

M155: Right Triangle Trigonometry Pre-Badge Task

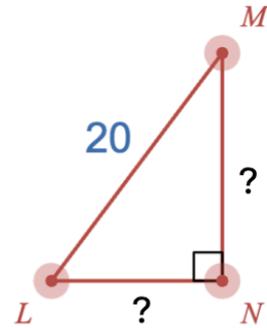
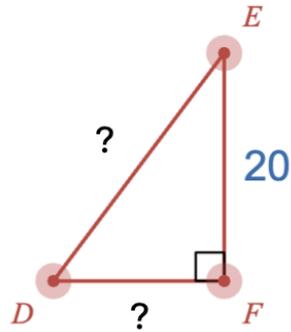
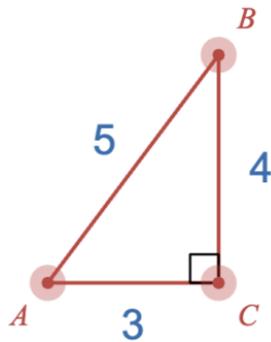
New Badge Alert!

This task will provide a preview of what we will be learning during the M155 - Right Triangle Trigonometry Badge. You already know so much math, so use this task to share any understanding that you have before we start our learning. You will have a chance to do the same task at the end of the badge to see how your thinking has evolved.

QUESTION 1 Triangle ABC is a right triangle with sides of length 3, 4, and 5. Triangle DEF and Triangle LMN are similar to Triangle ABC. Find the unknown side lengths.



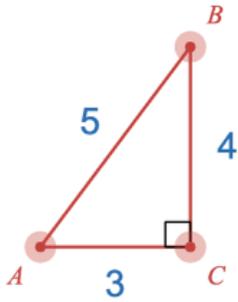
Note: Triangles are not drawn to scale



QUESTION 2 Triangle ABC is a right triangle with sides of length 3, 4, and 5. Triangle DEF and Triangle LMN are similar to Triangle ABC. Evaluate the given trigonometric expressions.

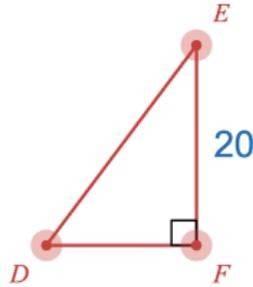


Note: Triangles are not drawn to scale



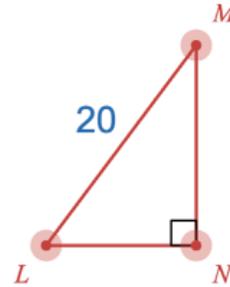
$$\cos A =$$

$$\sin B =$$



$$\cos D =$$

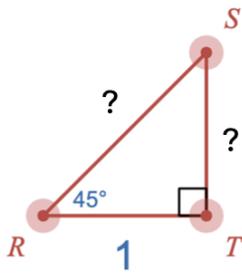
$$\sin E =$$



$$\cos L =$$

$$\sin M =$$

QUESTION 3 Triangle RST is a special right triangle with angles 45° , 45° , and 90° . Find the unknown side lengths. Then evaluate each trigonometric expression.

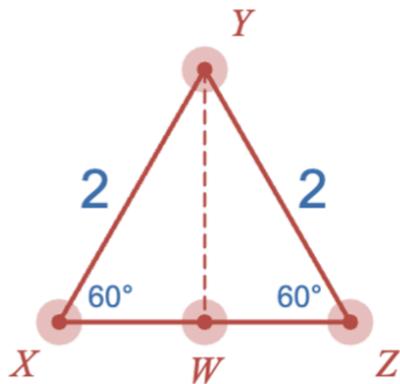


$$\cos 45^\circ =$$

$$\sin 45^\circ =$$

$$\tan 45^\circ =$$

QUESTION 4 Triangle XYZ is an equilateral triangle with sides of length 2. Point W bisects side XZ. Find the length of YW. Then evaluate each trigonometric expression.



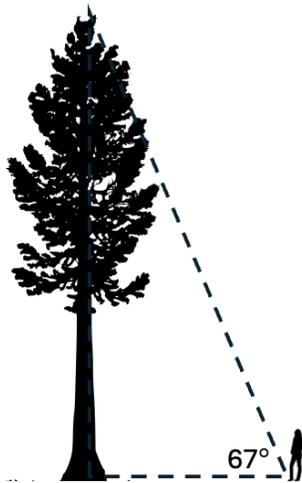
$$YW =$$

$$\cos 60^\circ =$$

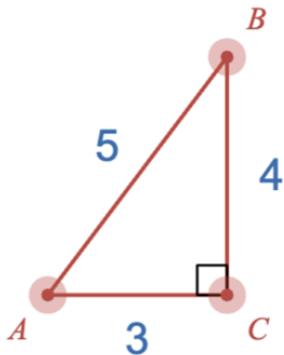
$$\sin 60^\circ =$$

$$\tan 60^\circ =$$

QUESTION 5 While visiting Sequoia National Forest, Ariana was using her math skills to calculate the height of some trees. She stood 50 feet away from a particular tree. Using a special tool, she measured the angle of elevation to the top of the tree as 67° . Determine the height of the tree. Show the calculations you use to determine your answer.



QUESTION 6 Triangle ABC is a right triangle with sides of length 3, 4, and 5. Calculate the value of the trigonometric expressions below.



$$(\cos A)^2 + (\sin A)^2$$

$$(\cos B)^2 + (\sin B)^2$$