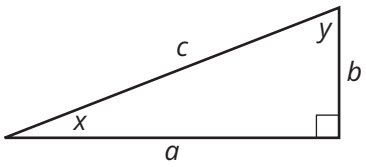
Assignment

Write

Use the diagram to complete each sentence.



1. If b is the opposite side, then x is the _____.
2. If y is the reference angle, then b is the _____.
3. If x is the reference angle, then b is the _____.

Remember

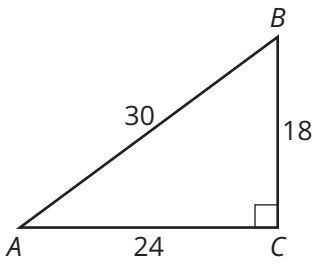
Given the same reference angle for similar right triangles, the side length ratios $\frac{\text{opposite}}{\text{hypotenuse}}$, $\frac{\text{adjacent}}{\text{hypotenuse}}$, and $\frac{\text{opposite}}{\text{adjacent}}$ are constant.

The side length ratios in right triangles with congruent reference angles are equal.

Practice

1. Determine the side length ratios $\frac{\text{opposite}}{\text{hypotenuse}}$, $\frac{\text{adjacent}}{\text{hypotenuse}}$, and $\frac{\text{opposite}}{\text{adjacent}}$ using $\angle A$ as the reference angle in each triangle. Write your answers as fractions in simplest form.

a.



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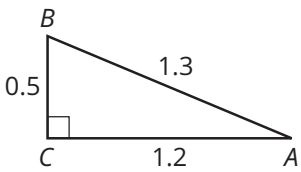

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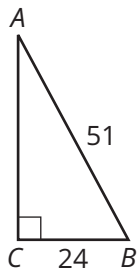
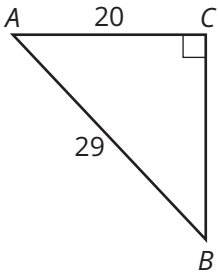


d.



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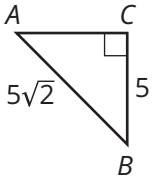
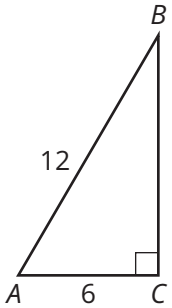


f.



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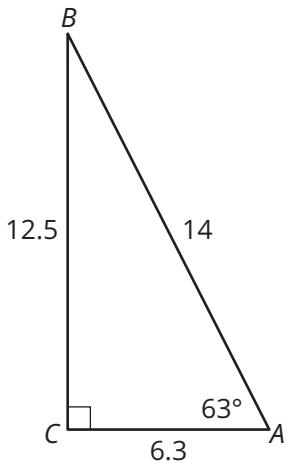
Stretch

1. Consider $\triangle ABC$ shown in the figure.



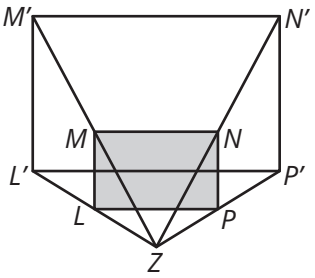
   a. Determine the side length ratios $\frac{\text{opposite}}{\text{hypotenuse}}$, $\frac{\text{adjacent}}{\text{hypotenuse}}$, and $\frac{\text{opposite}}{\text{adjacent}}$ using $\angle A$ as the reference angle. Write each ratio as a decimal rounded to hundredths.

   b. Trigonometric functions of angles include three important functions called the sine function, the cosine function, and the tangent function. These values can be determined with a graphing calculator. Use a graphing calculator to determine the sine (SIN), cosine (COS), and tangent (TAN) of 63°.

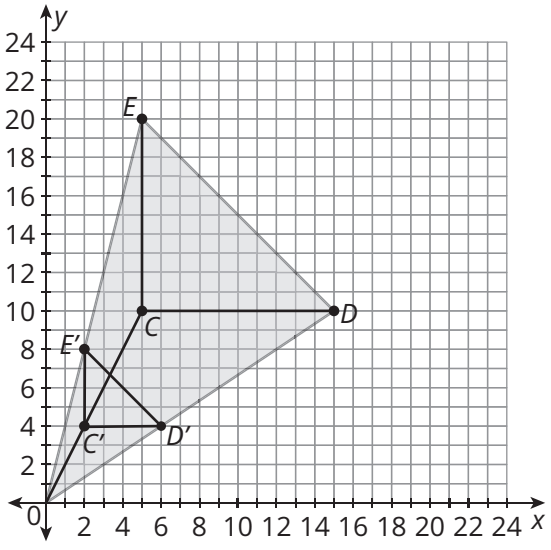
   c. Compare the values from part (a) and part (b). What conclusion can you make about the sine, cosine, and tangent of an angle in a right triangle?

Review

1. Given the pre-image and image, determine the scale factor.



2. Given the pre-image and image, determine the scale factor.



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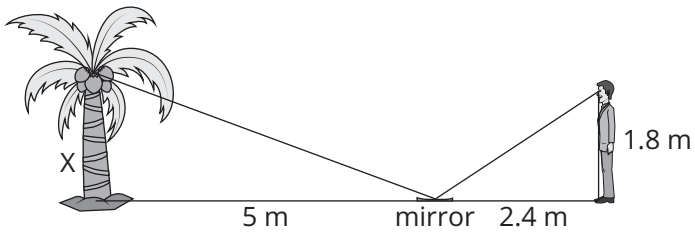
3. Determine each unknown height.

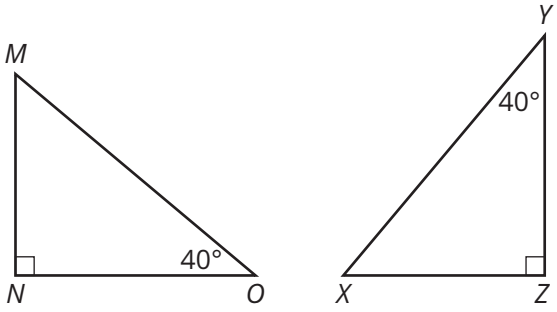
a.



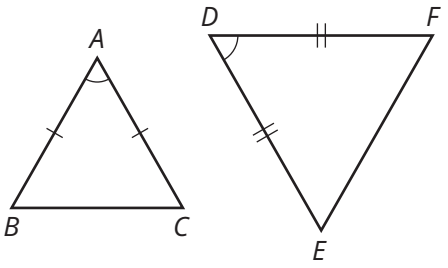
b. Pearl put a mirror 45 feet from the base of a building. She can see the top of the building in the mirror when she stands 12 feet from the mirror. If Pearl is 5 feet, 9 inches tall, what is the height of the building?

4. Determine whether the triangles are similar. If so, write a similarity statement. Explain your reasoning.

a.



b.



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