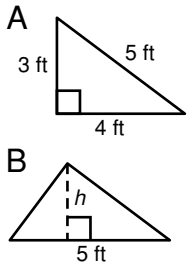
Name _____ Date _____ Class _____

LESSON 1-5

Practice B

Using Formulas in Geometry

Use the figures for Exercises 1–3.



1. Find the perimeter of triangle *A*. _____

2. Find the area of triangle *A*. _____

3. Triangle *A* is identical to triangle *B*. Find the height *h* of triangle *B*. _____

Find the perimeter and area of each shape.

4. square with a side 2.4 m in length

_____

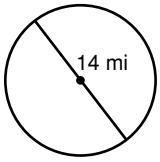
5. rectangle with length $(x + 3)$ and width 7

_____

6. Although a circle does not have sides, it does have a perimeter. What is the term for the perimeter of a circle? _____

Find the circumference and area of each circle.

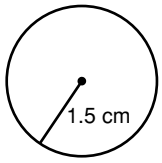
7.



Use $\frac{22}{7}$ for π.

_____

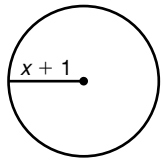
8.



Use 3.14 for π.

_____

9.



Leave π as π.

_____

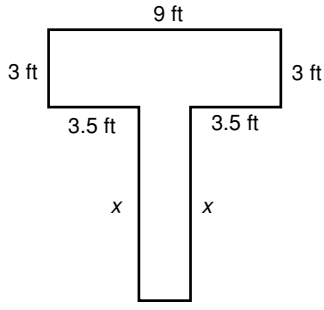
10. The area of a square is $\frac{1}{4}$ in^2. Find the perimeter. _____

11. The area of a triangle is 152 m^2, and the height is 16 m. Find the base. _____

12. The circumference of a circle is 25π mm. Find the radius. _____

Use the figure for Exercises 13 and 14.

Lucas has a 39-foot-long rope. He uses all the rope to outline this T-shape in his backyard. All the angles in the figure are right angles.



13. Find *x*. _____

14. Find the area enclosed by the rope. _____

LESSON 1-5

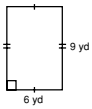
Practice A

Using Formulas in Geometry

Complete the statements.

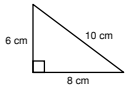
1. The sum of the side lengths of a plane figure is called the perimeter.
2. Give the formula for the perimeter of a rectangle. $P = 2\ell + 2w$
3. The area of a plane figure is the number of nonoverlapping square units of a given size that exactly cover the figure.
4. The formula for the area of a triangle is $A = \frac{1}{2}bh$.

Use the figure for Exercises 5 and 6.



5. Find the perimeter of the rectangle. 30 yd
6. Find the area of the rectangle. 54 yd^2

Use the figure for Exercises 7 and 8.



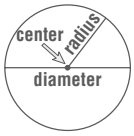
7. Find the perimeter of the triangle. 24 cm
8. Find the area of the triangle. 24 cm^2

Complete the statements.

9. In a circle, a diameter is a segment that passes through the center of the circle and that has endpoints on the circle.
10. A radius of a circle is a segment whose endpoints are the center of the circle and a point on the circle.
11. The diameter of a circle is twice the radius.

Draw your answer in the space provided.

12. Sketch a circle and label the center, a diameter, and a radius.



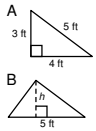
13. Give the formula for the area of a circle. $A = \pi r^2$
14. The circumference of a circle is the distance around the circle.
15. Give the formula for the circumference of a circle. $C = 2\pi r$ or $C = \pi d$

LESSON 1-5

Practice B

Using Formulas in Geometry

Use the figures for Exercises 1–3.



1. Find the perimeter of triangle *A*. 12 ft
2. Find the area of triangle *A*. 6 ft^2
3. Triangle *A* is identical to triangle *B*. Find the height *h* of triangle *B*. 2.4 ft or $2\frac{2}{5}$ ft

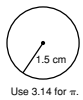
Find the perimeter and area of each shape.

4. square with a side 2.4 m in length
   $P = 9.6$ m; $A = 5.76$ m^2
5. rectangle with length $(x + 3)$ and width 7
   $P = 2x + 20$; $A = 7x + 21$
6. Although a circle does not have sides, it does have a perimeter. What is the term for the perimeter of a circle? circumference

Find the circumference and area of each circle.

7. 

Use $\frac{22}{7}$ for π.
$C \approx 44$ mi
$A \approx 154$ mi^2

8. 

Use 3.14 for π.
$C \approx 9.42$ cm
$A \approx 7.065$ cm^2

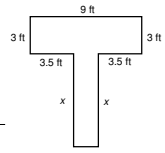
9. 

Leave π as π.
$C \approx 2\pi(x + 1)$
$A \approx \pi(x^2 + 2x + 1)$

10. The area of a square is $\frac{1}{4}$ in^2. Find the perimeter. 2 in.
11. The area of a triangle is 152 m^2, and the height is 16 m. Find the base. 19 m
12. The circumference of a circle is 25π mm. Find the radius. 12.5 mm

Use the figure for Exercises 13 and 14.

Lucas has a 39-foot-long rope. He uses all the rope to outline this T-shape in his backyard. All the angles in the figure are right angles.



13. Find *x*. 7.5 ft
14. Find the area enclosed by the rope. 42 ft^2

LESSON 1-5

Practice C

Using Formulas in Geometry

1. Find the length of the sides of a square whose area and perimeter are the same nonzero number. 4 units
2. Find the length of the radius of a circle whose area and circumference are the same nonzero number. 2 units
3. Explain why the area and the perimeter (or the circumference) of a figure can never be equal; they can only have equal numbers.
   Area is measured in square units, and perimeter is measured in linear units.

Find the measurements.

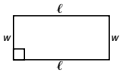
4. Faye has 44 feet of fencing to enclose a rectangular garden. She wants to enclose as much area as possible. Use trial-and-error to find the maximum area Faye can enclose with all 44 feet of fence. Name the length and width that give the maximum area.
   $A = 121$ ft^2; $\ell = 11$ ft; $w = 11$ ft
5. Explain what the answer to Exercise 4 implies about the relationship of perimeter to area for rectangles.
   For a given perimeter, a rectangle with sides of equal length (a square) encloses the maximum area.
6. Faye decides to use her 44 feet of fencing to enclose a circular garden. Find the area of the garden. (Use $\frac{22}{7}$ for π.) about 154 ft^2
7. Find the difference between the area Faye can enclose by a circle and the maximum area she can enclose by a rectangle. about 33 ft^2
8. Explain what the answer to Exercise 7 implies about the relationship of perimeter to area for rectangles and circles.
   If a rectangle and a circle have the same perimeter, then the circle has the greater area.
9. A rectangular box of tissues is 9.5 inches long, 4.5 inches wide, and 4 inches high. Find the area of the surface of the box. 197.5 in^2
10. A right triangle has two legs with lengths *a* and *b* and a hypotenuse with length *c*. In this triangle, the area and perimeter are the same nonzero number. Find the length of *a* if $b = 6$. (*Hint:* Use the Pythagorean Theorem, $a^2 + b^2 = c^2$.) $a = 8$

LESSON 1-5

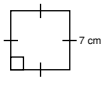
Reteach

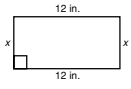
Using Formulas in Geometry

The **perimeter** of a figure is the sum of the lengths of the sides.
The **area** is the number of square units enclosed by the figure.

Figure	Rectangle	Square
Model		
Perimeter	$P = 2\ell + 2w$ or $2(\ell + w)$	$P = 4s$
Area	$A = \ell w$	$A = s^2$

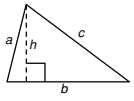
Find the perimeter and area of each figure.

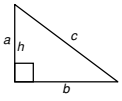
1. rectangle with $\ell = 4$ ft, $w = 1$ ft
   10 ft; 4 ft^2
2. square with $s = 8$ mm
   32 mm; 64 mm^2
3. 

   28 cm; 49 cm^2
4. 

   (24 + 2*x*) in.; 12*x* in^2

The perimeter of a triangle is the sum of its side lengths.
The base and height are used to find the area.

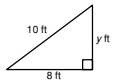


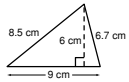


Perimeter $P = a + b + c$

Area $A = \frac{1}{2}bh$ or $\frac{bh}{2}$

Find the perimeter and area of each triangle.

5. 

   (18 + *y*) ft; 4*y* ft^2
6. 

   24.2 cm; 27 cm^2