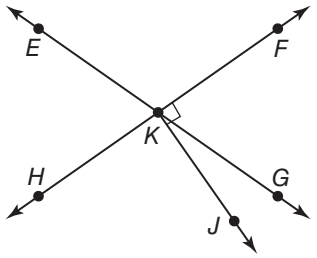
NAME _____ DATE _____ PERIOD _____

1-5 Skills Practice

Angle Relationships

For Exercises 1–6, use the figure at the right. Name an angle or angle pair that satisfies each condition.



1. Name two acute vertical angles.

2. Name two obtuse vertical angles.

3. Name a linear pair.

4. Name two acute adjacent angles.

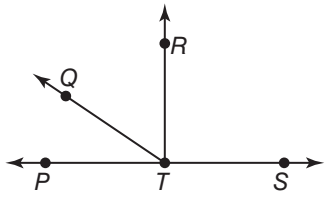
5. Name an angle complementary to $\angle EKH$.

6. Name an angle supplementary to $\angle FKG$.

7. Find the measures of an angle and its complement if one angle measures 24 degrees more than the other.

8. The measure of the supplement of an angle is 36 less than the measure of the angle. Find the measures of the angles.

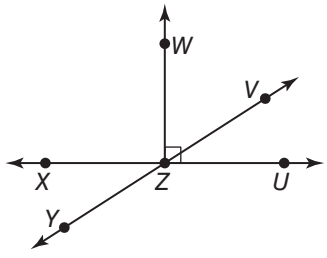
ALGEBRA For Exercises 9–10, use the figure at the right.



9. If $m\angle RTS = 8x + 18$, find the value of x so that $\overrightarrow{TR} \perp \overrightarrow{TS}$.

10. If $m\angle PTQ = 3y - 10$ and $m\angle QTR = y$, find the value of y so that $\angle PTR$ is a right angle.

Determine whether each statement can be assumed from the figure. Explain.



11. $\angle WZU$ is a right angle.

12. $\angle YZU$ and $\angle UZV$ are supplementary.

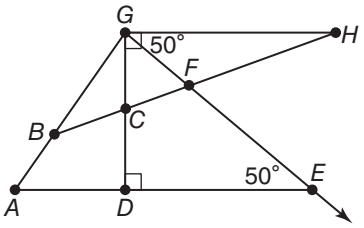
13. $\angle VZU$ is adjacent to $\angle YZX$.

NAME _____ DATE _____ PERIOD _____

1-5 Practice

Angle Relationships

Name an angle or angle pair that satisfies each condition.



1. Name two obtuse vertical angles.

2. Name a linear pair whose vertex is B.

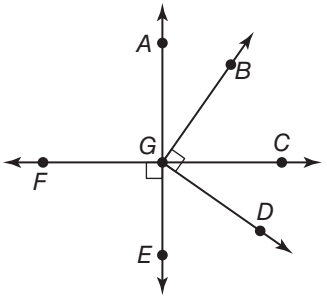
3. Name an angle not adjacent to, but complementary to $\angle FGC$.

4. Name an angle adjacent and supplementary to $\angle DCB$.

5. ALGEBRA Two angles are complementary. The measure of one angle is 21 more than twice the measure of the other angle. Find the measures of the angles.

6. ALGEBRA If a supplement of an angle has a measure 78 less than the measure of the angle, what are the measures of the angles?

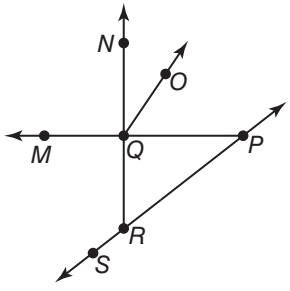
ALGEBRA For Exercises 7–8, use the figure at the right.



7. If $m\angle FGE = 5x + 10$, find the value of x so that $\overleftrightarrow{FC} \perp \overleftrightarrow{AE}$.

8. If $m\angle BGC = 16x - 4$ and $m\angle CGD = 2x + 13$, find the value of x so that $\angle BGD$ is a right angle.

Determine whether each statement can be assumed from the figure. Explain.

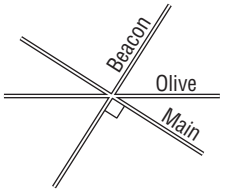


9. $\angle NQO$ and $\angle OQP$ are complementary.

10. $\angle SRQ$ and $\angle QRP$ is a linear pair.

11. $\angle MQN$ and $\angle MQR$ are vertical angles.

12. STREET MAPS Darren sketched a map of the cross streets nearest to his home for his friend Miguel. Describe two different angle relationships between the streets.



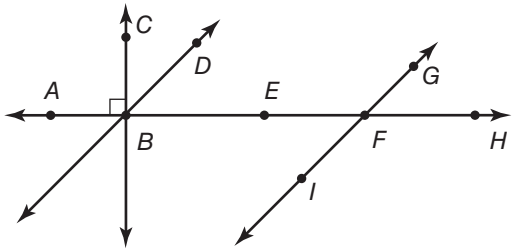
NAME _____ DATE _____ PERIOD _____

1-5 Study Guide and Intervention

Angle Relationships

Pairs of Angles **Adjacent angles** are two angles that lie in the same plane and have a common vertex and a common side, but no common interior points. A pair of adjacent angles with noncommon sides that are opposite rays is called a **linear pair**. **Vertical angles** are two nonadjacent angles formed by two intersecting lines.

Example **Name an angle or angle pair that satisfies each condition.**



a. two vertical angles

$\angle EFI$ and $\angle GFH$ are nonadjacent angles formed by two intersecting lines. They are vertical angles.

b. two adjacent angles

$\angle ABD$ and $\angle DBE$ have a common vertex and a common side but no common interior points. They are adjacent angles.

c. two supplementary angles

$\angle EFG$ and $\angle GFH$ form a linear pair. The angles are supplementary.

d. two complementary angles

$m\angle CBD + m\angle DBE = 90$. These angles are complementary.

Exercises

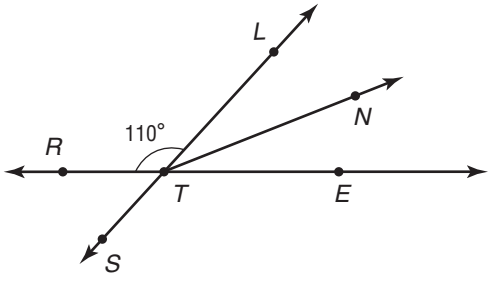
Name an angle or angle pair that satisfies each condition.

1. two adjacent angles

2. two acute vertical angles

3. two supplementary adjacent angles

4. an angle supplementary to $\angle RTS$

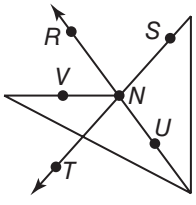


For Exercises 5–7, use the figure at the right.

5. Identify two obtuse vertical angles.

6. Identify two acute adjacent angles.

7. Identify an angle supplementary to $\angle TNU$.



8. Find the measures of two complementary angles if the difference in their measures is 18.

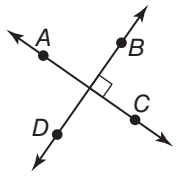
Lesson 1-5

NAME _____ DATE _____ PERIOD _____

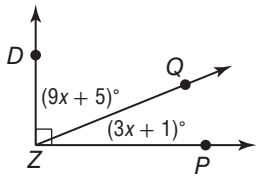
1-5 Study Guide and Intervention *(continued)*

Angle Relationships

Perpendicular Lines Lines, rays, and segments that form four right angles are **perpendicular.** The right angle symbol indicates that the lines are perpendicular. In the figure at the right, $\overleftrightarrow{AC}$ is perpendicular to $\overleftrightarrow{BD}$, or $\overleftrightarrow{AC} \perp \overleftrightarrow{BD}$.



Example **Find x so that $\overrightarrow{DZ}$ and $\overrightarrow{ZP}$ are perpendicular.**



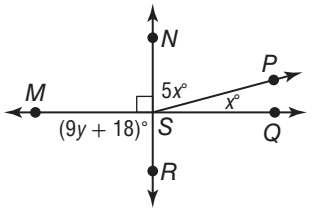
If $\overrightarrow{DZ} \perp \overrightarrow{ZP}$, then $m\angle DZP = 90$.

$m\angle DZQ + m\angle QZP = m\angle DZP$	Sum of parts = whole
$(9x + 5) + (3x + 1) = 90$	Substitution
$12x + 6 = 90$	Combine like terms.
$12x = 84$	Subtract 6 from each side.
$x = 7$	Divide each side by 12.

Exercises

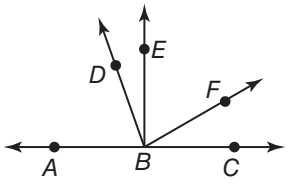
1. Find the value of x and y so that $\overleftrightarrow{NR} \perp \overleftrightarrow{MQ}$.

2. Find $m\angle MSN$.

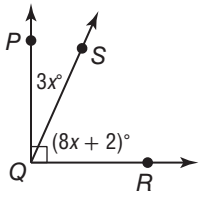


3. $m\angle EBF = 3x + 10$, $m\angle DBE = x$, and $\overrightarrow{BD} \perp \overrightarrow{BF}$. Find the value of x.

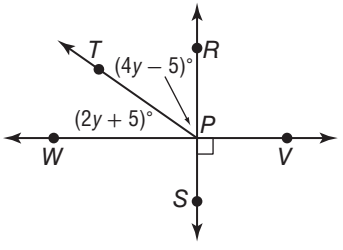
4. If $m\angle EBF = 7y - 3$ and $m\angle FBC = 3y + 3$, find the value of y so that $\overrightarrow{EB} \perp \overrightarrow{BC}$.



5. Find the value of x, $m\angle PQS$, and $m\angle SQR$.



6. Find the value of y, $m\angle RPT$, and $m\angle TPW$.

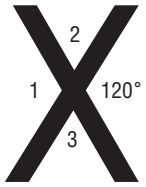


NAME _____ DATE _____ PERIOD _____

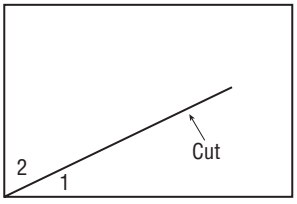
1-5 Word Problem Practice

Angle Relationships

1. LETTERS A sign painter is painting a large "X". What are the measures of angles 1, 2, and 3?

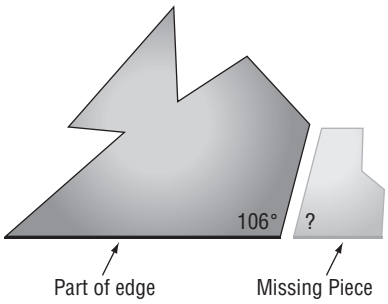


2. PAPER Matthew cuts a straight line segment through a rectangular sheet of paper. His cuts goes right through a corner. How are the two angles formed at that corner related?



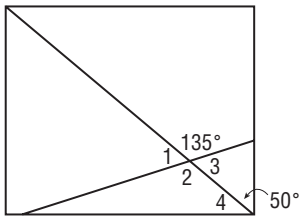
3. PIZZA Ralph has sliced a pizza using straight line cuts through the center of the pizza. The slices are not exactly the same size. Ralph notices that two adjacent slices are complementary. If one of the slices has a measure of $2x°$, and the other a measure of $3x°$, what is the measure of each angle?

4. GLASS Carlo dropped a piece of stained glass and the glass shattered. He picked up the piece shown on the left.



He wanted to find the piece that was adjoining on the right. What should the measurement of the angle marked with a question mark be? How is that angle related to the angle marked 106°?

5. LAYOUTS A rectangular plaza has a walking path along its perimeter in addition to two paths that cut across the plaza as shown in the figure.



a. Find the measure of ∠1.

b. Find the measure of ∠4.

c. Name a pair of vertical angles in the figure. What is the measure of ∠2?