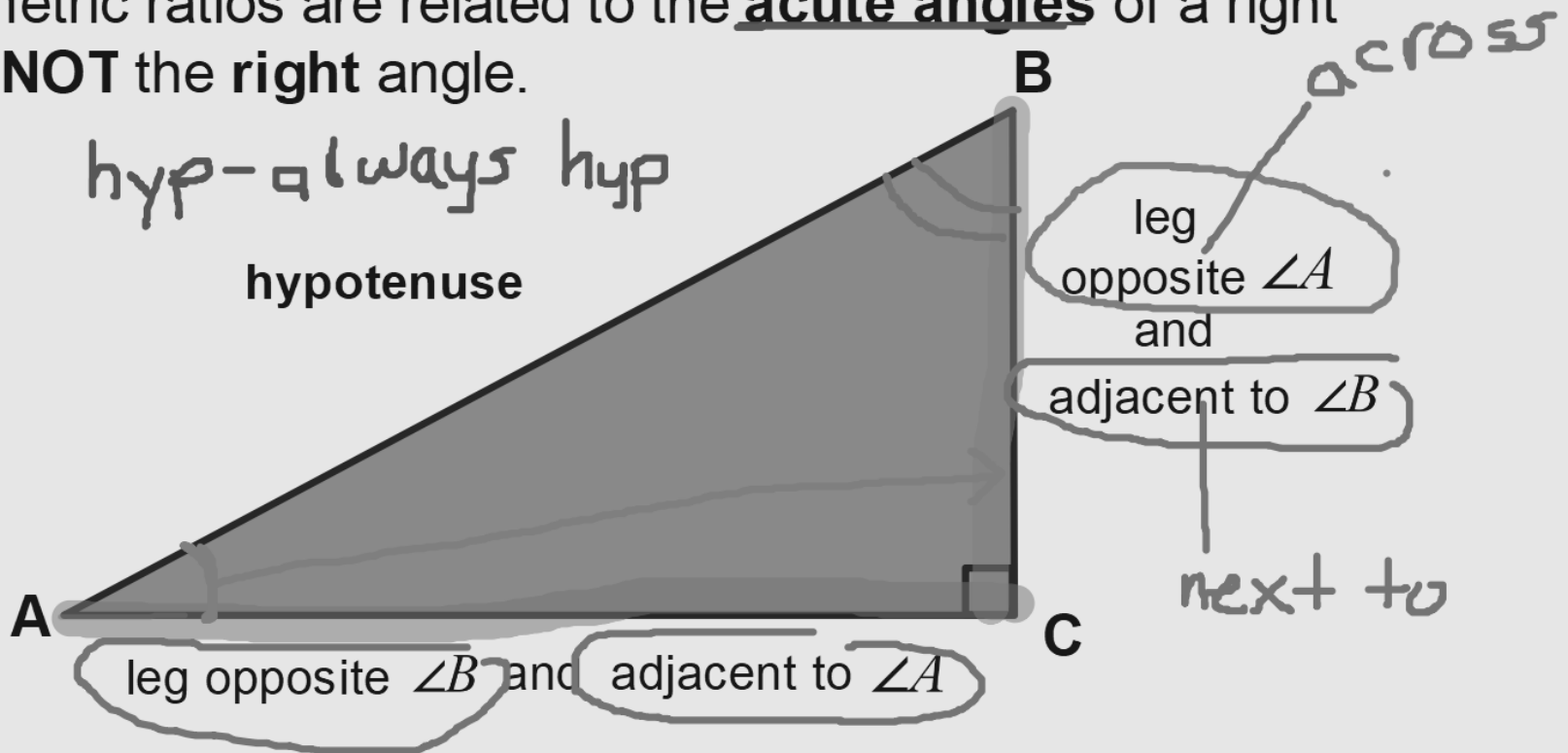


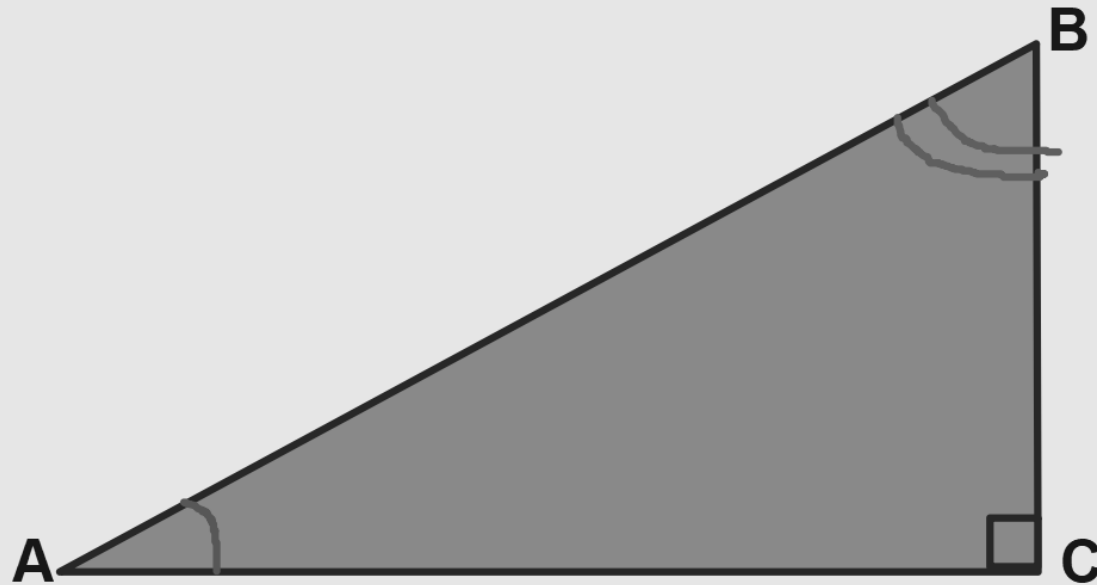
UNIT 6 L 3 (SECTION 8-4): TRIGONOMETRY
OBJECTIVES: FIND THE TRIGONOMETRIC RATIOS
USING RIGHT TRIANGLES.
SOLVE PROBLEMS USING TRIGONOMETRIC RATIOS.

Trigonometry- The study of the properties of triangles and trigonometric functions and their applications.

Trigonometric ratio- A ratio of the lengths of sides of a right triangle. The 3 most common are sine, cosine, and tangent. Trigonometric ratios are related to the acute angles of a right triangle, **NOT** the right angle.



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Which side is the hypotenuse? AB

Which leg is opposite $\angle A$? BC

Which leg is adjacent to $\angle A$? AC

Which leg is adjacent to $\angle B$? BC

Which leg is opposite $\angle B$? AC

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SOH•CAH•TOA: Is the great Indian guide who will lead us in using Trigonometry to solve right triangles. His name is IMPORTANT. SPELLING COUNTS!!!!!!!!!!



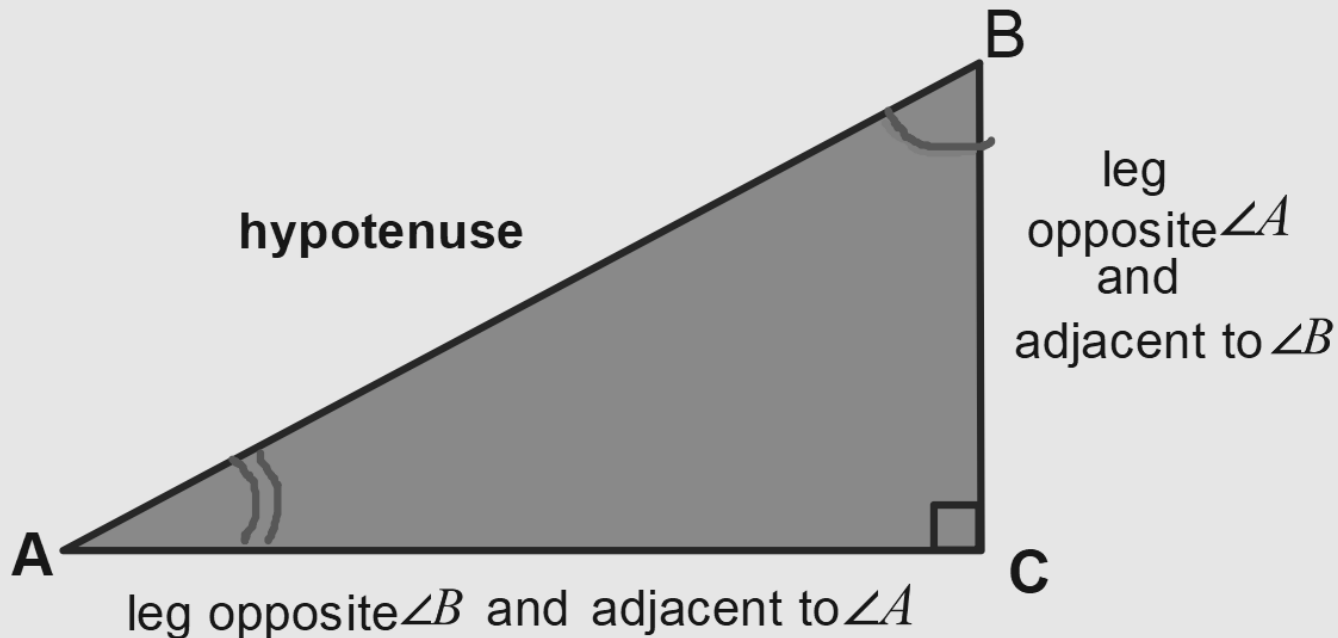
I will lead you to the answer. All you have to do is remember how to spell my name.

UNIT 6 L 3 (SECTION 8-4): TRIGONOMETRY
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SOH - CAH - TOA

$$\sin A = \frac{\text{opp}}{\text{hyp}} = \frac{BC}{AB} \quad \cos A = \frac{\text{adj}}{\text{hyp}} = \frac{AC}{AB} \quad \tan A = \frac{\text{opp}}{\text{adj}} = \frac{BC}{AC}$$

$$\sin B = \frac{\text{opp}}{\text{hyp}} = \frac{AC}{AB} \quad \cos B = \frac{\text{adj}}{\text{hyp}} = \frac{BC}{AB} \quad \tan B = \frac{\text{opp}}{\text{adj}} = \frac{AC}{BC}$$

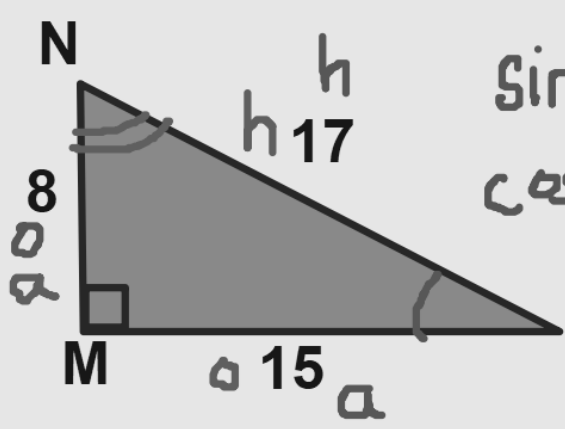


UNIT 6 L 3 (SECTION 8-4): TRIGONOMETRY

OBJECTIVES: FIND THE TRIGONOMETRIC RATIOS USING RIGHT TRIANGLES.

SOLVE PROBLEMS USING TRIGONOMETRIC RATIOS.

Find $\sin L$, $\cos L$, $\tan L$, $\sin N$, $\cos N$, and $\tan N$. Express each ratio as a fraction and as a decimal rounded to the nearest hundredth.



$\sin L = \frac{o}{h} = \frac{8}{17} \approx 0.5$ $\sin N = \frac{o}{h} = \frac{15}{17} \approx 0.9$
 $\cos L = \frac{a}{h} = \frac{15}{17} \approx 0.9$ $\cos N = \frac{a}{h} = \frac{8}{17} \approx 0.5$
 $\tan L = \frac{o}{a} = \frac{8}{15} \approx 0.5$ $\tan N = \frac{o}{a} = \frac{15}{8} \approx 1.9$

Use a calculator to find each value. Round to the nearest tenth.

$$\tan 56^\circ \approx 1.5$$

$$\cos 80^\circ \approx 0.2$$

$$\sin 57^\circ \approx 0.8$$

$$\tan 45^\circ = 1$$



UNIT 7 L 3 (SECTION 8-4): TRIGONOMETRY
OBJECTIVES: FIND THE TRIGONOMETRIC RATIOS
USING RIGHT TRIANGLES.
SOLVE PROBLEMS USING TRIGONOMETRIC RATIOS.

We can use trig ratios to find the missing measures of right triangles.

To find the measure of a missing angle, we can use the inverse of sine, cosine, and tangent.

[The angle is always behind the word]

$\sin A = x$ to find the angle we use the equation: $A = \sin^{-1}(x) \Leftrightarrow$ this
is read as A equals the inverse sine of x.

$\cos A = y$ to find the angle we use the equation: $A = \cos^{-1}(y)$

$\tan A = z$ to find the angle we use the equation: $A = \tan^{-1}(z)$

UNIT 6 L 3 (SECTION 8-4): TRIGONOMETRY
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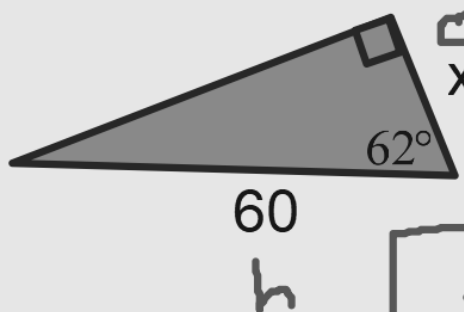
Find the measure of each angle to the nearest degree.

$\tan A = 1.4176$ $A = \tan^{-1}(1.4176)$ $A \approx 55^\circ$

$\sin B = 0.6307$ $B = \sin^{-1}(0.6307)$ $B \approx 39^\circ$

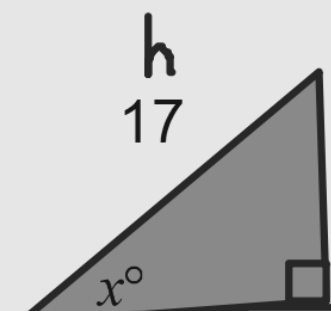
Find x. Round to the nearest tenth for a side and nearest degree for an angle measure. [set up equation and solve for x]

$60 \cdot \cos 62 = \frac{x}{60} \cdot 60$
 $60 \cos 62 = x$



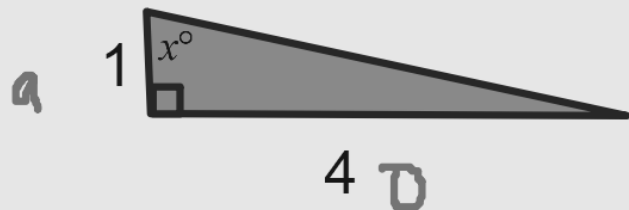
$x \approx 29.2$

$\sin x = \frac{12}{17}$
 $x = \sin^{-1}(12/17)$



$x \approx 45^\circ$

UNIT 6 L 3 (SECTION 8-4): TRIGONOMETRY
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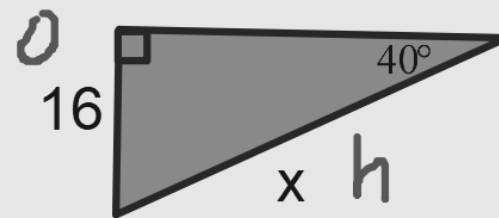
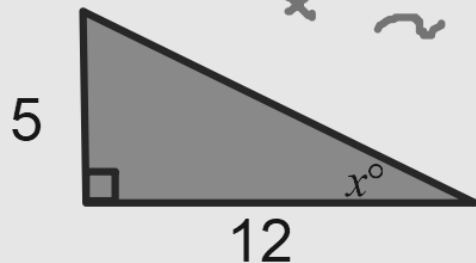


$$\tan x = \frac{4}{1}$$

$$\tan x = 4$$

$$x = \tan^{-1}(4)$$

$$x \approx 76^\circ$$



$$x \cdot \sin 40 = \frac{16}{x}$$

$$x = \frac{16}{\sin 40}$$

$$x \approx 24.9$$

$$\frac{x \cdot \sin 40 = 16}{\sin 40} = \frac{16}{\sin 40}$$