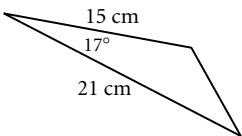


Lesson 12.3 • The Law of Sines

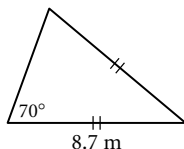
Name _____ Period _____ Date _____

In Exercises 1–3, find the area of each figure to the nearest square unit.

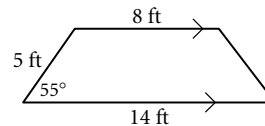
1. Area \approx _____



2. Area \approx _____

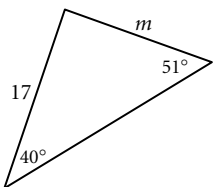


3. Area \approx _____

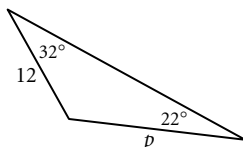


In Exercises 4–6, find each length to the nearest centimeter. All lengths are in centimeters.

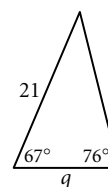
4. $m \approx$ _____



5. $p \approx$ _____



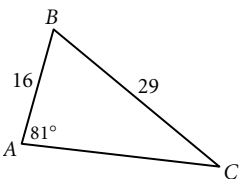
6. $q \approx$ _____



In Exercises 7–9, find the measure of each angle to the nearest degree.

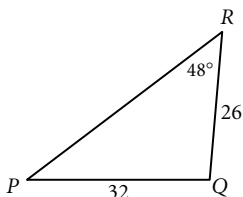
7. $m\angle B \approx$ _____

$m\angle C \approx$ _____



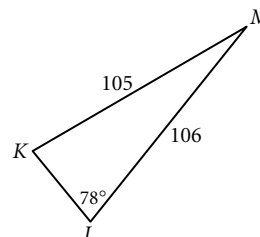
8. $m\angle P \approx$ _____

$m\angle Q \approx$ _____



9. $m\angle K \approx$ _____

$m\angle M \approx$ _____



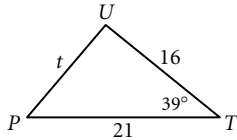
10. A large helium balloon is tethered to the ground by two taut lines. One line is 100 feet long and makes an 80° angle with the ground. The second line makes a 40° angle with the ground. How long is the second line, to the nearest foot? How far apart are the tethers?

Lesson 12.4 • The Law of Cosines

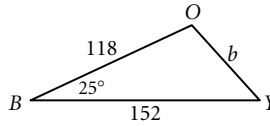
Name _____ Period _____ Date _____

In Exercises 1–3, find each length to the nearest centimeter. All lengths are in centimeters.

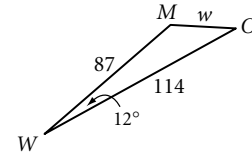
1. $t \approx$ _____



2. $b \approx$ _____



3. $w \approx$ _____

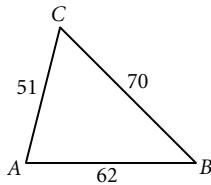


In Exercises 4–6, find each angle measure to the nearest degree.

4. $m\angle A \approx$ _____

$m\angle B \approx$ _____

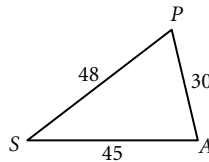
$m\angle C \approx$ _____



5. $m\angle A \approx$ _____

$m\angle P \approx$ _____

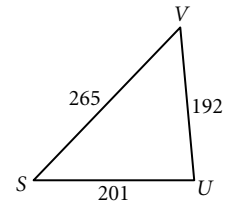
$m\angle S \approx$ _____



6. $m\angle S \approx$ _____

$m\angle U \approx$ _____

$m\angle V \approx$ _____



7. A circle with radius 12 in. has radii drawn to the endpoints of a 5 in. chord. What is the measure of the central angle?

8. A parallelogram has side lengths 22.5 cm and 47.8 cm. One angle measures 116° . What is the length of the shorter diagonal?

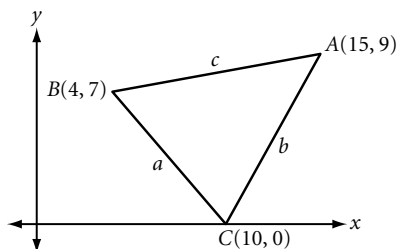
9. The diagonals of a parallelogram are 60 in. and 70 in. and intersect at an angle measuring 64° . Find the length of the shorter side of the parallelogram.

Lesson 12.5 • Problem Solving with Trigonometry

Name _____ Period _____ Date _____

1. While floating down a river with a 2.75 mi/h current, Alicia decides to swim directly toward the river bank. She can swim 0.75 mi/h in still water. What is the actual speed at which she moves toward the bank? At what angle will she approach the bank, measured with respect to the bank?

2. Find the measure of each angle to the nearest hundredth of a degree.



3. Two fire watchtowers 8.4 km apart spot a fire at the same time. Tower 1 reports the fire at a 36° angle measure from its line of sight to Tower 2. Tower 2 reports a 68° angle measure between the fire and Tower 1. How far is the fire from each tower?
4. Two airplanes leave O'Hare Airport in Chicago at the same time. One plane flies 280 mi/h at bearing 55° . The other plane flies 350 mi/h at bearing 128° . How far apart are the two planes after 2 hours 15 minutes?
5. Carla needs to fence her triangular plot of land. The angle between the two shorter sides measures 83° . The shortest side is 122 ft and the longest is 215 ft. How much fencing does Carla need? What is the area of her plot of land?