Essential Question: How can you classify two angles as complementary or supplementary?

1. **ACTIVITY: Complementary and Supplementary Angles**

   Work with a partner.

   a. The graph represents the measures of *complementary angles*. Use the graph to complete the table.

   $\begin{array}{c|c|c|c|c|c|c|c} 
   \hline
   x & 10^\circ & 20^\circ & 25^\circ & 30^\circ & 45^\circ & 50^\circ & 75^\circ \\
   y & 80^\circ & 70^\circ & 65^\circ & 60^\circ & 45^\circ & 40^\circ & 15^\circ \\
   \hline
   \end{array}$

   b. How do you know when two angles are complementary? Explain.

   *They add up to 90°*

   c. The graph represents the measures of *supplementary angles*. Use the graph to complete the table.

   $\begin{array}{c|c|c|c|c|c|c|c} 
   \hline
   x & 20^\circ & 30^\circ & 60^\circ & 90^\circ & 130^\circ & 140^\circ & 150^\circ \\
   y & 160^\circ & 150^\circ & 120^\circ & 90^\circ & 50^\circ & 40^\circ & 30^\circ \\
   \hline
   \end{array}$

   d. How do you know when two angles are supplementary? Explain.

   *They add up to 180°*
We did not do this page in class, but the answers are shown below.

7.2 Complementary and Supplementary Angles (continued)

2 ACTIVITY: Exploring Rules About Angles

Work with a partner. Complete each sentence with *always*, *sometimes*, or *never*.

a. If \(x\) and \(y\) are complementary angles, then both \(x\) and \(y\) are ______________ acute.

b. If \(x\) and \(y\) are supplementary angles, then \(x\) is ______________ acute.

c. If \(x\) is a right angle, then \(x\) is ______________ acute.

d. If \(x\) and \(y\) are complementary angles, then \(x\) and \(y\) are ______________ adjacent.

e. If \(x\) and \(y\) are supplementary angles, then \(x\) and \(y\) are ______________ vertical.

3 ACTIVITY: Classifying Pairs of Angles

Work with a partner. Tell whether the two angles shown on the clocks are *complementary*, *supplementary*, or *neither*. Explain your reasoning.

a. [Clock Image]

b. [Clock Image]

c. [Clock Image]

d. [Clock Image]
**7.2 Complementary and Supplementary Angles (continued)**

### Activity: Identifying Angles

Work with a partner. Use a protractor and the figure shown.

**a.** Name four pairs of complementary angles and four pairs of supplementary angles.

- \( \angle 1 + \angle 2 \)
- \( \angle 3 + \angle 4 \)
- \( \angle 5 + \angle 6 \)
- \( \angle 7 + \angle 8 \)

**b.** Name two pairs of vertical angles.

**What Is Your Answer?**

**5. IN YOUR OWN WORDS** How can you classify two angles as complementary or supplementary? Give examples of each type.

- Complementary angles add up to 90°.
- Supplementary angles add up to 180°.
Tell whether the angles are \textit{complementary}, \textit{supplementary}, or \textit{neither}.

1. \quad \angle 43^\circ \quad \angle 47^\circ

2. \quad \angle 48^\circ \quad \angle 27^\circ

3. \quad \angle 52^\circ \quad \angle 128^\circ

Tell whether the angles are \textit{complementary or supplementary}. Then find the value of \( x \).

4. \quad \angle 10x^\circ \quad \angle 30^\circ \quad 10x + 30 = 90$

5. \quad \angle (4x + 40)^\circ \quad \angle 3x^\circ \quad 4x + 40 + 3x = 180$

6. Find the value of \( x \) needed to hit the ball in the hole.