What's Going On?

Checking In

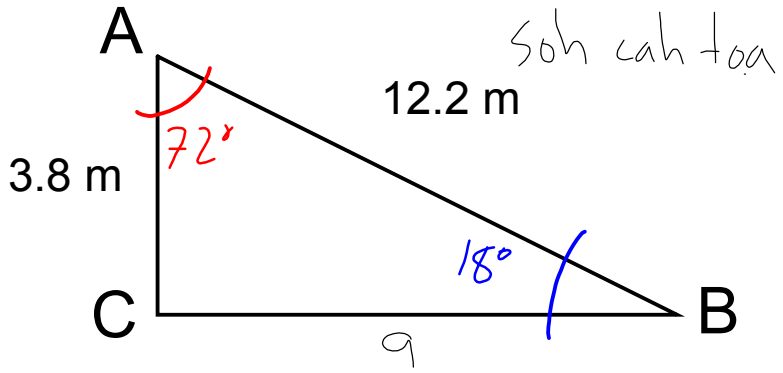
Minds on Another old friend :)

Action! Some new friends!

Consolidation Using your friends.

Learning Goal - I will know the trig ratios of our special angles and be able to apply operations to them.

Solve the triangle below without using the Pythagorean Theorem.



Angle A

$\cos A = \frac{3.8}{12.2}$

$A = \cos^{-1}\left(\frac{3.8}{12.2}\right)$

$A = 72°$

Angle B

$\sin B = \frac{3.8}{12.2}$

$B = \sin^{-1}\left(\frac{3.8}{13.2}\right)$

$B = 18°$

Now that we have all of the angles, we can solve for the missing side ***a*** in several ways.

We can use Angle A and tan OR sin

We can use Angle B and tan OR cos

$\cos 18° = \frac{a}{12.2}$

$a = 12.2 \times \cos 18°$

$a = 11.6m$

Minds on

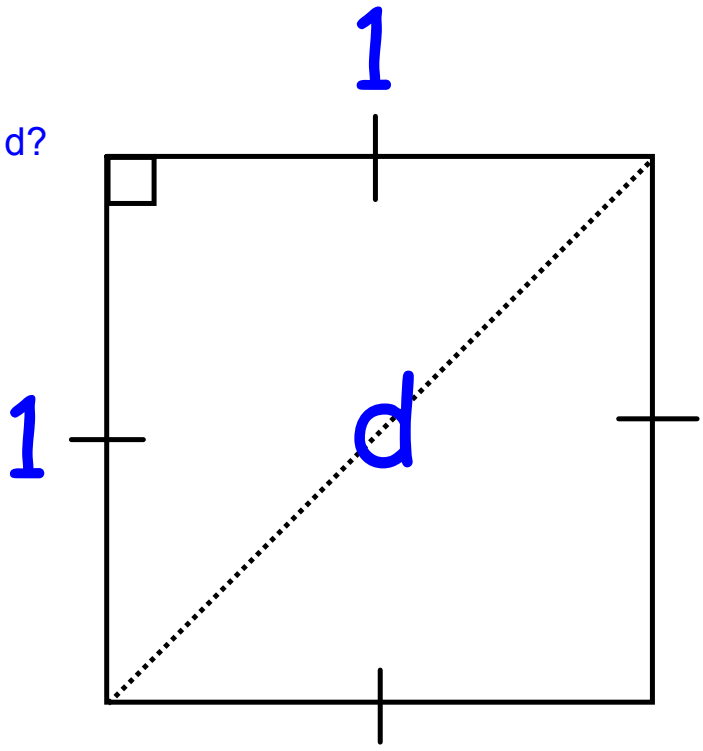
Another Old Friend

1. What is the EXACT length of d?

$1^2 + 1^2 = d^2$

$\sqrt{d^2} = \sqrt{2}$

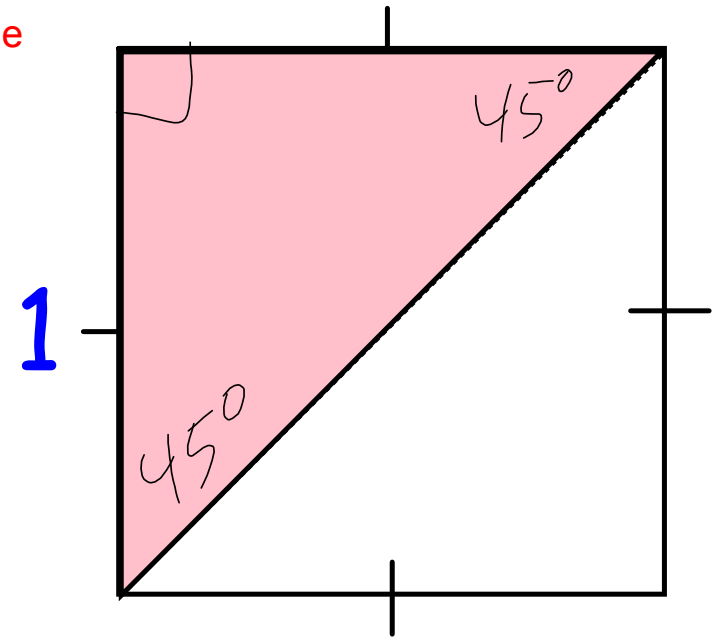
$d = \sqrt{2}$



Minds on

Another Old Friend

2. What are the measures of the angles in the red triangle?

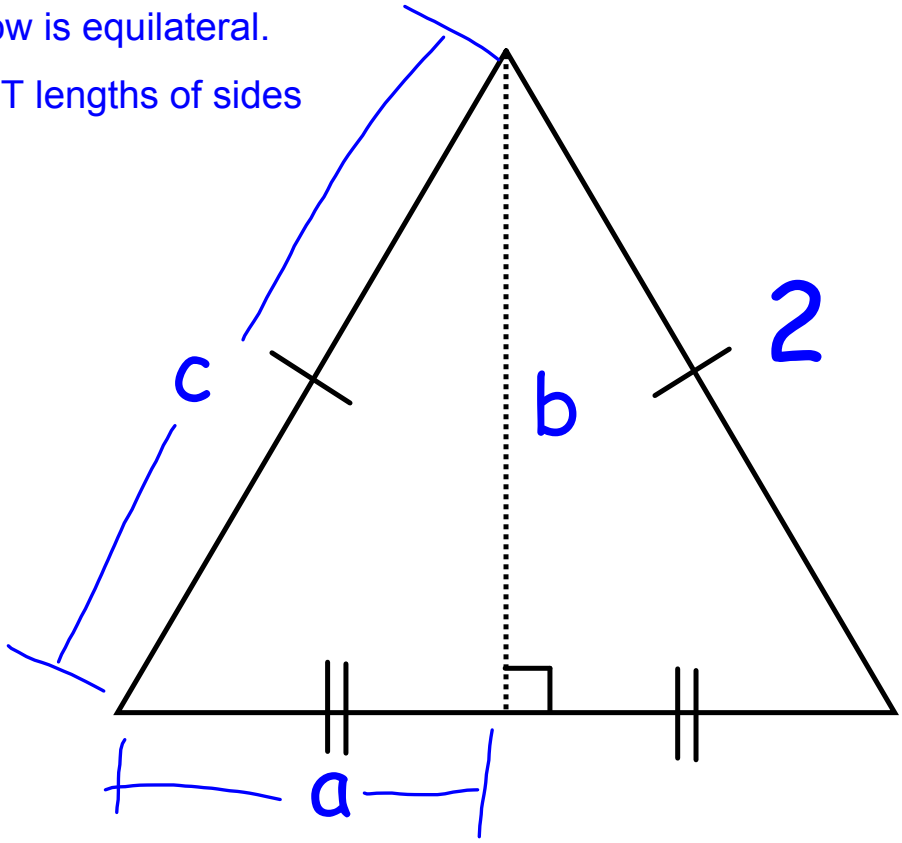


Minds on

Another Old Friend

The large triangle below is equilateral.

1. What are the EXACT lengths of sides a, b and c?



$c = 2$

$a = 1$

$a^2 + b^2 = c^2$

$1^2 + b^2 = 2^2$

$1 + b^2 = 4$

$\sqrt{b^2} = \sqrt{3}$

$b = \sqrt{3}$

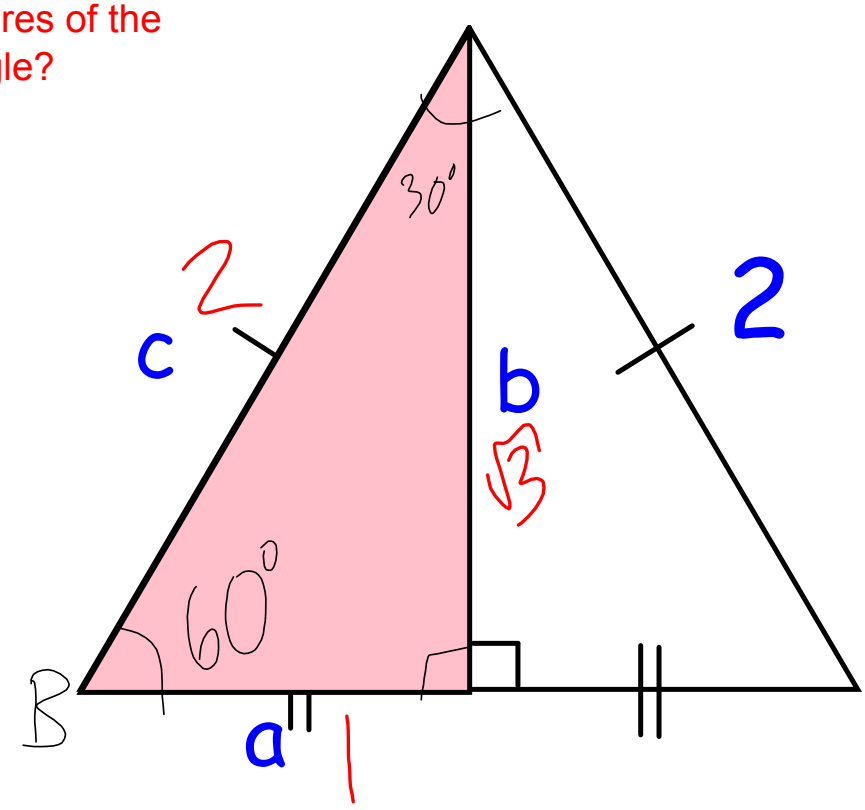
Minds on

Another Old Friend

2. What are the measures of the angles in the red triangle?

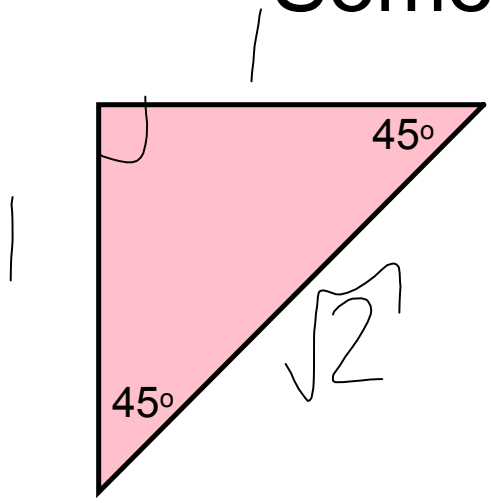
$\cos B = \frac{1}{2}$

$B = \cos^{-1}\left(\frac{1}{2}\right)$



Action!

Some New Friends



What are the **6** trigonometric ratios for a 45 degree angle?

Be exact!

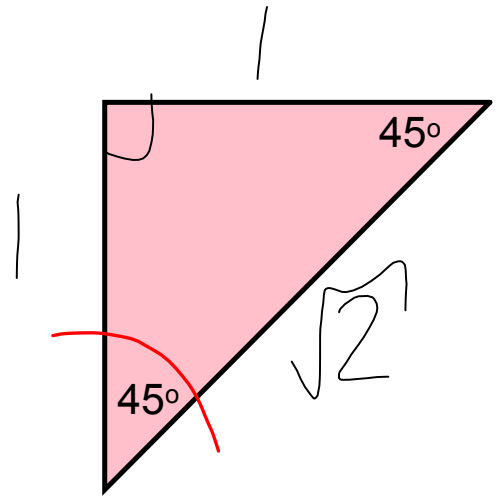
$\sin 45 = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

Rationalize the denominator $= \frac{\sqrt{2}}{2}$

$\sin 45 = \frac{\sqrt{2}}{2}$ $\cos 45 =$

$\tan 45 =$ $\csc 45 =$

$\sec 45 =$ $\cot 45 =$



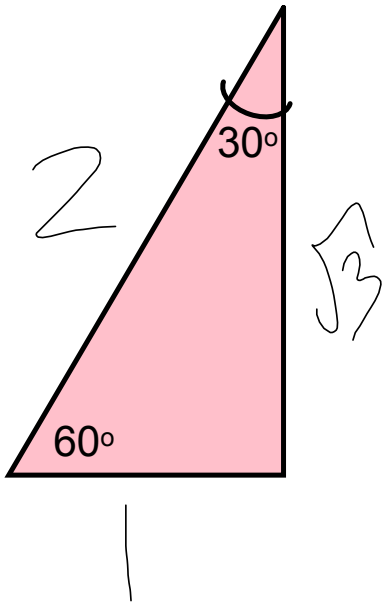
$\sin 45 = \frac{\sqrt{2}}{2}$ $\cos 45 = \frac{\sqrt{2}}{2}$

$\tan 45 = 1$ $\csc 45 = \sqrt{2}$

$\sec 45 = \sqrt{2}$ $\cot 45 = 1$

Action!

Some New Friends



What are the **6** trigonometric ratios for a 30 degree and a 60 degree angle?

Be exact!

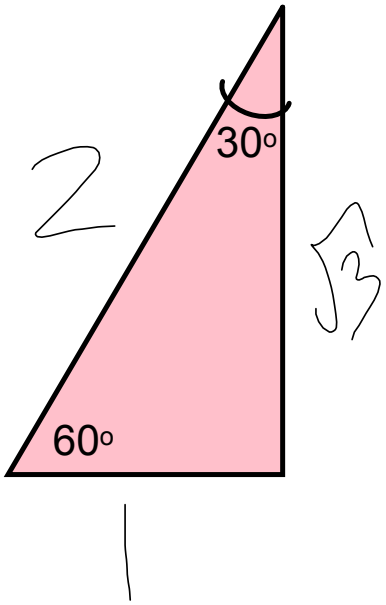
*No radicals allowed in the denominator!

sin 30 = cos 30 = tan 30 =

csc 30 = sec 30 = cot 30 =

sin 60 = cos 60 = tan 60 =

csc 60 = sec 60 = cot 60 =



$\sin 30 = \frac{1}{2}$

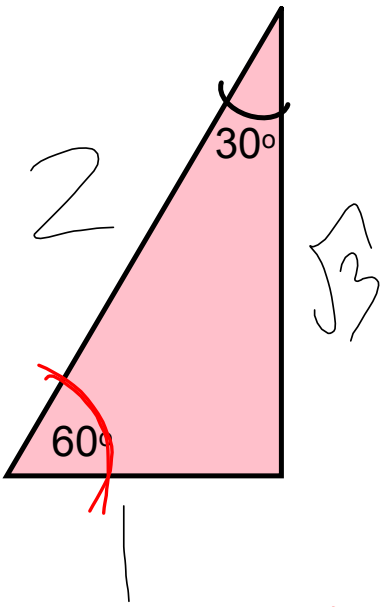
$\cos 30 = \frac{\sqrt{3}}{2}$

$\tan 30 = \frac{\sqrt{3}}{3}$

$\csc 30 = 2$

$\sec 30 = \frac{2\sqrt{3}}{3}$

$\cot 30 = \sqrt{3}$



$\frac{2}{\sqrt{3}}$ $\frac{\sqrt{3}}{\sqrt{3}}$ $\frac{2\sqrt{3}}{3}$

$\sin 60 = \frac{\sqrt{3}}{2}$

$\csc 60 = \frac{2\sqrt{3}}{3}$

$\cos 60 = \frac{1}{2}$

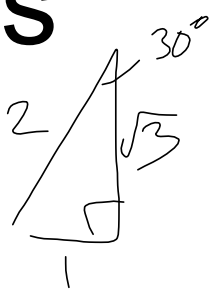
$\sec 60 = 2$

$\tan 60 = \sqrt{3}$

$\cot 60 = \frac{\sqrt{3}}{3}$

Consolidation

Using your friends



Determine the exact value of:

$$(\sin 45^o)(\cos 45^o) + (\sin 30^o)(\sin 60^o)$$

$$= \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{2}\right) + \left(\frac{1}{2}\right)\left(\frac{\sqrt{3}}{2}\right)$$

$$= \frac{2}{4} + \frac{\sqrt{3}}{4}$$

$$= \frac{2+\sqrt{3}}{4}$$