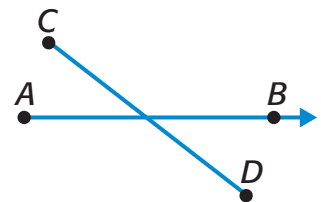
Model  line AB is perpendicular to line CD
 $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$

EXAMPLE Describe Lines

3 Describe the figure.

The figure shows ray AB and line segment CD . Notice that ray AB intersects line segment CD .

\overrightarrow{AB} intersects \overline{CD} .

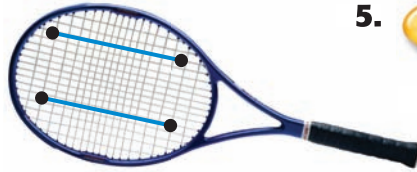


CHECK What You Know

Identify each figure. See Examples 1 and 2 (p. 394)



4. Describe the line segments formed on a tennis racquet.
See Example 3 (p. 395)



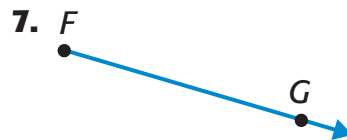
5. **Talk About It** List a real-world example for a line segment, parallel lines, and intersecting lines.

Practice and Problem Solving

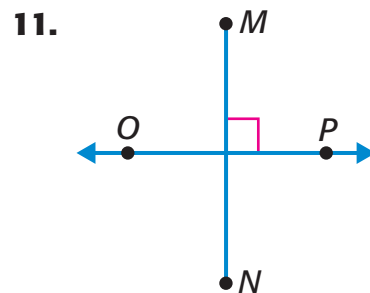
EXTRA PRACTICE

See page R25.

Identify each figure. See Examples 1 and 2 (p. 394)



Describe the figure. See Example 3 (p. 395)



Real-World PROBLEM SOLVING

Geography On a map, streets resemble line segments. Use the map to the right to answer Exercises 12–15.

- Identify two streets that are parallel to Oak Street.
- Tell whether Center Street and Johnston Street are parallel, intersecting, or perpendicular lines. Explain.
- Identify two streets that are parallel.
- Are there any streets that are intersecting? Explain.



H.O.T. Problems

OPEN ENDED Draw an example of each figure described.

16. ray CD

17. $\overleftrightarrow{DE} \parallel \overleftrightarrow{FG}$

18. \overline{RS} intersecting \overline{TU}

REASONING Tell whether each statement is *true* or *false*.

19. If two lines are parallel, they are the same distance apart.

20. If two lines are parallel, they are also perpendicular.

21. **WRITING IN MATH** Can you draw two lines on a sheet of paper that are both parallel and perpendicular? Explain.



Standards Practice

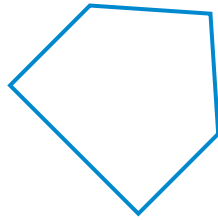
22 The figure below has five sides. What is it called? (Lesson 10-2)

A hexagon

B triangle

C octagon

D pentagon



23 Which figure shows parallel lines? (Lesson 10-4)

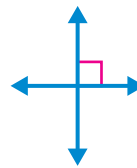
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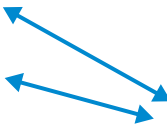
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G



J



Spiral Review

For Exercises 24 and 25, use the table. (Lesson 10-3)

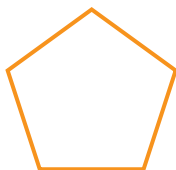
24. Mr. Ito's class is playing a game. The table shows how many playing pieces are needed. Copy and complete the table.

25. Explain how to find the number of pieces needed if you know the number of students playing.

Game Pieces Needed	
Students	Number of Pieces
4	36
7	63
■	72
9	■
10	90

Identify each polygon. (Lesson 10-2)

26.



27.



28.

