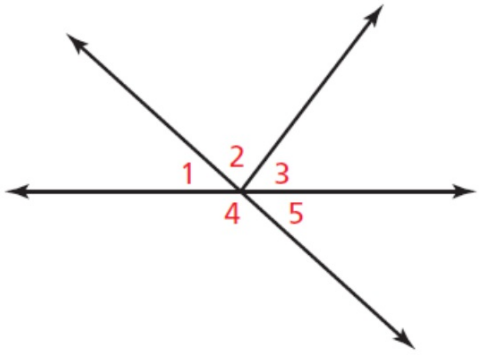
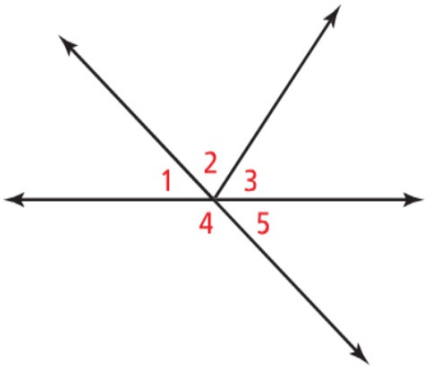
Identify all the linear pairs and all the vertical angles in the figure.



Identify all the linear pairs and all the vertical angles in the figure.



SOLUTION

To find vertical angles, look for angles formed by intersecting lines.

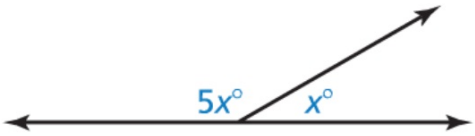
- $\angle 1$ and $\angle 5$ are vertical angles.

To find linear pairs, look for adjacent angles whose noncommon sides are opposite rays.

- $\angle 1$ and $\angle 4$ are a linear pair. $\angle 4$ and $\angle 5$ are also a linear pair.

Two angles form a linear pair. The measure of one angle is five times the measureof the other angle. Find the measure of each angle.

Step 1 Draw a diagram. Let $x°$ be the measure of one angle. The measure of the other angle is $5x°$.



Step 2 Use the fact that the angles of a linear pair are supplementary to write an equation.

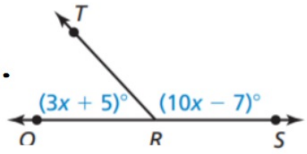
$$x° + 5x° = 180°$$ Write an equation.

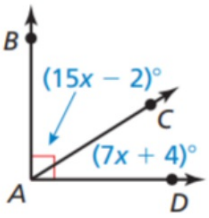
$$6x = 180$$ Combine like terms.

$$x = 30$$ Divide each side by 6.

▶ The measures of the angles are $30°$ and $5(30°) = 150°$.

1.6 Homework

1. 

2. 

11. $m\angle QRT = 47°, m\angle TRS = 133°$
12. $m\angle BAC = 58°, m\angle CAD = 32°$

3. Two angles form a linear pair. The measure of one angle is twice the measure of the other angle.

60°, 120°

4. The measure of an angle is nine times the measure of its complement.

9°, 81°

5. The measure of an angle is 6° less than the measure of its complement.

6. The measure of an angle is 12° more than twice the measure of its complement.

$x + (x - 6) = 90$; 48° and 42°
$x + (2x + 12) = 90$; 26° and 64°

CRITICAL THINKING **In Exercises 36–41, tell whether the statement is *always*, *sometimes*, or *never* true. Explain your reasoning.**

36. Complementary angles are adjacent.

37. Angles in a linear pair are supplements of each other.

38. Vertical angles are adjacent.

39. Vertical angles are supplements of each other.

40. If an angle is acute, then its complement is greater than its supplement.

41. If two complementary angles are congruent, then the measure of each angle is 45°.

36. sometimes; The angles could share a common side and make a right angle.

37. always; A linear pair forms a straight angle, which is 180°.

38. never; Vertical angles are formed by two pairs of opposite rays.

39. sometimes; This is possible if the lines are perpendicular.

40. never; Its complement will be acute, and its supplement will be obtuse.

41. always; $45 + 45 = 90$