

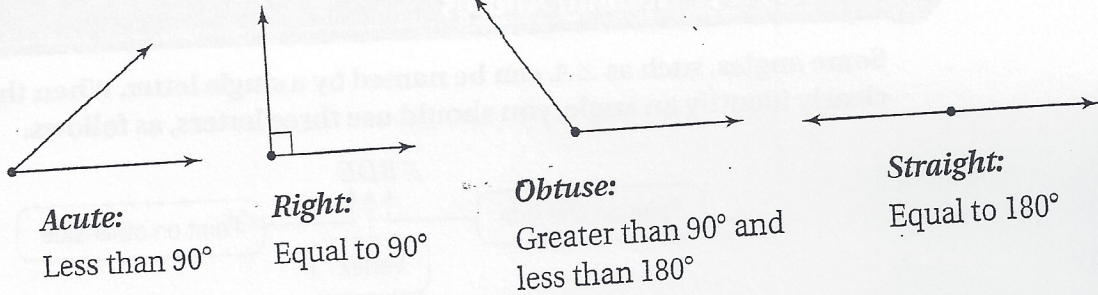
11.1 Classifying Angles



COMMON
CORE STATE
STANDARDS
7.G.5
8.G.5

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

Classification of Angles



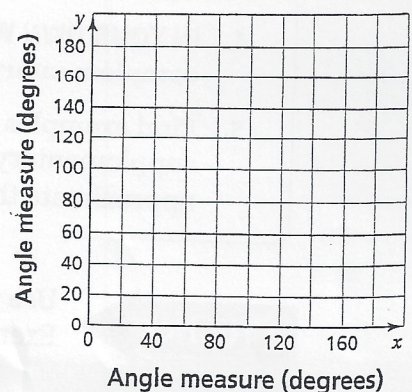
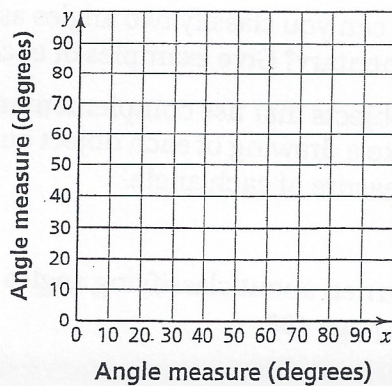
1 ACTIVITY: Complementary and Supplementary Angles

Work with a partner.

- Copy and complete each table.
 - Graph each function. Is the function linear?
 - Write an equation for y as a function of x .
 - Describe the values of x that make sense for each function.
- a. Two angles are **complementary** if the sum of their measures is 90° . In the table, x and y are complementary.
- b. Two angles are **supplementary** if the sum of their measures is 180° . In the table, x and y are supplementary.

x	15°	30°	45°	60°	75°
y					

x	30°	60°	90°	120°	150°
y					



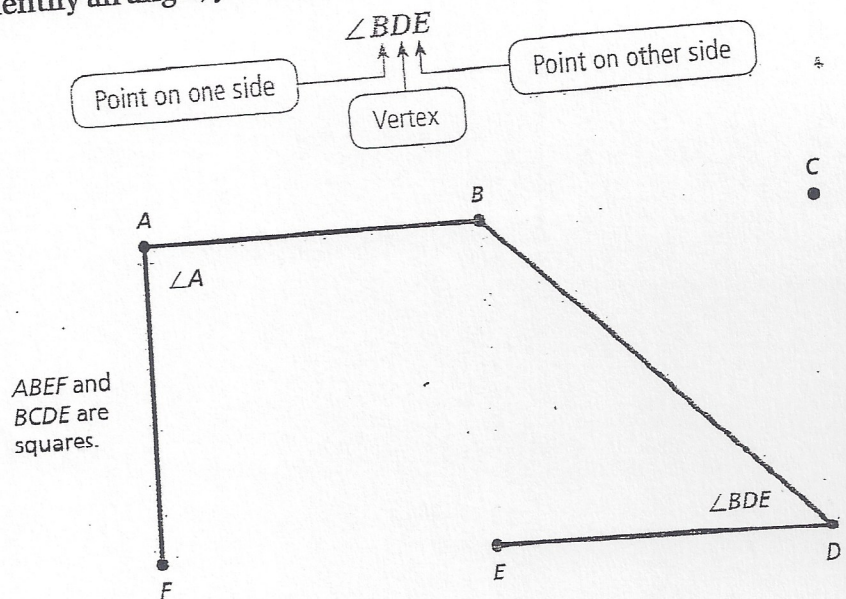
2 ACTIVITY: Exploring Rules About Angles

Work with a partner. Copy and complete each sentence with *always*, *sometimes*, or *never*.

- If x and y are complementary angles, then both x and y are _____ acute.
- If x and y are supplementary angles, then x is _____ acute.
- If x is a right angle, then x is _____ acute.

3 ACTIVITY: Naming Angles

Some angles, such as $\angle A$, can be named by a single letter. When this does not clearly identify an angle, you should use three letters, as follows.



Work with a partner.

- Name all pairs of complementary angles in the diagram above.
- Name all pairs of supplementary angles in the diagram above.

What Is Your Answer?

- IN YOUR OWN WORDS** How can you classify two angles as complementary or supplementary? Give examples of each type.
- Find examples of real-life objects that use complementary and supplementary angles. Make a drawing of each object and approximate the degree measure of each angle.

Practice →

Use what you learned about classifying angles to complete Exercises 3–5 on page 468.

11.1 Exercises

Vocabulary and Concept Check

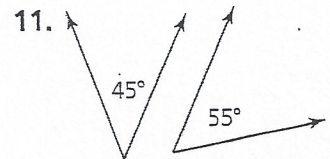
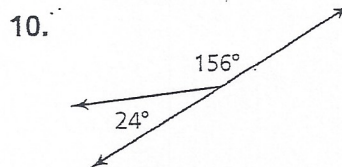
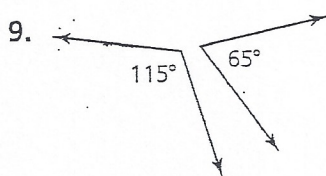
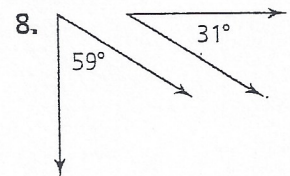
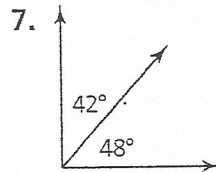
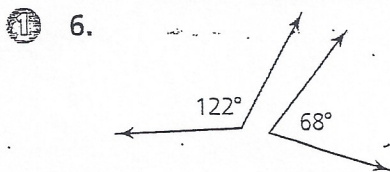
- VOCABULARY** Explain the difference between complementary angles and supplementary angles.
- WRITING** When two lines intersect, how many pairs of vertical angles are formed? Explain.

Practice and Problem Solving

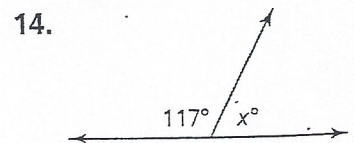
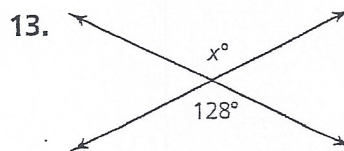
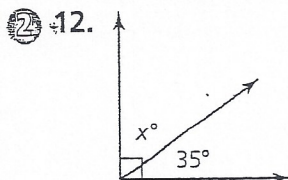
Tell whether the statement is *always*, *sometimes*, or *never* true. Explain.

- If x and y are supplementary angles, then x is obtuse.
- If x and y are right angles, then x and y are supplementary angles.
- If x and y are complementary angles, then y is a right angle.

Tell whether the angles are *complementary*, *supplementary*, or *neither*.



Find the value of x .



15. **ERROR ANALYSIS** Describe and correct the error in finding the value of x .



The value of x is 55 because vertical angles are complementary.

16. **TRIBUTARY** A tributary joins a river at an angle. Find the value of x .

