

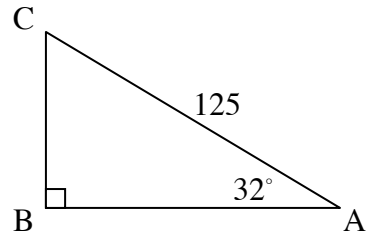
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Solving For Missing Angles Algebra 1

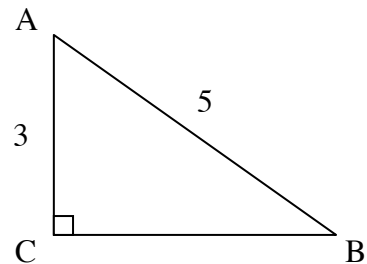
Today we will learn how to use right triangle trigonometry to find missing angles of a right triangle. In the first exercise, though, we will review how to solve for a missing side using trigonometry.

Exercise #1: Find the length of \overline{AB} to the nearest *tenth*.



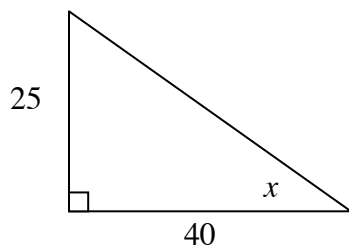
Solving for a Missing Angle – The process for finding a missing angle in a right triangle is very similar to that of finding a missing side. The key is to identify a trigonometric ratio that can be set up and then use the inverse trigonometric functions to solve for that angle.

Exercise #2: Solve for $m\angle B$ to the nearest *degree*.

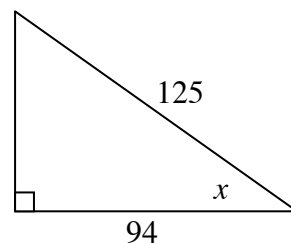


Exercise #3: Find the value of x , in the diagrams below, to the nearest *degree*.

(a)



(b)



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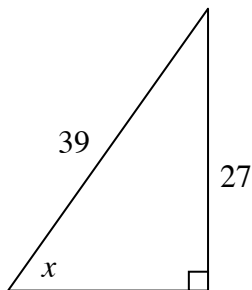
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Solving For Missing Angles Algebra 1 Homework

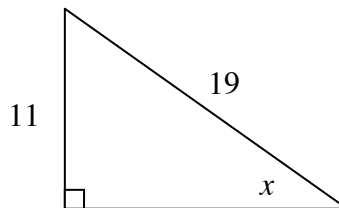
Skills

1. For the following right triangles, find the measure of each angle, x , to the nearest degree:

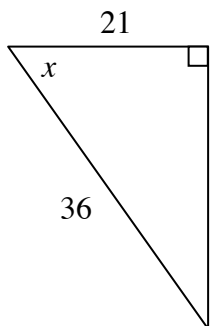
(a)



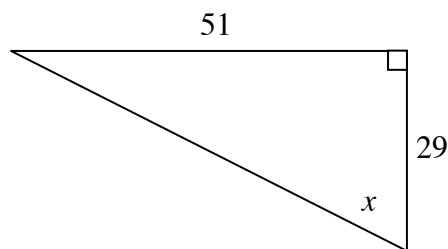
(b)



(c)



(d)



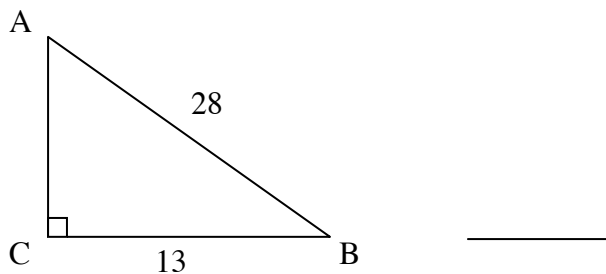
2. Given the following right triangle, which of the following is closest to $m\angle A$?

(1) 28°

(3) 62°

(2) 25°

(4) 65°



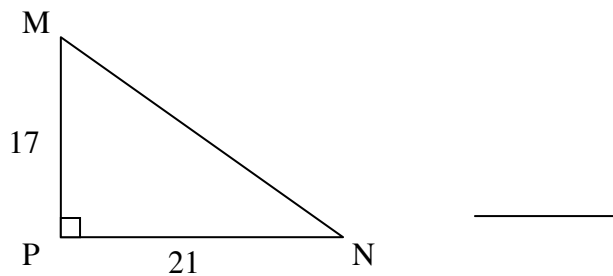
3. In the diagram shown, $m\angle N$ is closest to

(1) 51°

(3) 17°

(2) 54°

(4) 39°



Name: _____

Date: _____

Using Trigonometry to Solve for Missing Sides Algebra 1 Homework

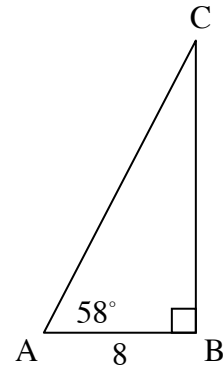
Skill

In problems 1 through 3, determine the trigonometric ratio needed to solve for the missing side and then use this ratio to find the missing side.

1. In right triangle ABC , $m\angle A = 58^\circ$ and $AB = 8$. Find the length of each of the following. Round your answers to the nearest *tenth*.

(a) BC

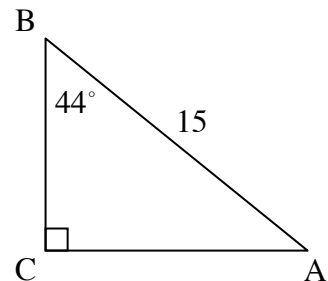
(b) AC



2. In right triangle ABC , $m\angle B = 44^\circ$ and $AB = 15$. Find the length of each of the following. Round your answers to the nearest *tenth*.

(a) AC

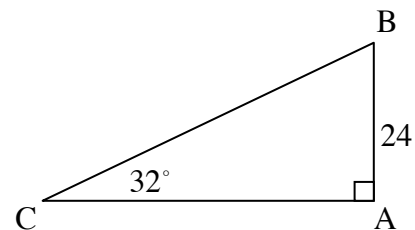
(b) BC



3. In right triangle ABC , $m\angle C = 32^\circ$ and $AB = 24$. Find the length of each of the following. Round your answers to the nearest *tenth*.

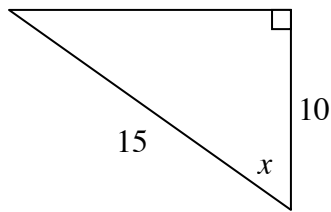
(a) AC

(b) BC

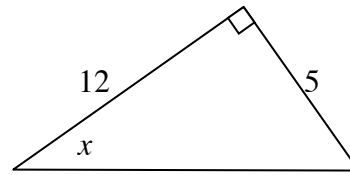


Exercise #4: Find the value of x in the diagrams below. Round your answers to the nearest degree.

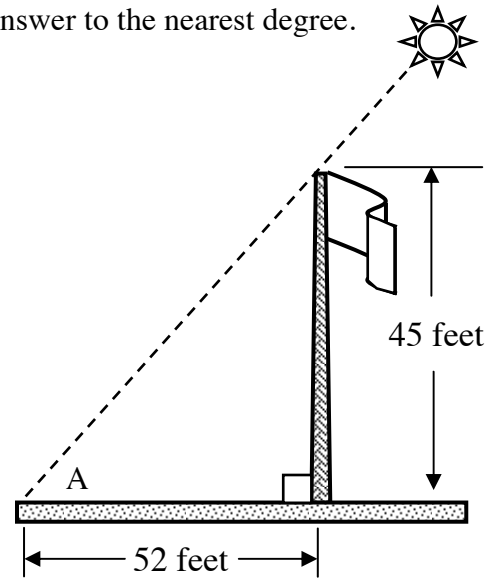
(a)



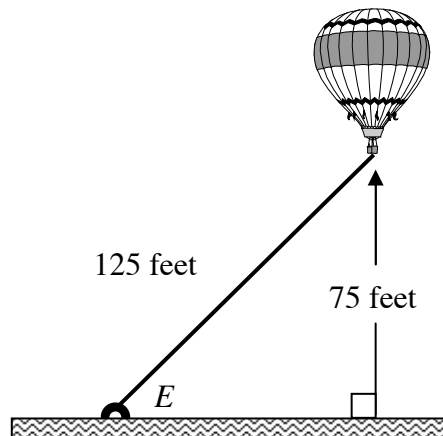
(b)



Exercise #5: A flagpole that is 45-feet high casts a shadow along the ground that is 52-feet long. What is the angle of elevation, A , of the sun? Round your answer to the nearest degree.

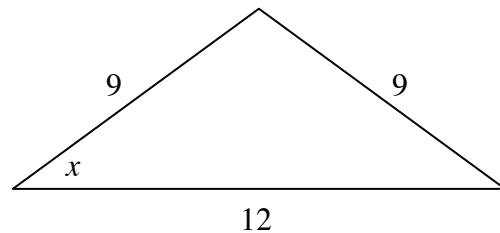


Exercise #6: A hot air balloon hovers 75 feet above the ground. The balloon is tethered to the ground with a rope that is 125 feet long. At what angle of elevation, E , is the rope attached to the ground? Round your answer to the nearest degree.

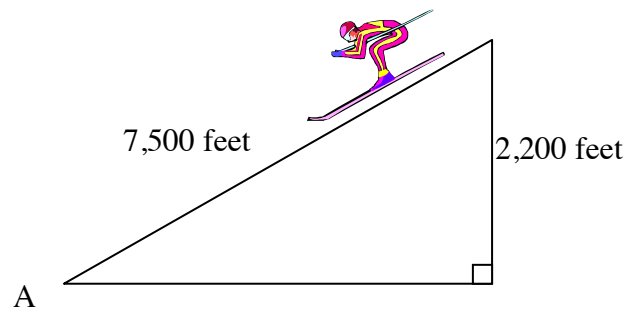


Applications

4. An isosceles triangle has legs measuring 9 feet and a base of 12 feet. Find the measure of the base angle, x , to the nearest degree. (Remember: Right triangle trigonometry can only be used in right triangles.)

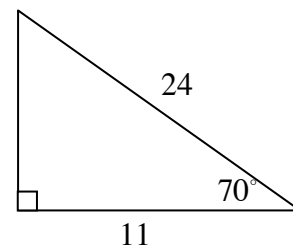


5. A skier is going down a slope that measures 7,500 feet long. By the end of the slope, the skier has dropped 2,200 vertical feet. To the nearest degree, what is the angle, A , of the slope?



Reasoning

6. Could the following triangle exist with the given measurements? Justify your answer.



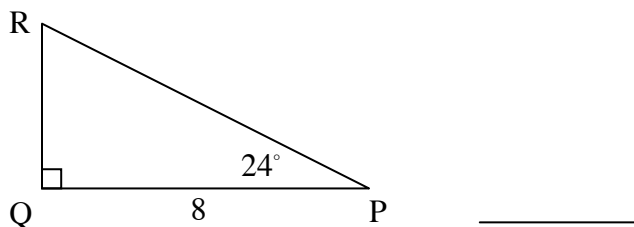
4. Which of the following would give the length of hypotenuse \overline{PR} in the diagram below?

(1) $8 \cos(24^\circ)$

(3) $8 \tan(24^\circ)$

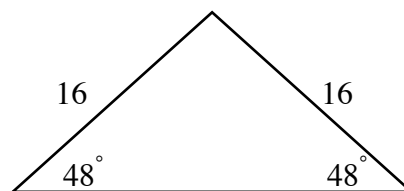
(2) $\frac{8}{\cos(24^\circ)}$

(4) $\frac{8}{\tan(24^\circ)}$

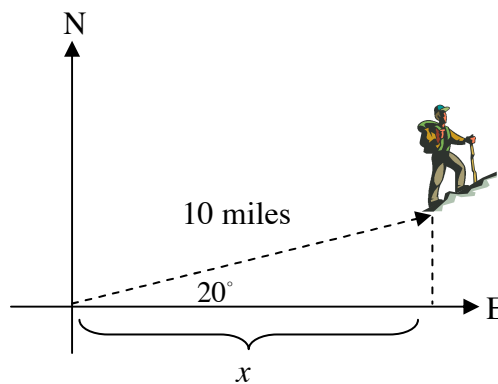


Applications

5. An isosceles triangle has legs of length 16 and base angles that measure 48° . Find the height of the isosceles triangle to the *nearest tenth*. Hint – Create a right triangle by drawing the height.



6. Carlos walked 10 miles at an angle of 20° north of due east. To the nearest tenth of a mile, how far east, x , is Carlos from his starting point?



7. Students are trying to determine the height of the flagpole at Arlington High. They have measured out a horizontal distance of 40 feet from the flagpole and site the top of it at an angle of elevation of 52° . What is the height, h , of the flagpole? Round your answer to the nearest *tenth* of a foot.

