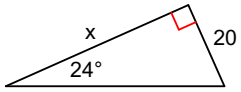
7.3 ~ The Tangent Ratio

Past due on_____ Period____

1) In triangle ABC, $m\angle B = 90°$, $AC = 50$, $AB = 48$, and $BC = 14$. Write a ratio, in simplest form, that represents the tangent of $\angle A$.

Write a trigonometric equation using tangent to find the indicated side length, *x*. Give an exact answer, solve the equation for *x*, and approximate answer rounded to the nearest hundredth.

2)



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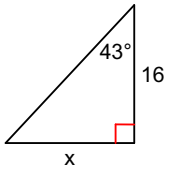

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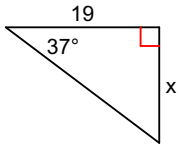

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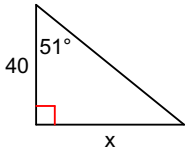

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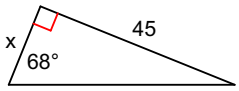

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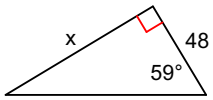
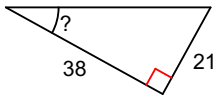


Write a trigonometric ratio and use it to calculated the measure of the indicated angle to the nearest tenth of a degree.

8)



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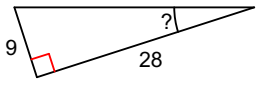

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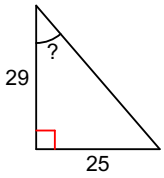

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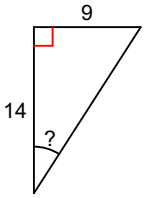

Draw a diagram that represents each situation. Write and solve a trigonometric equation (or ratio) using tangent. Approximate your answer to the nearest tenth unless otherwise stated.

12) A water slide makes an angle of 13° with the ground. The slide extends horizontally 58.2 meters. Find the height of the slide.

13) The distance from a point *P* on the ground to a point *R* at the base of a cliff is 30 meters. The measure of angle *P* is 72°. What is the height of the cliff?

14) You must order a new rope for the flagpole. To find out what length of rope is needed, you observe that pole casts a shadow 11.6 meters long on the ground. The angle between the sun's rays and the ground is 36.8°. How tall is the pole?

15) Lombard Street is on a hill in San Francisco, California, that rises 45 feet for every 100 feet of horizontal distance. What angle does the hill make with a horizontal line? Round to the nearest degree.

16) A hiker whose eyes are 5.5 feet above ground stands 25 feet from the base of a redwood tree. She looks up at an angle of 71° to see the top of the tree. If the hiker is 5.5 feet tall, what is the height of the tree?

17) A lifeguard is sitting on an observation chair at a pool. The lifeguard's eye level is 6.2 feet from the ground. The base of the chair is 15.4 feet from a swimmer. Calculate the measure of the angle formed when the lifeguard looks down at the swimmer.