Name _____ Class _____ Date _____

8-3 Reteaching

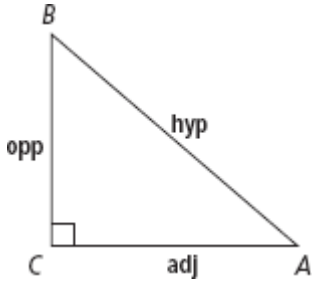
Trigonometry

Use trigonometric ratios to find the length of a side of a right triangle.

$$\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$$

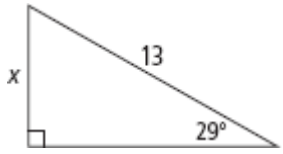
$$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan A = \frac{\text{opposite}}{\text{adjacent}}$$



Problem

What is the value of x to the nearest tenth?



First, identify the information given.

The angle measure is 29. The length of the side *opposite* the angle is x. The length of the *hypotenuse* is 13.

$$\sin 29^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$ Use the sine ratio.

$$\sin 29^\circ = \frac{x}{13}$$ Substitute.

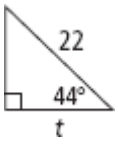
$$13(\sin 29^\circ) = x$$ Multiply by 13.

$$6.3 \approx x$$ Solve for x using a calculator.

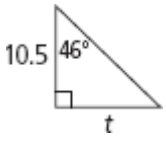
Exercises

Find the value of *t* to the nearest tenth.

1.

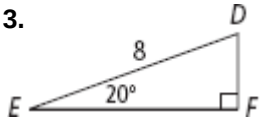


2.

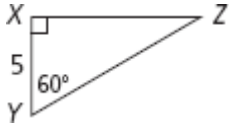


Find the missing lengths in each right triangle. Round your answers to the nearest tenth

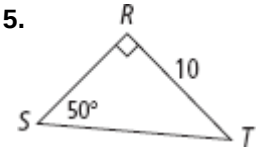
3.



4.



5.



Name _____ Class _____ Date _____

8-3 Reteaching (continued)

Trigonometry

When you know the length of one or more sides in a right triangle and are looking for the angle measures of the triangle, you should use inverse trigonometric ratios.

$\sin^{-1}(x)$ is the measure of the angle where $\frac{\text{opposite}}{\text{hypotenuse}} = x$.

Similarly, $\cos^{-1}(x)$ is the measure of the angle where $\frac{\text{adjacent}}{\text{hypotenuse}} = x$, and

$\tan^{-1}(x)$ is the measure of the angle where $\frac{\text{opposite}}{\text{adjacent}} = x$.

Problem

Find the measure of $\angle T$ to the nearest degree.

First, identify the information given. The length of the side *adjacent* to the angle is 33. The length of the *hypotenuse* is 55.

$\cos T = \frac{\text{adjacent}}{\text{hypotenuse}}$ Use the cosine ratio.

$\cos T = \frac{33}{55} = 0.6$ Fill in known information

$T = \cos^{-1}(0.6)$ Use the inverse of the cosine ratio

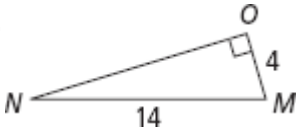
$T \approx 53^{\circ}$ Use a calculator to solve.

The measure of $\angle T$ is about 53.

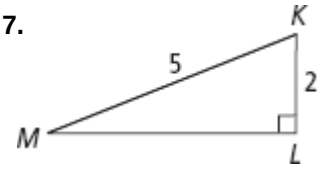
Exercises

Find $m\angle M$ to the nearest degree.

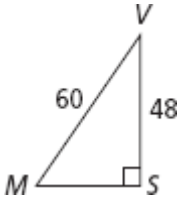
6.



7.

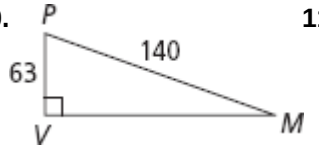


8.



9.

10.



11.