

Chapter 1 Vocabulary Test

SCORE _____

acute angle	coplanar	n -gon	right angle
adjacent angles	cylinder	obtuse angle	segment bisector
angle	degree	opposite rays	side
angle bisector	distance	perimeter	space
area	edge	perpendicular	sphere
base	equiangular polygon	plane	supplementary angles
between	equilateral polygon	Platonic solid	surface area
circumference	exterior	point	undefined term
collinear	face	polygon	vertex
complementary angles	interior	polyhedron	vertex of a polygon
concave	intersection	prism	vertical angles
cone	line	pyramid	volume
congruent	linear pair	ray	
construction	line segment	regular polygon	
convex	midpoint	regular polyhedra	

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

- Two lines are perpendicular if they intersect to form a right angle.
- Two angles are congruent if their measures have a sum of 90.
- If two rays intersect at a common endpoint, a plane is formed.

- _____
- _____
- _____

Choose the correct term to complete each sentence.

- Vertical angles are two (*nonadjacent* or *collinear*) angles formed by two intersecting lines.
- The (*midpoint* or *angle bisector*) divides a line segment into two congruent segments.

- _____
- _____

Choose from the terms above to complete each sentence.

- A(n) _____? divides an angle into two congruent angles.
- Two angles are _____? if their measures have a sum of 180.
- Two angles that lie in the same plane are called _____? if they share a common side and a common vertex.

- _____
- _____
- _____

Define each term in your own words.

- collinear
- vertical angles

- _____
- _____

Chapter 1 Test, Form 1

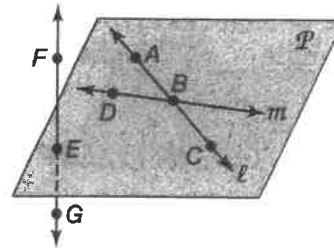
Assessment

Write the letter for the correct answer in the blank at the right of each question.

1. Name the geometric shape modeled by a pinhole in a wall.

- A line segment B plane C line D point 1. _____

For Exercises 2–4, use the figure at the right.



2. Which is another name for line ℓ ?

- F \overleftrightarrow{AB} H \overleftrightarrow{BD} 2. _____
 G C J P

3. Name the intersection of lines ℓ and m .

- A A C C 3. _____
 B B D P

4. Name three points coplanar with point A.

- F B, C, F G B, C, E H E, F, G J B, D, G 4. _____

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Midpoint

10. Fiona jogs every morning on a track that can be represented as a straight line. Her starting coordinate is $(-2, 5)$ and the finishing coordinate is $(4, -5)$. What are the coordinates of the point where Fiona has run half the distance?

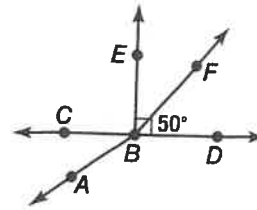
- F $(-3, -5)$ G $(1, 0)$ H $(2, 0)$ J $(6, -2)$ 10. _____

Chapter 1 Test, Form 1 (continued)

For Exercises 11–13, use the figure at the right.

11. Which point is the vertex of all the angles in this figure?

- A A C B
 B C D E



11. _____

12. What type of angle is $\angle ABC$?

- F acute angle G right angle H obtuse angle J straight angle 12. _____

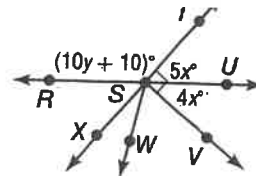
13. Which is true?

- A $m\angle EBF = 140$ B $m\angle EBF = 90$ C $m\angle EBF = 50$ D $m\angle EBF = 40$ 13. _____

For Exercises 15–17, use the figure at the right.

15. Which pair of angles are vertical angles?

- A $\angle RST, \angle TSU$ C $\angle RSX, \angle TSU$
 B $\angle TSU, \angle USV$ D $\angle RSX, \angle XSW$



15. _____

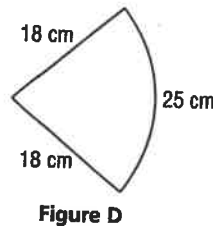
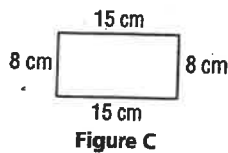
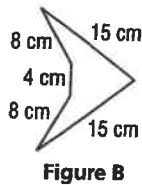
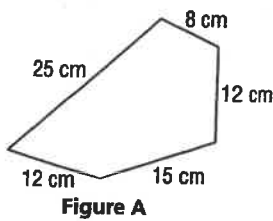
16. Which angle is supplementary to $\angle USV$?

- F $\angle TSU$ G $\angle VSW$ H $\angle RSV$ J $\angle WSR$ 16. _____

17. Find the values of x and y .

- A $x = 10, y = 12$ B $x = 20, y = 7$ C $x = 10, y = 8$ D $x = 50, y = 40$ 17. _____

For Exercises 18–20, use the figures below.



18. Which figure is not a polygon?

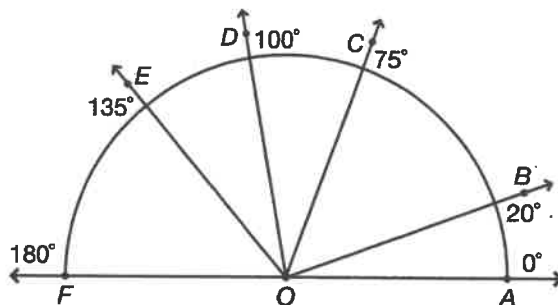
- F Figure A G Figure B H Figure C J Figure D 18. _____

MEASURING ANGLES

through zero on the protractor scale. The angle could be measured by subtracting the smaller measurement from the larger one. Putting the ray on zero simply makes the counting easier.

Practice

Using the following figure, find the measure of each angle.



_____ 1. $\angle AOB$

_____ 6. $\angle BOD$

_____ 2. $\angle FOA$

_____ 7. $\angle BOE$

_____ 3. $\angle AOD$

_____ 8. $\angle BOF$

_____ 4. $\angle FOB$

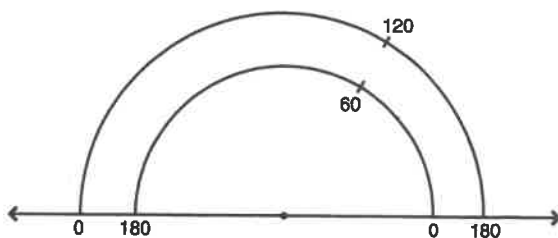
_____ 9. $\angle COD$

_____ 5. $\angle BOC$

_____ 10. $\angle COE$

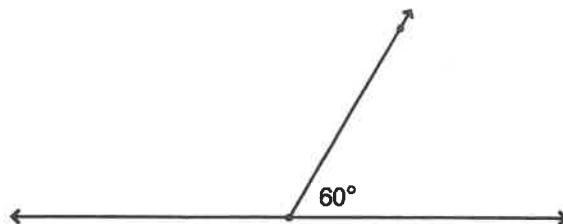
Drawing Angles

You can use a protractor to draw an angle of a given size. First, draw a ray and place the center point of the protractor on the endpoint of the ray. Align the ray with the base line of the protractor. Locate the degree of the angle you wish to draw. Make a dot at that point and connect it to the endpoint of the ray.



MEASURING ANGLES

The resulting angle will have the correct degree of measurement:



Practice

Use a protractor to draw angles with the given measures.

11. 45°

14. 125°

12. 75°

15. 32°

13. 100°

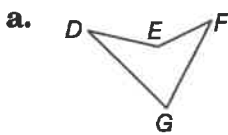
1-6 Study Guide and Intervention

Two-Dimensional Figures

Lesson 1-6

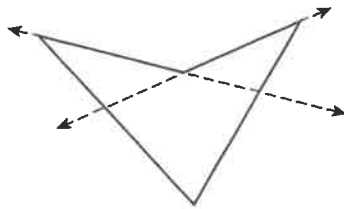
Polygons A **polygon** is a closed figure formed by a finite number of coplanar segments called **sides**. The sides have a common endpoint, are noncollinear, and each side intersects exactly two other sides, but only at their endpoints. In general, a polygon is classified by its number of sides. The vertex of each angle is a **vertex of the polygon**. A polygon is named by the letters of its vertices, written in order of consecutive vertices. Polygons can be **concave** or **convex**. A convex polygon that is both **equilateral** (or has all sides congruent) and **equiangular** (or all angles congruent) is called a regular polygon.

Example Name each polygon by its number of sides. Then classify it as *convex* or *concave* and *regular* or *irregular*.

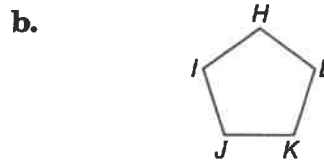


The polygon has four sides, so it is a quadrilateral.

Two of the lines containing the sides of the polygon will pass through the interior of the quadrilateral, so it is concave.



Only convex polygons can be regular, so this is an irregular quadrilateral.



The polygon has five sides, so it is a pentagon.

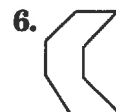
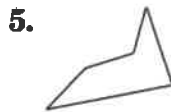
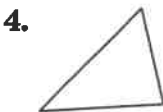
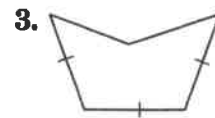
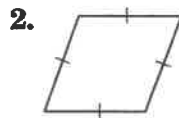
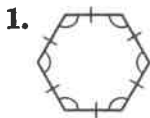
No line containing any of the sides will pass through the interior of the pentagon, so it is convex.

All of the sides are congruent, so it is equilateral. All of the angles are congruent, so it is equiangular.

Since the polygon is convex, equilateral, and equiangular, it is regular. So this is a regular pentagon.

Exercises

Name each polygon by its number of sides. Then classify it as *convex* or *concave* and *regular* or *irregular*.



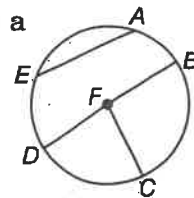
10-1 Study Guide and Intervention

Circles and Circumference

Segments in Circles A circle consists of all points in a plane that are a given distance, called the **radius**, from a given point called the **center**.

A segment or line can intersect a circle in several ways.

- A segment with endpoints that are at the center and on the circle is a **radius**.
- A segment with endpoints on the circle is a **chord**.
- A chord that passes through the circle's center and made up of collinear radii is a **diameter**.



chord: \overline{AE} , \overline{BD}
 radius: \overline{FB} , \overline{FC} , \overline{FD}
 diameter: \overline{BD}

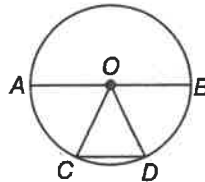
For a circle that has radius r and diameter d , the following are true

$$r = \frac{d}{2} \qquad r = \frac{1}{2}d \qquad d = 2r$$

Example

a. Name the circle.

The name of the circle is $\odot O$.



b. Name radii of the circle.

\overline{AO} , \overline{BO} , \overline{CO} , and \overline{DO} are radii.

c. Name chords of the circle.

\overline{AB} and \overline{CD} are chords.

Exercises

For Exercises 1–7, refer to

1. Name the circle.

2. Name radii of the circle.

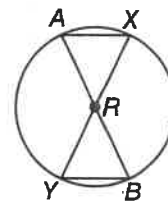
3. Name chords of the circle.

4. Name diameters of the circle.

5. If $AB = 18$ millimeters, find AR .

6. If $RY = 10$ inches, find AR and AB .

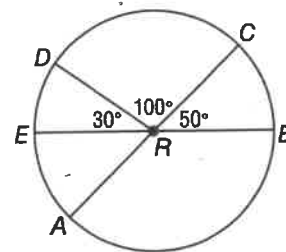
7. Is $\overline{AB} \cong \overline{XY}$? Explain.



10-2 Skills Practice

Measuring Angles and Arcs

\overline{AC} and \overline{EB} are diameters of $\odot R$. Identify each arc as a *major arc*, *minor arc*, or *semicircle* of the circle. Then find its measure.



1. $m\widehat{EA}$

2. $m\widehat{CB}$

3. $m\widehat{DC}$

4. $m\widehat{DEB}$

5. $m\widehat{AB}$

6. $m\widehat{CDA}$

\overline{PR} and \overline{QT} are diameters of $\odot A$. Find each measure.

7. $m\widehat{UPQ}$

8. $m\widehat{PQR}$

9. $m\widehat{UTS}$

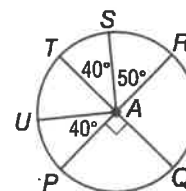
10. $m\widehat{RS}$

11. $m\widehat{RSU}$

12. $m\widehat{STP}$

13. $m\widehat{PQS}$

14. $m\widehat{PRU}$



Chapter 1 Assessment Answer Key

Vocabulary Test
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Form 1
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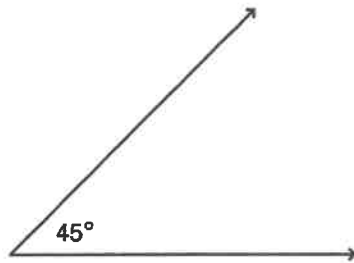
1. true
 false;
2. complementary
3. false; angle
4. nonadjacent
5. midpoint
6. angle bisector
7. supplementary
8. adjacent angles
9. points that lie on
 the same line
 opposite, congruent
 angles formed when
10. two lines intersect

1. D
2. F
3. B
4. G
5. D
6. J
7. A
8. H
9. A
10. G

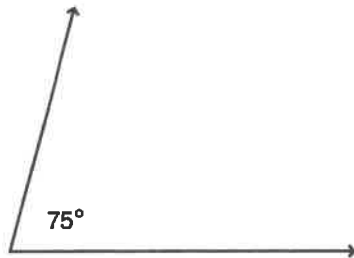
11. C
 12. F
 13. D
 14. G
 15. C
 16. H
 17. A
 18. J
 19. D
 20. G
- B: 12 yd**

Lesson 4

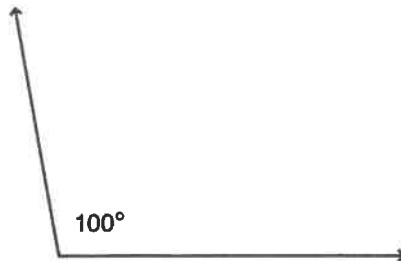
1. 20°
2. 180°
3. 100°
4. 160°
5. 55°
6. 80°
7. 115°
8. 160°
9. 25°
10. 60°
- 11.



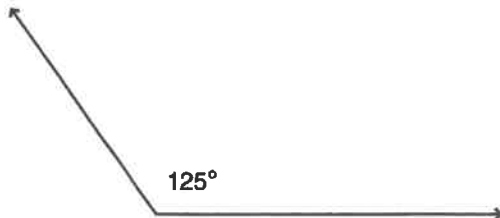
12.



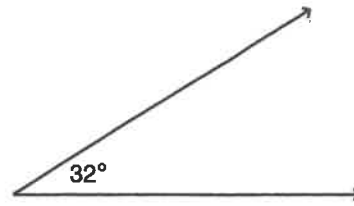
13.



14.



15.



16. 100°
17. 50°
18. 138°
19. 65°
20. 40°
21. 55°
22. 90°
23. 180°
24. 125°
25. 145°
26. 35°
27. 145°
28. 1,600 miles
29. 2,400 miles
30. 800 miles
31. 3,200 miles

10-1 Study Guide and Intervention

Circles and Circumference

Segments in Circles A circle consists of all points in a plane that are a given distance, called the **radius**, from a given point called the **center**.

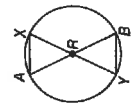
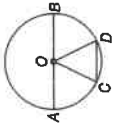
- A segment of line can intersect a circle in several ways.
- A segment with endpoints that are at the center and on the circle is a **radius**.
- A segment with endpoints on the circle is a **chord**.
- A chord that passes through the circle's center and made up of collinear radii is a **diameter**.

For a circle that has radius r and diameter d , the following are true

$$r = \frac{d}{2} \quad d = 2r$$

Example

- Name the circle.
The name of the circle is $\odot O$.
- Name radii of the circle.
 \overline{AO} , \overline{BO} , \overline{CO} , and \overline{DO} are radii.
- Name chords of this circle.
 \overline{AB} and \overline{CD} are chords.



- Exercises**
For Exercises 1-7, refer to $\odot R$.
- Name the circle. $\odot R$
 - Name radii of the circle. \overline{RA} , \overline{RB} , \overline{RY} , and \overline{RX}
 - Name chords of the circle. \overline{BY} , \overline{AX} , \overline{AB} , and \overline{XY}
 - Name diameters of the circle. \overline{AB} and \overline{XY}
 - If $AB = 18$ millimeters, find AR . 9 mm
 - If $RY = 10$ inches, find AR and AB . $AR = 10$ in.; $AB = 20$ in.

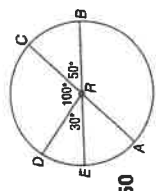
7. Is $\overline{AB} \cong \overline{XY}$? Explain. **Yes; all diameters of the same circle are congruent.**

Answers (Lesson 10-2)

10-2 Skills Practice

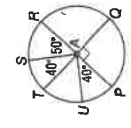
Measuring Angles and Arcs

\overline{AC} and \overline{EB} are diameters of $\odot R$. Identify each arc as a **major arc**, **minor arc**, or **semicircle** of the circle. Then find its measure.



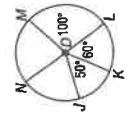
- $m\widehat{EA}$ minor arc; 50
- $m\widehat{CB}$ minor arc; 50
- $m\widehat{DC}$ minor arc; 100
- $m\widehat{DEB}$ major arc; 210
- $m\widehat{AB}$ minor arc; 130
- $m\widehat{CDA}$ semicircle; 180

\overline{PR} and \overline{QT} are diameters of $\odot A$. Find each measure.



- $m\widehat{UPQ}$ 130
- $m\widehat{UTS}$ 90
- $m\widehat{RSU}$ 140
- $m\widehat{PQR}$ 180
- $m\widehat{RS}$ 50
- $m\widehat{STP}$ 130
- $m\widehat{PQS}$ 230
- $m\widehat{PRU}$ 320

Use $\odot D$ to find the length of each arc. Round to the nearest hundredth.



- $m\widehat{LM}$ if the radius is 5 inches 8.73 in.
- $m\widehat{MN}$ if the diameter is 3 yards 2.09 yd
- \widehat{KL} if $JD = 7$ centimeters 7.33 cm
- \widehat{JK} if $NL = 12$ feet 12.57 ft
- \widehat{LM} if $DM = 9$ millimeters 25.13 mm
- \widehat{JK} if $KD = 15$ inches 13.09 in.

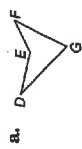
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1-6 Study Guide and Intervention

Two-Dimensional Figures

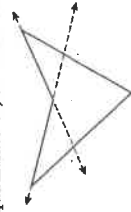
Polygons A polygon is a closed figure formed by a finite number of coplanar segments called sides. The sides have a common endpoint, are noncollinear, and each side intersects exactly two other sides, but only at their endpoints. In general, a polygon is classified by its number of sides. The vertex of each angle is a **vertex of the polygon**. A polygon is named by the letters of its vertices, written in order of consecutive vertices. Polygons can be **concave** or **convex**. A convex polygon that is both **equilateral** (or has all sides congruent) and **equiangular** (or all angles congruent) is called a **regular polygon**.

Example Name each polygon by its number of sides. Then classify it as *convex* or *concave* and *regular* or *irregular*.



The polygon has four sides, so it is a quadrilateral.

Two of the lines containing the sides of the polygon will pass through the interior of the quadrilateral, so it is **convex**.



Only convex polygons can be regular, so this is an **irregular** quadrilateral.



The polygon has five sides, so it is a pentagon.

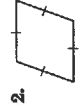
No line containing any of the sides will pass through the interior of the pentagon, so it is **convex**.

All of the sides are congruent, so it is **equilateral**. All of the angles are congruent, so it is **equiangular**.

Since the polygon is convex, equilateral, and equiangular, it is **regular**. So this is a **regular pentagon**.



hexagon; convex; regular



quadrilateral; convex; irregular



pentagon; concave; irregular



triangle; convex; irregular



pentagon; concave; irregular



octagon; concave; irregular

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