Unlock the Problem

You can find models of lines in the world around you. For example, two streets that cross each other model intersecting lines. Metal rails on a train track that never cross model parallel lines.

Try This! Tell how the streets appear to be related. Write perpendicular, parallel, or intersecting.

- W 36th St and Broadway
- W 35th St and 7th Ave
- W 37th St and W 36th St

Math Talk

Use Math Vocabulary
Can two rays be parallel? Explain.
Activity

Draw and label $\overrightarrow{YX} \perp \overrightarrow{YZ}$ intersecting at point $Y$.

Materials

- straightedge

STEP 1: Draw and label $\overrightarrow{YX}$.

STEP 2: Then draw and label $\overrightarrow{YZ}$.

STEP 3: Make sure $\overrightarrow{YX}$ and $\overrightarrow{YZ}$ intersect at point $Y$.

STEP 4: Make sure the rays are perpendicular.

1. Name the figure you drew.

2. Can you classify the figure? Explain.

Share and Show

1. Draw and label $QR \parallel ST$.

Think: Parallel lines never intersect. Parallel line segments are parts of parallel lines.

Use the figure for 2 and 3.

2. Name two line segments that appear to be parallel.

3. Name two line segments that appear to be perpendicular.
On Your Own

Use the figure for 4–5.

4. Name a pair of lines that are perpendicular.

__________________________________________________________

5. Name a pair of lines that appear to be parallel.

__________________________________________________________

Draw and label the figure described.

6. \( \overline{RS} \parallel \overline{TU} \)

7. \( \overrightarrow{KL} \) and \( \overrightarrow{KM} \)

8. \( \overrightarrow{CD} \perp \overrightarrow{DE} \)

9. \( \overrightarrow{JK} \perp \overrightarrow{LM} \)

10. \( \overrightarrow{ST} \) intersecting \( \overrightarrow{UV} \) at point \( X \)

11. \( \overrightarrow{AB} \parallel \overrightarrow{FG} \)

Problem Solving • Applications

Use the figure for 12–13.

12. THINK SMARTER Dan says that \( \overrightarrow{HL} \) is parallel to \( \overrightarrow{IM} \). Is Dan correct? Explain.

_________________________________________________________

13. GO DEEPER Name two intersecting line segments that are not perpendicular.

_________________________________________________________
Use the house plan at the right for 14–16.

14. What geometric term describes a corner of the living room?

15. Name three parts of the plan that show line segments.

16. **Think Smarter** Name a pair of line segments that appear to be parallel.

Use the map at the right for 17–19.

17. Name a street that appears to be parallel to S 17th Street.

18. **Mathematical Practice** Use Diagrams Name a street that appears to be parallel to Vernon Street.

19. Name a street that appears to be perpendicular to S 19th Street.

20. **Think Smarter** Choose the labels to make a true statement.

\[ \vec{GH} \] is perpendicular to \[ \vec{JI} \]
\[ \vec{AB} \]
\[ \vec{EF} \]
\[ \vec{AE} \]
\[ \vec{GH} \]
**Parallel Lines and Perpendicular Lines**

*Use the figure for 1–2.*

1. Name a pair of lines that appear to be perpendicular.

   **Think:** Perpendicular lines form right angles.  
   \[ \overrightarrow{AB} \text{ and } \overrightarrow{EF} \text{ appear to form right angles.} \]

2. Name a pair of lines that appear to be parallel.

*Draw and label the figure described.*

3. \[ \overrightarrow{MN} \text{ and } \overrightarrow{PQ} \text{ intersecting at point } R \]

4. \[ \overrightarrow{WX} \parallel \overrightarrow{YZ} \]

5. \[ \overrightarrow{FH} \perp \overrightarrow{JK} \]

*Problem Solving*

*Use the street map for 6–7.*

6. Name two streets that intersect but do not appear to be perpendicular.

7. Name two streets that appear to be parallel to each other.

8. [WRITE Math] Draw and label an example of two parallel lines that are perpendicular to a third line.
Lesson Check (4.G.A.1)

1. Write a capital letter that appears to have perpendicular line segments?

2. In the figure, which pair of line segments appear to be parallel?

   ![Diagram]

   F G
     J H

Spiral Review (4.NBT.B.5, 4.NBT.B.6, 4.NF.A.2, 4.G.A.2)

3. Nolan drew a right triangle. How many acute angles did he draw?

4. Mike drank more than half the juice in his glass. What fraction of the juice could Mike have drunk?

5. A school principal ordered 1,000 pencils. He gave an equal number to each of 7 teachers until he had given out as many as possible. How many pencils were left?

6. A carton of juice contains 64 ounces. Ms. Wilson bought 6 cartons of juice. How many ounces of juice did she buy?