





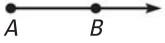
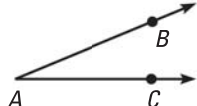
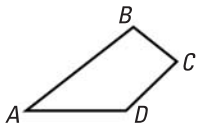
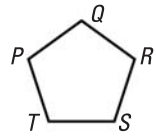
BIG IDEAS

For Your Notebook

Big Idea 1

Describing Geometric Figures

You learned to identify and classify geometric figures.

Point A 	Line AB (\overleftrightarrow{AB}) 	Plane M 	Segment AB (\overline{AB}) 
Ray AB (\overrightarrow{AB}) 	Angle A ($\angle A$, $\angle BAC$, or $\angle CAB$) 	Polygon <div style="display: flex; justify-content: space-around;"> <div>  Quadrilateral ABCD </div> <div>  Pentagon PQRST </div> </div>	

Big Idea 2

Measuring Geometric Figures

SEGMENTS You measured segments in the coordinate plane.

Distance Formula

Distance between $A(x_1, y_1)$ and $B(x_2, y_2)$:

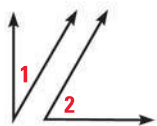
$$AB = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

Midpoint Formula

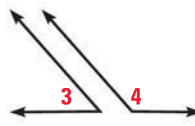
Coordinates of midpoint M of \overline{AB} , with endpoints $A(x_1, y_1)$ and $B(x_2, y_2)$:

$$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

ANGLES You classified angles and found their measures.

**Complementary angles**

$$m\angle 1 + m\angle 2 = 90^\circ$$

**Supplementary angles**

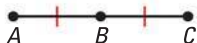
$$m\angle 3 + m\angle 4 = 180^\circ$$

FORMULAS Perimeter and area formulas are reviewed on page 49.

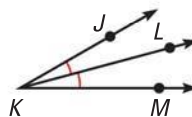
Big Idea 3

Understanding Equality and Congruence

Congruent segments have equal lengths. Congruent angles have equal measures.



$$\overline{AB} \cong \overline{BC} \text{ and } AB = BC$$



$$\angle JKL \cong \angle LKM \text{ and } m\angle JKL = m\angle LKM$$

1

CHAPTER REVIEW

@HomeTutor
classzone.com

- Multi-Language Glossary
- Vocabulary Practice

REVIEW KEY VOCABULARY

For a list of postulates and theorems, see pp. 926–931.

- undefined terms, p. 2
point, line, plane
- collinear, coplanar points, p. 2
- defined terms, p. 3
- line segment, endpoints, p. 3
- ray, opposite rays, p. 3
- intersection, p. 4
- postulate, axiom, p. 9
- coordinate, p. 9
- distance, p. 9
- between, p. 10
- congruent segments, p. 11
- midpoint, p. 15
- segment bisector, p. 15
- angle, p. 24
sides, vertex, measure
- acute, right, obtuse, straight, p. 25
- congruent angles, p. 26
- angle bisector, p. 28
- construction, p. 33
- complementary angles, p. 35
- supplementary angles, p. 35
- adjacent angles, p. 35
- linear pair, p. 37
- vertical angles, p. 37
- polygon, p. 42
side, vertex
- convex, concave, p. 42
- n -gon, p. 43
- equilateral, equiangular, regular, p. 43

VOCABULARY EXERCISES

1. Copy and complete: Points A and B are the ? of \overline{AB} .
2. Draw an example of a *linear pair*.
3. If Q is between points P and R on \overleftrightarrow{PR} , and $PQ = QR$, then Q is the ? of \overleftrightarrow{PR} .

REVIEW EXAMPLES AND EXERCISES

Use the review examples and exercises below to check your understanding of the concepts you have learned in each lesson of Chapter 1.

1.1 Identify Points, Lines, and Planes

pp. 2–8

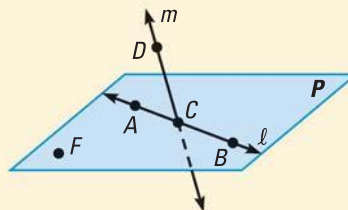
EXAMPLE

Use the diagram shown at the right.

Another name for \overleftrightarrow{CD} is line m .

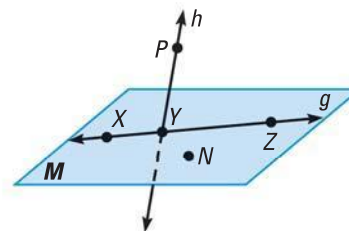
Points A , B , and C are collinear.

Points A , B , C , and F are coplanar.



EXERCISES

4. Give another name for line g .
5. Name three points that are *not* collinear.
6. Name four points that are coplanar.
7. Name a pair of opposite rays.
8. Name the intersection of line h and plane M .



EXAMPLES 1, 2, and 3
on pp. 3–4
for Exs. 4–8

1.2 Use Segments and Congruence

pp. 9–14

EXAMPLE

Find the length of \overline{HJ} .

$$GJ = GH + HJ$$

Segment Addition Postulate

$$27 = 18 + HJ$$

Substitute 27 for GJ and 18 for GH .

$$9 = HJ$$

Subtract 18 from each side.



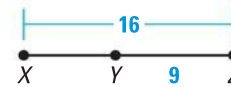
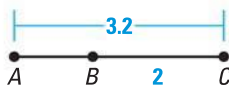
EXERCISES

Find the indicated length.

9. Find AB .

10. Find NP .

11. Find XY .



12. The endpoints of \overline{DE} are $D(-4, 11)$ and $E(-4, -13)$. The endpoints of \overline{GH} are $G(-14, 5)$ and $H(-9, 5)$. Are \overline{DE} and \overline{GH} congruent? *Explain.*

EXAMPLES 2, 3, and 4

on pp. 10–11
for Exs. 9–12

1.3 Use Midpoint and Distance Formulas

pp. 15–22

EXAMPLE

\overline{EF} has endpoints $E(1, 4)$ and $F(3, 2)$. Find (a) the length of \overline{EF} rounded to the nearest tenth of a unit, and (b) the coordinates of the midpoint M of \overline{EF} .

- a. Use the Distance Formula.

$$EF = \sqrt{(3 - 1)^2 + (2 - 4)^2} = \sqrt{2^2 + (-2)^2} = \sqrt{8} \approx 2.8 \text{ units}$$

- b. Use the Midpoint Formula.

$$M\left(\frac{1 + 3}{2}, \frac{4 + 2}{2}\right) = M(2, 3)$$

EXERCISES

13. Point M is the midpoint of \overline{JK} . Find JK when $JM = 6x - 7$ and $MK = 2x + 3$.

In Exercises 14–17, the endpoints of a segment are given. Find the length of the segment rounded to the nearest tenth. Then find the coordinates of the midpoint of the segment.

14. $A(2, 5)$ and $B(4, 3)$

15. $F(1, 7)$ and $G(6, 0)$

16. $H(-3, 9)$ and $J(5, 4)$

17. $K(10, 6)$ and $L(0, -7)$

18. Point $C(3, 8)$ is the midpoint of \overline{AB} . One endpoint is $A(-1, 5)$. Find the coordinates of endpoint B .

19. The endpoints of \overline{EF} are $E(2, 3)$ and $F(8, 11)$. The midpoint of \overline{EF} is M . Find the length of \overline{EM} .

EXAMPLES 2, 3, and 4

on pp. 16–18
for Exs. 13–19

1

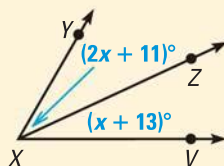
CHAPTER REVIEW

1.4 Measure and Classify Angles

pp. 24–32

EXAMPLE

Given that $m\angle YXV$ is 60° ,
find $m\angle YXZ$ and $m\angle ZXV$.



STEP 1 Find the value of x .

$$m\angle YXV = m\angle YXZ + m\angle ZXV$$

$$60^\circ = (2x + 11)^\circ + (x + 13)^\circ$$

$$x = 12$$

Angle Addition Postulate

Substitute angle measures.

Solve for x .

STEP 2 Evaluate the given expressions when $x = 12$.

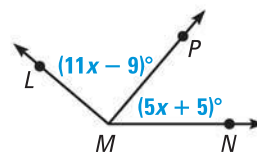
$$m\angle YXZ = (2x + 11)^\circ = (2 \cdot 12 + 11)^\circ = 35^\circ$$

$$m\angle ZXV = (x + 13)^\circ = (12 + 13)^\circ = 25^\circ$$

EXERCISES

20. In the diagram shown at the right, $m\angle LMN = 140^\circ$.
Find $m\angle PMN$.

21. \overrightarrow{VZ} bisects $\angle UVW$, and $m\angle UVZ = 81^\circ$. Find
 $m\angle UVW$. Then classify $\angle UVW$ by its angle measure.

EXAMPLES
3 and 5

on pp. 26, 28
for Exs. 20–21

1.5 Describe Angle Pair Relationships

pp. 35–41

EXAMPLE

a. $\angle 1$ and $\angle 2$ are complementary angles. Given that $m\angle 1 = 37^\circ$, find $m\angle 2$.

$$m\angle 2 = 90^\circ - m\angle 1 = 90^\circ - 37^\circ = 53^\circ$$

b. $\angle 3$ and $\angle 4$ are supplementary angles. Given that $m\angle 3 = 106^\circ$, find $m\angle 4$.

$$m\angle 4 = 180^\circ - m\angle 3 = 180^\circ - 106^\circ = 74^\circ$$

EXERCISES

$\angle 1$ and $\angle 2$ are complementary angles. Given the measure of $\angle 1$, find $m\angle 2$.

22. $m\angle 1 = 12^\circ$

23. $m\angle 1 = 83^\circ$

24. $m\angle 1 = 46^\circ$

25. $m\angle 1 = 2^\circ$

$\angle 3$ and $\angle 4$ are supplementary angles. Given the measure of $\angle 3$, find $m\angle 4$.

26. $m\angle 3 = 116^\circ$

27. $m\angle 3 = 56^\circ$

28. $m\angle 3 = 89^\circ$

29. $m\angle 3 = 12^\circ$

30. $\angle 1$ and $\angle 2$ are complementary angles. Find the measures of the angles
when $m\angle 1 = (x - 10)^\circ$ and $m\angle 2 = (2x + 40)^\circ$.

31. $\angle 1$ and $\angle 2$ are supplementary angles. Find the measures of the angles
when $m\angle 1 = (3x + 50)^\circ$ and $m\angle 2 = (4x + 32)^\circ$. Then classify $\angle 1$ by its
angle measure.

EXAMPLES
2 and 3

on p. 36
for Exs. 22–31

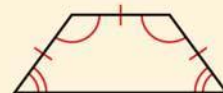
1.6 Classify Polygons

pp. 42–47

EXAMPLE

Classify the polygon by the number of sides. Tell whether it is equilateral, equiangular, or regular. *Explain.*

The polygon has four sides, so it is a quadrilateral. It is not equiangular or equilateral, so it is not regular.



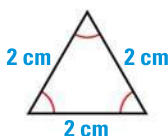
EXERCISES

Classify the polygon by the number of sides. Tell whether it is equilateral, equiangular, or regular. *Explain.*

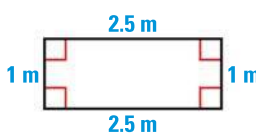
EXAMPLES 2 and 3

on pp. 43–44
for Exs. 32–35

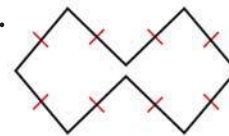
32.



33.



34.



35. Pentagon $ABCDE$ is a regular polygon. The length of \overline{BC} is represented by the expression $5x - 4$. The length of \overline{DE} is represented by the expression $2x + 11$. Find the length of \overline{AB} .

1.7 Find Perimeter, Circumference, and Area

pp. 49–56

EXAMPLE

The diameter of a circle is 10 feet. Find the circumference and area of the circle. Round to the nearest tenth.

The radius is half of the length of the diameter, so $r = \frac{1}{2}(10) = 5$ ft.

Circumference

Area

$$C = 2\pi r \approx 2(3.14)(5) = 31.4 \text{ ft}$$

$$A = \pi r^2 \approx 3.14(5^2) = 78.5 \text{ ft}^2$$

EXERCISES

In Exercises 36–38, find the perimeter (or circumference) and area of the figure described. If necessary, round to the nearest tenth.

EXAMPLES 1, 2, and 3

on pp. 49–50
for Exs. 36–40

36. Circle with diameter 15.6 meters

37. Rectangle with length $4\frac{1}{2}$ inches and width $2\frac{1}{2}$ inches

38. Triangle with vertices $U(1, 2)$, $V(-8, 2)$, and $W(-4, 6)$

39. The height of a triangle is 18.6 meters. Its area is 46.5 square meters. Find the length of the triangle's base.

40. The area of a circle is 320 square meters. Find the radius of the circle. Then find the circumference. Round your answers to the nearest tenth.