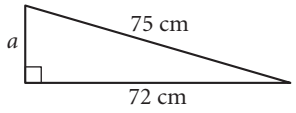
Lesson 9.1 • The Theorem of Pythagoras

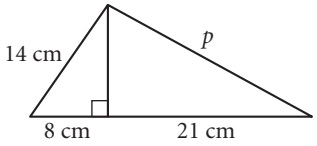
Name _____ **Period** _____ **Date** _____

Give all answers rounded to the nearest 0.1 unit.

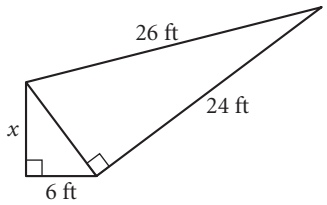
1. $a =$ _____



2. $p \approx$ _____

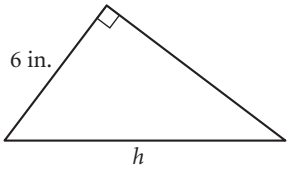


3. $x =$ _____

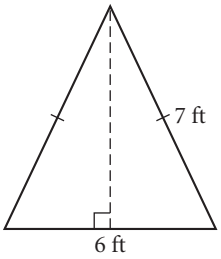


4. Area $= 39$ in^2

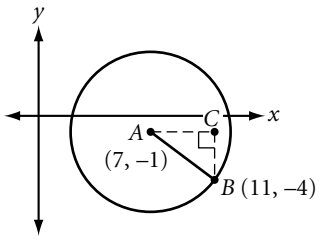
$h \approx$ _____



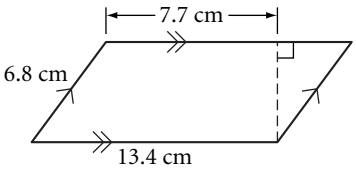
5. Find the area.



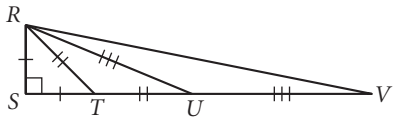
6. Find the coordinates of C and the radius of circle A.



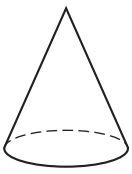
7. Find the area.



8. $RS = 3$ cm. Find RV.



9. Base area $= 16\pi$ cm^2 and slant height $= 3$ cm. What's wrong with this picture?



10. Given $\triangle PQR$, with $m\angle P = 90°$, $PQ = 20$ in., and $PR = 15$ in., find the area of $\triangle PQR$, the length of the hypotenuse, and the altitude to the hypotenuse.

Lesson 9.2 • The Converse of the Pythagorean Theorem

Name _____ **Period** _____ **Date** _____

All measurements are in centimeters. Give answers rounded to the nearest 0.01 cm.

In Exercises 1–4, determine whether a triangle with the given side lengths is a right triangle.

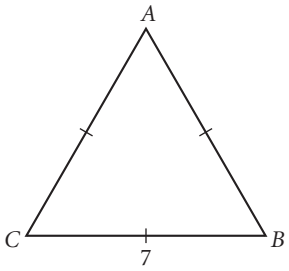
1. 76, 120, 98

2. 221, 204, 85

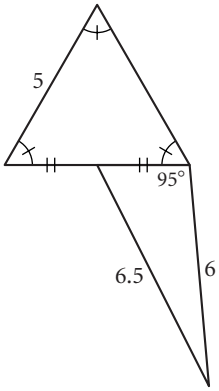
3. 5.0, 1.4, 4.8

4. 80, 82, 18

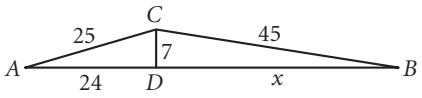
5. Find the area of $\triangle ABC$.



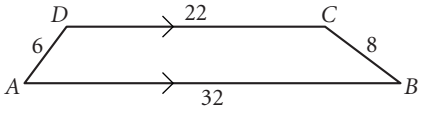
6. What's wrong with this picture?



7. Find x. Explain your method.

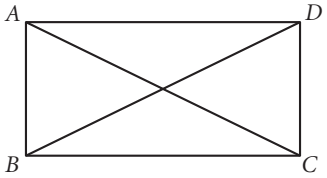


8. Find the area of $ABCD$.



In Exercises 9–11, determine whether $ABCD$ is a rectangle and justify your answer. If not enough information is given, write "cannot be determined."

9. $AB = 3$, $BC = 4$, and $AC = 6$.



10. $AB = 3$, $BC = 4$, $DA = 4$, and $AC = 5$.

11. $AB = 3$, $BC = 4$, $CD = 3$, $DA = 4$, and $AC = BD$.

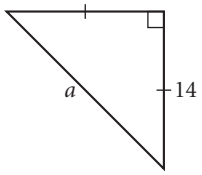
Lesson 9.3 • Two Special Right Triangles

Name _____ **Period** _____ **Date** _____

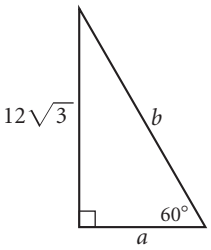
Give your answers in exact form unless otherwise indicated.
All measurements are in centimeters.

In Exercises 1–3, find the unknown lengths.

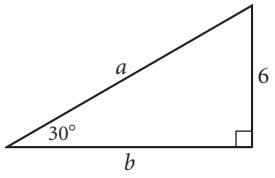
1. $a =$ _____



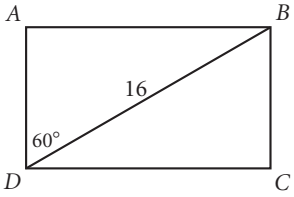
2. $a =$ _____, $b =$ _____



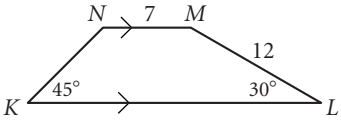
3. $a =$ _____, $b =$ _____



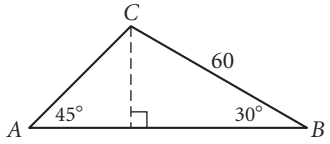
4. Find the area of rectangle *ABCD*.



5. Find the perimeter and area of *KLMN*.



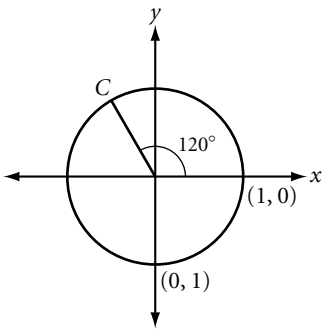
6. $AC =$ _____, $AB =$ _____, and area $\triangle ABC =$ _____.



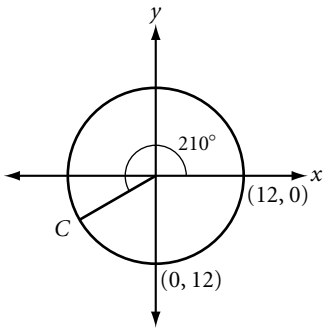
7. Find the area of an isosceles trapezoid if the bases have lengths 12 cm and 18 cm and the base angles have measure 60°.

In Exercises 8 and 9, find the coordinates of *C*.

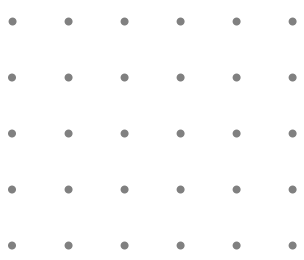
8.



9.



10. Sketch and label a figure to demonstrate that $\sqrt{18}$ is equivalent to $3\sqrt{2}$.



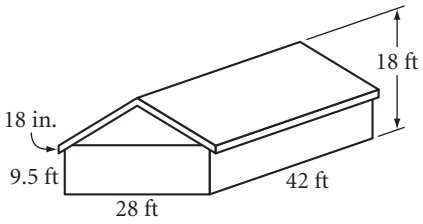
Lesson 9.4 • Story Problems

Name _____ **Period** _____ **Date** _____

1. A 20 ft ladder reaches a window 18 ft high. How far is the foot of the ladder from the base of the building? How far must the foot of the ladder be moved to lower the top of the ladder by 2 ft?

2. Robin and Dovey have four pet pigeons that they train to race. They release the birds at Robin's house and then drive to Dovey's to collect them. To drive from Robin's to Dovey's, because of one-way streets, they go 3.1 km north, turn right and go 1.7 km east, turn left and go 2.3 km north, turn right and go 0.9 km east, turn left and go 1.2 km north, turn left and go 4.1 km west, and finally turn left and go 0.4 km south. How far do the pigeons have to fly to go directly from Robin's house to Dovey's house?

3. Hans needs to paint the 18 in.-wide trim around the roof eaves and gable ends of his house with 2 coats of paint. A quart can of paint covers 175 ft^2 and costs \$9.75. A gallon can of paint costs \$27.95. How much paint should Hans buy? Explain.



4. What are the dimensions of the largest 30°-60°-90° triangle that will fit inside a 45°-45°-90° triangle with leg length 14 in.? Sketch your solution.

Lesson 9.5 • Distance in Coordinate Geometry

Name _____ **Period** _____ **Date** _____

In Exercises 1–3, find the distance between each pair of points.

1. $(-5, -5)$, $(1, 3)$ **2.** $(-11, -5)$, $(5, 7)$ **3.** $(8, -2)$, $(-7, 6)$

In Exercises 4 and 5, use the distance formula and the slope of segments to identify the type of quadrilateral. Explain your reasoning.

4. $A(-2, 1)$, $B(3, -2)$, $C(8, 1)$, $D(3, 4)$ **5.** $T(-3, -3)$, $U(4, 4)$, $V(0, 6)$, $W(-5, 1)$

For Exercises 6 and 7, use $\triangle ABC$ with coordinates $A(4, 14)$, $B(10, 6)$, and $C(16, 14)$.

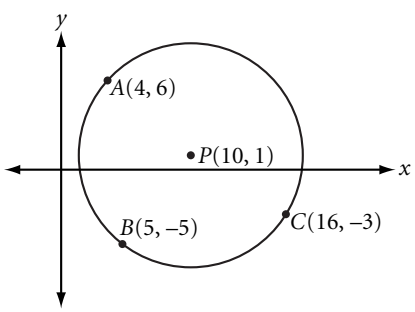
6. Determine whether $\triangle ABC$ is scalene, isosceles, or equilateral. Find the perimeter of the triangle.

7. Find the midpoints M and N of $\overline{AB}$ and $\overline{AC}$, respectively. Find the slopes and lengths of $\overline{MN}$ and $\overline{BC}$. How do the slopes compare? How do the lengths compare?

8. Find the equation of the circle with center $(-1, 5)$ and radius 2.

9. Find the center and radius of the circle whose equation is $x^2 + (y + 2)^2 = 25$.

10. P is the center of the circle. What's wrong with this picture?

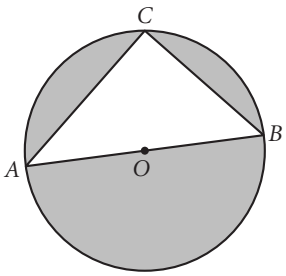


Lesson 9.6 • Circles and the Pythagorean Theorem

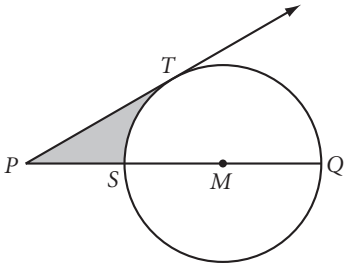
Name _____ **Period** _____ **Date** _____

In Exercises 1 and 2, find the area of the shaded region in each figure. All measurements are in centimeters. Write your answers in terms of π and rounded to the nearest 0.1 cm^2.

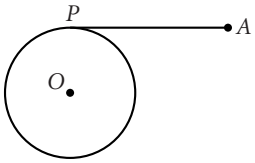
1. $AO = 5$. $AC = 8$.



2. Tangent $\overrightarrow{PT}$, $QM = 12$, $m\angle P = 30°$



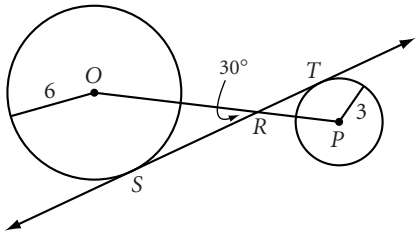
3. $AP = 63$ cm. Radius of circle $O = 37$ cm. How far is A from the circumference of the circle?



4. Two perpendicular chords with lengths 12.2 cm and 8.8 cm have a common endpoint. What is the area of the circle?

5. $ABCD$ is inscribed in a circle. $\overline{AC}$ is a diameter. If $AB = 9.6$ cm, $BC = 5.7$ cm, and $CD = 3.1$ cm, find AD.

6. Find ST.



7. The coordinate of point M is $\left(\frac{-\sqrt{3}}{2}, \frac{1}{2}\right)$. Find the measure of $\angle AOM$.