1-5 Practice  *Angle Relationships*

Adjacent Angles: ____________________________________________

Example: 

Nonexample: 

Linear Pair: ____________________________________________

Example: 

Nonexample: 

Vertical Pair: ____________________________________________

Example: 

Nonexample: 

Complementary angles:  

\[
\begin{align*}
\text{Add} & \quad 90^\circ \\
65^\circ & + 25^\circ = 90^\circ \\
25^\circ & + 65^\circ \\
\end{align*}
\]

Supplementary angles:  

\[
\begin{align*}
\text{Add} & \quad 180^\circ \\
120^\circ & + 60^\circ \\
120^\circ & + 60^\circ \\
\end{align*}
\]

Supplement:  

**two angles add to 180°**

Complement: 

**two angle measures have sum 90°**
Name an angle or angle pair that satisfies each condition.

1. Name two obtuse vertical angles.

2. Name a linear pair with vertex $B$.

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 \( \overline{FC} = \overline{AE} \).

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.
1-5 Practice

Section: Angle Relationships

Name an angle or angle pair that satisfies each condition.

1. Name two obtuse vertical angles. **Sample answer: \( \angle GFH, \angle CFE \)**
2. Name a linear pair with vertex \( B \). **\( \angle GBC, \angle CBA \)**
3. Name an angle not adjacent to, but complementary to \( \angle FGC \). **\( \angle FED \)**
4. Name an angle adjacent and supplementary to \( \angle DCB \). **\( \angle BCG \) or \( \angle DCH \)**

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. **23, 67**

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? **129, 51**

**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 \( \overline{FC} \perp \overline{AE} \). **16**

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. **4.5**

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

9. \( \angle NQO \) and \( \angle OQP \) are complementary. **No; \( m\angle NQP \) is not known to be 90.**

10. \( \angle SRQ \) and \( \angle QRP \) is a linear pair. **Yes; they are adjacent angles whose noncommon sides are opposite rays.**

11. \( \angle MQN \) and \( \angle MQR \) are vertical angles. **No; the angles are adjacent.**

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. **Sample answer: Beacon \( \perp \) Main; Olive divides two of the angles formed by Beacon and Main into pairs of complementary angles.**
\( 15^\circ \) \( x = 1\text{st angle} \quad x \)

\( y = 2\text{nd angle} \quad 21 + 2x \)

\( y = 21 + 2x \)

\( 90 = x + y \)

\( 90 = x + (21 + 2x) \)

\( 90 = 3x + 21 \)

\[-21\]

\( 69 = 3x \)

\( 23 = x \)