1-4 Practice

Angle Measure

For Exercises 1–10, use the figure at the right.

Name the vertex of each angle.

1. $\angle 5 \ M$  
2. $\angle 3 \ P$
3. $\angle 8 \ O$  
4. $\angle NMP \ M$

Name the sides of each angle.

5. $\angle 6 \ NM, \ NO \ or \ NP \ or \ NR$  
6. $\angle 2 \ PR, \ PM$
7. $\angle MOP \ OM, \ OP \ or \ OR$  
8. $\angle OMN \ MO, \ MN$

Write another name for each angle.

9. $\angle QPR \ \angle 3, \ \angle RPQ$
10. $\angle 1 \ \angle MPO, \ \angle OPM, \ \angle MPN, \ \angle NPM$

Classify each angle as right, acute, or obtuse. Then use a protractor to measure the angle to the nearest degree.

11. $\angle UZW \ 90, \ right$  
12. $\angle YZW \ 70, \ acute$
13. $\angle TZW \ 110, \ obtuse$  
14. $\angle UZT \ 20, \ acute$

ALGEBRA In the figure, $\overrightarrow{CB}$ and $\overrightarrow{CD}$ are opposite rays, $\overrightarrow{CE}$ bisects $\angle DCF$, and $\overrightarrow{CG}$ bisects $\angle FCB$.

15. If $m \angle DCE = 4x + 15$ and $m \angle ECF = 6x - 5$, find $m \angle DCE$.  
16. If $m \angle FCG = 9x + 3$ and $m \angle GCB = 13x - 9$, find $m \angle GCB$.

17. TRAFFIC SIGNS The diagram shows a sign used to warn drivers of a school zone or crossing. Measure and classify each numbered angle.

$m \angle 1 = 90, \ right \ angle; \ m \angle 2 = 130, \ obtuse$
1-4 Word Problem Practice

Angle Measure

1. LETTERS  Lina learned about types of angles in geometry class. As she was walking home she looked at the letters on a street sign and noticed how many are made up of angles. The sign she looked at was KLINE ST. Which letter(s) on the sign have an obtuse angle? What other letters in the alphabet have an obtuse angle?

   the letter K; sample answers: X, Y

2. SQUARES  A square has four right angle corners. Give an example of another shape that has four right angle corners.

   rectangle

3. STARS  Melinda wants to know the angle of elevation of a star above the horizon. Based on the figure, what is the angle of elevation? Is this angle an acute, right, or obtuse angle?

   $65^\circ$; acute angle

4. CAKE  Nick has a slice of cake. He wants to cut it in half, bisecting the $46^\circ$ angle formed by the straight edges of the slice. What will be the measure of the angle of each of the resulting pieces?

   23

5. ROADS  Central Street runs north-south and Spring Street runs east-west.

   a. What kind of angle do Central Street and Spring Street make?

      right angle

   b. Valerie is driving down Spring Street heading east. She takes a left onto River Street. What type of angle did she have to turn her car through?

      acute angle

   c. What is the angle measure Valerie is turning her car when she takes the left turn?

      48
1-5 Practice

**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 \( FC \perp AE \).  
   \(16\)

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.  
   \( \text{No; } m\angle NQP \text{ is not known to be 90}. \)

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.  
    \( \text{No; the angles are adjacent}. \)

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

![Diagram of an X with angles labeled]

Angle 1 is 120°; angles 2 and 3 are both 60°.

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

![Diagram of a corner cut]

They are complementary.

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?

36, 54

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

![Diagram of a glass piece with angles labeled]

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°?

74°; The angles are supplementary.

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.

![Diagram of a rectangular plaza with angles labeled]

a. Find the measure of ∠1. 45

b. Find the measure of ∠4. 40

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

Sample answers: ∠1 and ∠3 or ∠2 and angle with measure 135; 135
PART 1: MULTIPLE CHOICE

Instructions: Fill in the appropriate circle for the best answer.

1. Which object models a line? (Lesson 1-1)
   A a fly  B a wall  C a meter stick  D a diskette

2. Which figure shows \( \overrightarrow{AB} \) and point \( G \) contained in plane \( R \)? (Lesson 1-1)
   F  
   G  

3. If point \( P \) is between \( A \) and \( M \), which is true? (Lesson 1-2)
   A \( PA + AM = PM \)  C \( AM + PM = AP \)
   B \( AM + AP = PA \)  D \( AP + PM = AM \)

4. When segments have the same measure, they are said to be ___? (Lesson 1-2)
   F accurate  H congruent
   G precise  J constructed

5. Find the distance between \( A(-3,5) \) and \( B(4,2) \), to the nearest hundredth. (Lesson 1-3)
   A 6.75  B 7.62  C 8.06  D 10

6. Find \( EF \) if \( E \) is the midpoint of \( \overline{DF} \), \( DE = 15 - 3x \), and \( EF = x + 3 \). (Lesson 1-3)
   F 1  G 6  H 9

For Questions 7-9, use the figure.

7. What is another name for \( \angle 2 \)? (Lesson 1-4)
   A \( \angle WYX \)  C \( \angle WXY \)
   B \( \angle 3 \)  D \( \angle Y \)

8. Which angles form a linear pair? (Lesson 1-5)
   F \( \angle 1 \) and \( \angle 3 \)  H \( \angle 2 \) and \( \angle 5 \)
   G \( \angle 2 \) and \( \angle 3 \)  J \( \angle 1 \) and \( \angle 4 \)

9. Name the angle that is vertical to \( \angle 3 \). (Lesson 1-5)
   A \( \angle 1 \)  B \( \angle 2 \)  C \( \angle 3 \)  D \( \angle 4 \)

10. Find the length of one side of a regular hexagon whose perimeter is 75 feet. (Lesson 1-6)
    F 25 ft  G 18.75 ft  H 15 ft  J 12.5 ft
1. Standardized Test Practice (continued)

11. Name the intersection of $\overrightarrow{AE}$ and $\overrightarrow{CG}$. (Lesson 1-1)
   A line $CD$  C point $C$
   B line $AB$  D point $G$
   11. $\bigcirc \bigcirc \bigcirc$

12. Find the distance between $A(-12, 13)$ and $B(-2, -11)$. (Lesson 1-3)
   F 6 units  G 14 units  H 26 units  J 29 units
   12. $\bigcirc \bigcirc \bigcirc$

13. Find the coordinates of $B$ if $A$ has coordinates $(3, 5)$ and $Y(-2, 3)$ is the midpoint of $\overline{AB}$. (Lesson 1-3)
   A $B(-7, 1)$  B $(3, 3)$  C $B(5, -2)$  D $B(-7, -3)$
   13. $\bigcirc \bigcirc \bigcirc$

14. If $m\angle HJK = 7y - 2$ and $m\angle PQR = 133$, find the value of $y$ so that $\angle HJK$ is supplementary to $\angle PQR$. (Lesson 1-5)
   F $-3$  G 2  H 4  J 7
   14. $\bigcirc \bigcirc \bigcirc \bigcirc$

15. Find the perimeter of $\triangle ABC$ if $A(1, 1), B(4, -3)$, and $C(-3, -2)$. (Lesson 1-6)
   A 17.1 units  B 20 units  C 23.5 units  D 29 units
   15. $\bigcirc \bigcirc \bigcirc$

Part 2: Gridded Response

Instructions: Enter your answer by writing each digit of the answer in a column box and then shading in the appropriate circle that corresponds to that entry.

For Exercises 16 and 17, use the figure below. $\overrightarrow{HL}$ bisects $\angle KHI$ and $\overrightarrow{HG}$ and $\overrightarrow{HI}$ are opposite rays.

16. If $\angle 1 \cong \angle 2$, $m\angle KHG = 70$, and $m\angle 1 = 3d + 2$, find the value of $d$. (Lesson 1-4)

17. If $m\angle 2 = a + 15$ and $m\angle 3 = a + 35$, find the value of $a$ so that $\overrightarrow{HL} \perp \overrightarrow{HJ}$. (Lesson 1-5)
# Chapter 1 Vocabulary Test

Write whether each sentence is *true* or *false*. If *false*, replace the underlined word or phrase to make a true sentence.

1. Two lines are perpendicular if they intersect to form a **right** angle.

2. Two angles are **congruent** if their measures have a sum of 90.

3. If two rays intersect at a common endpoint, a **plane** is formed.

Choose the correct term to complete each sentence.

4. Vertical angles are two (**nonadjacent** or **collinear**) angles formed by two intersecting lines.

5. The (**midpoint** or **angle bisector**) divides a line segment into two congruent segments.

Choose from the terms above to complete each sentence.

6. A(n) ____ **angle bisector** divides an angle into two congruent angles.

7. Two angles are ____ **supplementary** if their measures have a sum of 180.

8. Two angles that lie in the same plane are called ____ **adjacent angles** if they share a common side and a common vertex.

Define each term in your own words.

9. **collinear**

10. **vertical angles**