What's Going On?

Checking In

Minds on An old friend.

Action! A new *friend*?

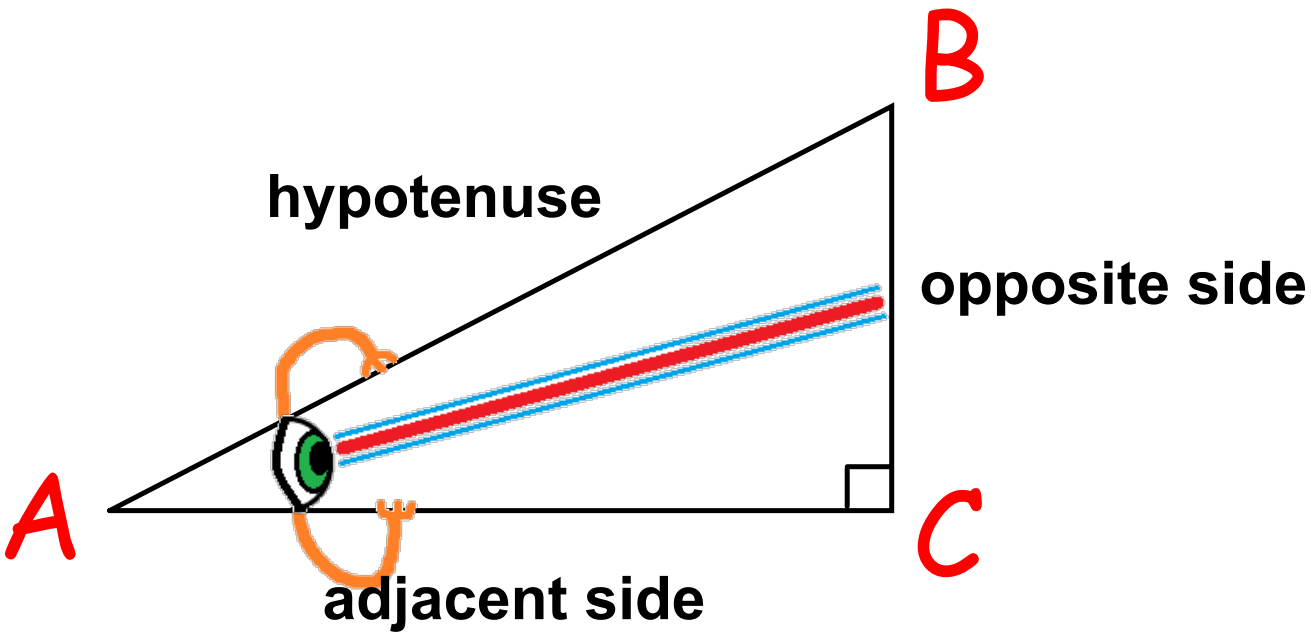
Consolidation Restrictions

Learning Goal - I will know the six trigonometric ratios and will be able to use them to solve problems.

We are going to move RAFT until the end of the period today and tomorrow.

Minds on

The Angle Monster



The angle monster always looks at his opposite side and hugs his adjacent side and his hypotenuse.

Minds on

An old friend...

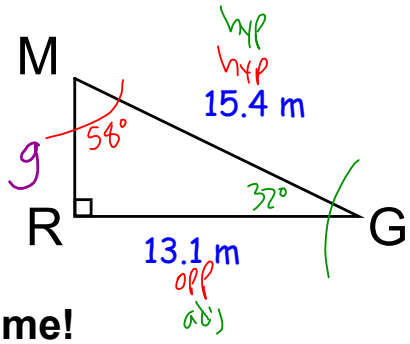
It's amazing!

YES!!!!

sohcahtoa

Minds on

Using your old friend...



Solve me!

Angle M : $\sin M = \frac{13.1}{15.4}$

$\sin M = 0.8506$

$M = \sin^{-1}(0.8506)$

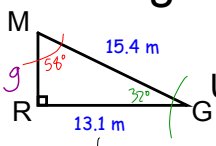
$M \doteq 58°$

Angle G : $\cos G = \frac{13.1}{15.4}$

$G = \cos^{-1}\left(\frac{13.1}{15.4}\right)$

$G \doteq 32°$

side g



Using Angle M

$\cos 58° = \frac{g}{15.4}$

$g = 15.4 \times \cos 58°$

$g \doteq 8.2\text{m}$

$\tan 58° = \frac{13.1}{g}$

$g = \frac{13.1}{\tan 58°}$

$g \doteq 8.2\text{m}$

Using Angle G

$\sin 32° = \frac{g}{15.4}$

$g = 15.4 \times \sin 32°$

$g \doteq 8.2\text{m}$

$\tan 32° = \frac{g}{13.1}$

$g = 13.1 \times \tan 32°$

$g \doteq 8.2\text{m}$

Action!

Reciprocal Trigometric Ratios

cosecant

$$\csc\theta = \frac{\text{hypotenuse}}{\text{opposite}} = \frac{1}{\sin\theta}$$

secant

$$\sec\theta = \frac{\text{hypotenuse}}{\text{adjacent}} = \frac{1}{\cos\theta}$$

cotangent

$$\cot\theta = \frac{\text{adjacent}}{\text{opposite}} = \frac{1}{\tan\theta}$$

Action!

Reciprocal Trigometric Ratios

$$\csc\theta = \frac{1}{\sin\theta}$$

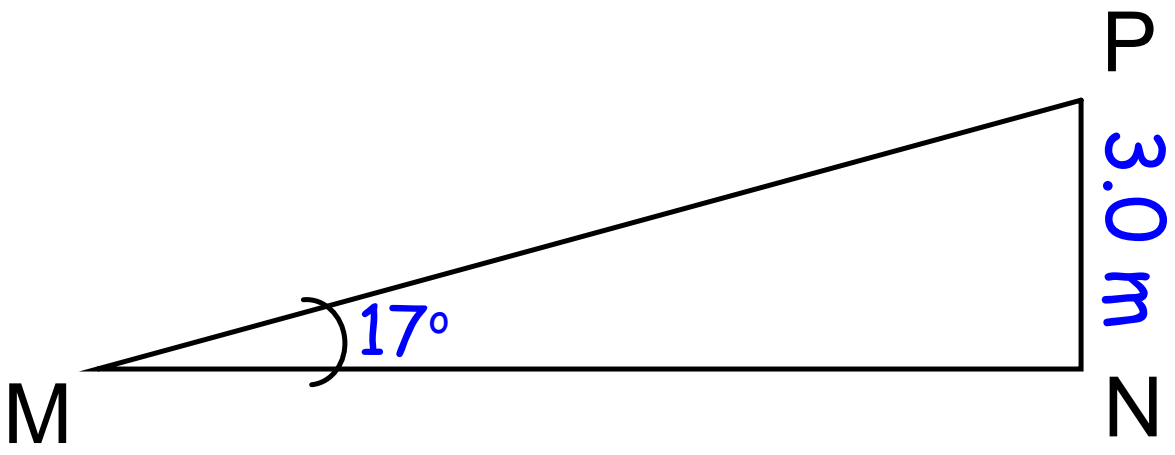
$$\sec\theta = \frac{1}{\cos\theta}$$

$$\cot\theta = \frac{1}{\tan\theta}$$

Action!

Reciprocal Trigometric Ratios

Determine the length of side p (MN)



Action!

A new *friend*?

choshacao

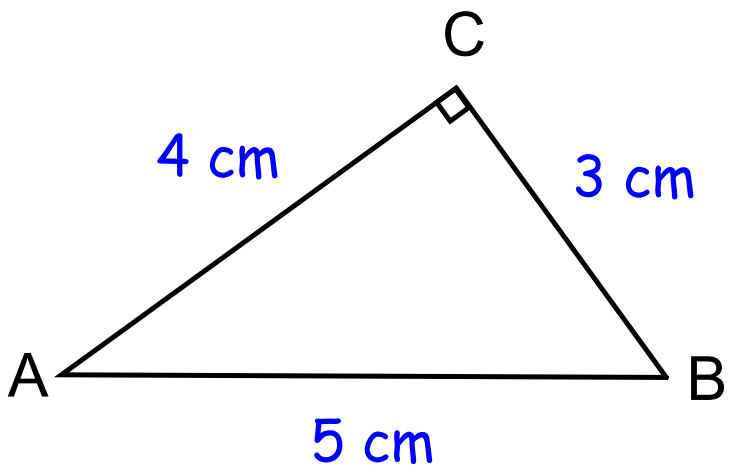
Action!

The Ratios

Determine **all 6** trigonometric ratios for triangle ABC.

Which ratio is the largest?

Which ratio is the smallest?



$\sin A = \frac{3}{5}$

$\cos A = \frac{4}{5}$

$\tan A = \frac{3}{4}$

$\csc A = \frac{5}{3}$

$\sec A = \frac{5}{4}$

$\cot A = \frac{4}{3}$

$\sin B = \frac{4}{5}$

$\cos B = \frac{3}{5}$

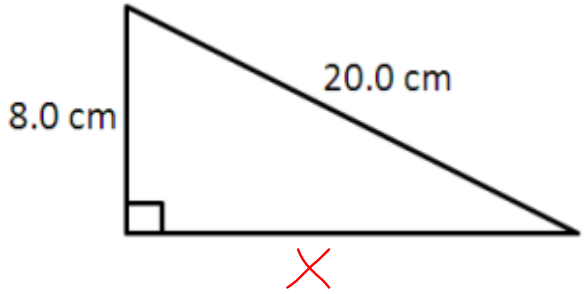
$\tan B = \frac{4}{3}$

$\csc B = \frac{5}{4}$

$\sec B = \frac{5}{3}$

$\cot B = \frac{3}{4}$

Action!



a. Determine the length of the missing side to one decimal place.

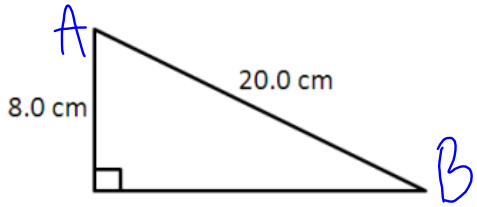
$x^2 = 20^2 - 8^2$

$x^2 = 400 - 64$

$\sqrt{x^2} = \sqrt{336}$

$x \doteq 18.3$ cm

b. Express one unknown angle in terms of a primary trigonometric ratio and the other in terms of a reciprocal ratio and calculate the angles.



$\cos A = \frac{8}{20}$

$A = \cos^{-1}\left(\frac{8}{20}\right)$

$\csc B = \frac{20}{8}$

$\csc B = 2.5$

$\sin B = \frac{1}{2.5}$

$B = \sin^{-1}\left(\frac{1}{2.5}\right)$

Consolidation

Restrictions

What are the restrictions on the **6** trigonometric ratios?

$0 < \sin\theta < 1$

$0 < \cos\theta < 1$

$0 < \tan\theta$

$\csc\theta > 1$

$\sec\theta > 1$