1-4 Measuring Angles

Vocabulary

Review

Write T for *true* or F for *false*.

_____ **1.** $\overrightarrow{AB}$ names a *ray* with endpoints *A* and *B*.

_____ **2.** You name a *ray* by its endpoint and another point on the *ray*.

Vocabulary Builder

angle (noun, verb) ANG gul

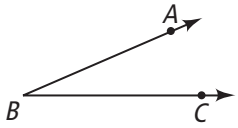
Other Word Forms: angular (adjective), angle (verb), angled (adjective)

Definition: An **angle** is formed by two rays with the same endpoint.

Use Your Vocabulary

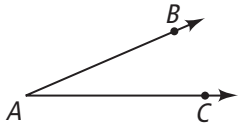
Name the rays that form each *angle*.

3.



_____ and _____

4.



_____ and _____

take note

Key Concept Angle

Definition

An **angle** is formed by two rays with the same endpoint.

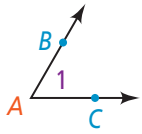
The rays are the **sides** of the angle. The endpoint is the **vertex** of the angle.

How to Name It

You can name an angle by

- its vertex
- a point on each ray and the vertex
- a number

Diagram



For Exercises 5–8, use the diagram in the Take Note on page 14. Name each part of the angle.

5. the *vertex*

6. two points that are NOT the vertex

and

7. the *sides*

and

8. Name the angle three ways.

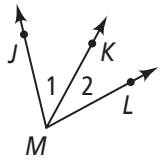
by its *vertex*

by a point on each side and the vertex

by a number

Problem 1 Naming Angles

Got It? **What are two other names for $\angle KML$?**



9. Cross out the ray that is NOT a ray of $\angle KML$.

$\overrightarrow{MK}$ $\overrightarrow{MJ}$ $\overrightarrow{ML}$

10. Circle all the possible names of $\angle KML$.

$\angle 1$ $\angle 2$ $\angle JKL$ $\angle JMK$ $\angle JML$ $\angle KMJ$ $\angle LMK$

take note

Key Concept Types of Angles

11. Draw your own example of each type of angle.

acute	right	obtuse	straight
$0 < x <$	$x =$	$< x <$	$x =$

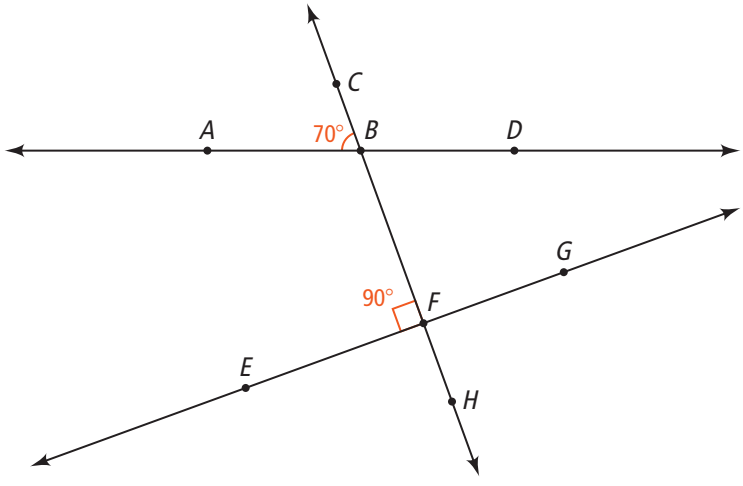
In the diagram, $m\angle ABC = 70$ and $m\angle BFE = 90$. Describe each angle as *acute, right, obtuse* or *straight*. Give an angle measure to support your description.

12. $\angle ABC$

13. $\angle CBD$

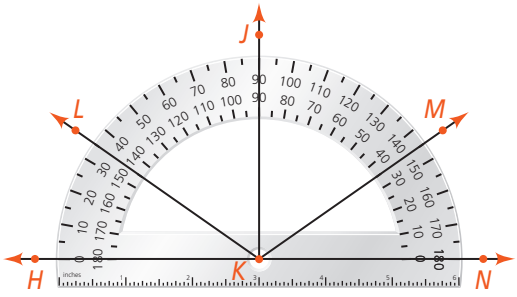
14. $\angle CFG$

15. $\angle CFH$



Problem 2 Measuring and Classifying Angles

Got It? What are the measures of $\angle LKH$, $\angle HKN$, and $\angle MKH$ in the art below? Classify each angle as *acute, right, obtuse,* or *straight.*

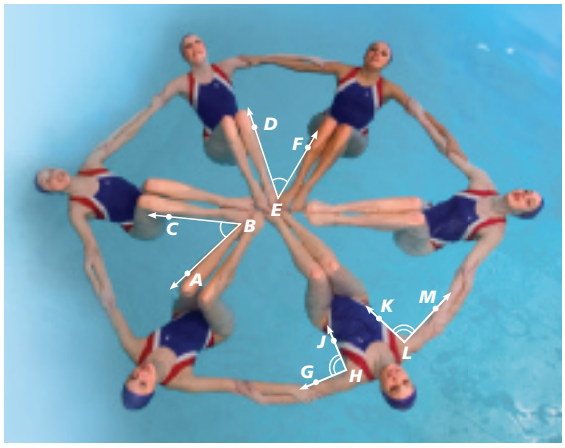


16. Write the measure of each angle. Then classify each angle.

$\angle LKH$	$\angle HKN$	$\angle MKH$
____°	____°	____°
_____	_____	_____

Problem 3 Using Congruent Angles

Got It? Use the photo at the right. If $m\angle ABC = 49$, what is $m\angle DEF$?



17. $\angle ABC$ has ____ angle mark(s).

18. The other angle with the same number of marks is $\angle$ ____.

19. Underline the correct word to complete the sentence.

The measure of $\angle ABC$ and the measure of the angle in Exercise 18 are equal / unequal.

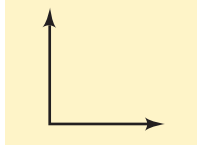
20. $m\angle DEF =$ ____

take note

Postulate 1–8 Angle Addition Postulate

If point B is in the interior of $\angle AOC$, then $m\angle AOB + m\angle BOC = m\angle AOC$.

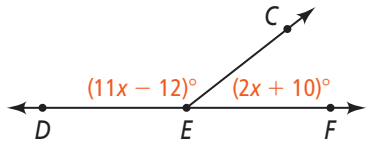
21. Draw $\angle ABT$ with point L in the interior and $\angle ABL$ and $\angle LBT$.



22. Complete: $m\angle ABL + m\angle$ ____ $= m\angle$ ____

Problem 4 Using the Angle Addition Postulate

Got It? $\angle DEF$ is a straight angle. What are $m\angle DEC$ and $m\angle CEF$?



23. Write a justification for each statement.

$m\angle DEF = 180$

$m\angle DEC + m\angle CEF = 180$

$(11x - 12) + (2x + 10) = 180$

$13x - 2 = 180$

$13x = 182$

$x = 14$

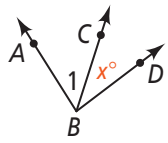
24. Use the value of x to find $m\angle DEC$ and $m\angle CEF$.

$m\angle DEC = 11x - 12 = 11(\quad) - 12 =$

$m\angle CEF =$

Lesson Check • Do you know How?

Algebra If $m\angle ABD = 85$, what is an expression to represent $m\angle ABC$?



25. Use the justifications at the right to complete the statements below.

$m\angle ABC + m\angle CBD = m\angle ABD$	Angle Addition Postulate
$m\angle ABC +$ ☐ $=$ ☐	Substitute.
$m\angle ABC +$ ☐ $-$ ☐ $=$ ☐ $-$ ☐	Subtract ☐ from each side.
$m\angle ABC =$ ☐	Simplify.

Math Success

Check off the vocabulary words that you understand.

☐ acute angle ☐ obtuse angle ☐ right angle ☐ straight angle

Rate how well you can *classify angles*.

Need to review 0 2 4 6 8 10 Now I get it!