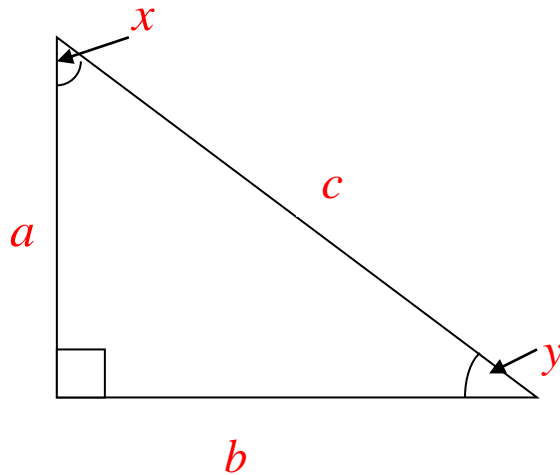


## Trigonometry Proofs 1



Fill in the blanks in the following fractions with  $a, b, c$ :

$$\sin x = \frac{\quad}{\quad} \quad \cos x = \frac{\quad}{\quad} \quad \sin y = \frac{\quad}{\quad} \quad \cos y = \frac{\quad}{\quad}$$

The expressions above are in two equal pairs. Write which ones are equal below:

$$\sin x =$$

$$\cos x =$$

Now use what you know about the sum of angles in a triangle to write  $y$  in terms of  $x$ :

$$y =$$

Finally substitute this expression for  $y$  into the above expressions:

$$\sin x =$$

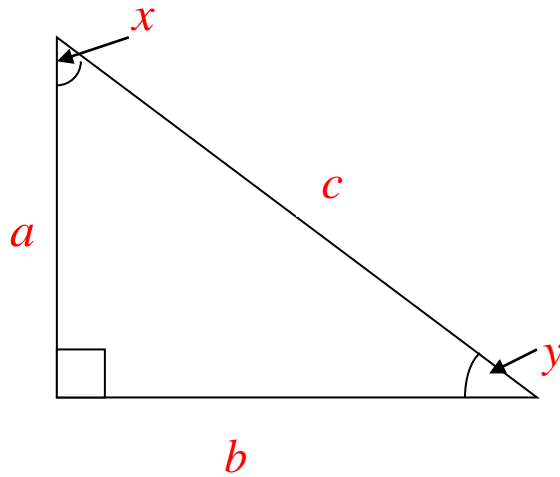
$$\cos x =$$

You should have got:

$$\sin x = \cos(90^\circ - x)$$

$$\cos x = \sin(90^\circ - x)$$

## Trigonometry Proofs 2



Fill in the blanks in the following fractions with  $a, b, c$ :

$$\sin x = \frac{\quad}{\quad}$$

$$\cos x = \frac{\quad}{\quad}$$

$$\tan x = \frac{\quad}{\quad}$$

Now divide your expression for  $\sin x$  by your expression for  $\cos x$  and cancel:

$$\frac{\sin x}{\cos x} = \frac{\quad}{\quad}$$

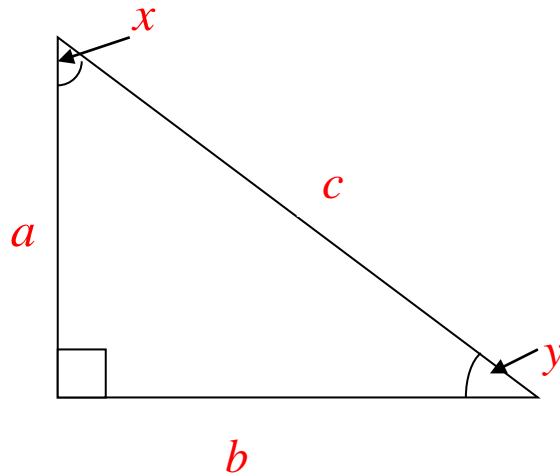
The answer that you get should be the same as one of your original expressions. Rewrite in terms of this:

$$\frac{\sin x}{\cos x} = \quad$$

You should have got:

$$\frac{\sin x}{\cos x} = \tan x$$

### Trigonometry Proofs 3



Fill in the blanks in the following fractions with  $a, b, c$ :

$$\sin x = \frac{\quad}{\quad}$$

$$\cos x = \frac{\quad}{\quad}$$

Rearrange the above equations to get an expression for  $a$  and an expression for  $b$ :

$$a =$$

$$b =$$

Use Pythagoras Theorem to write an equation linking  $a, b, c$ :

Now substitute your expressions for  $a$  and  $b$  into your Pythagoras equation:

Simplify and divide your equation through by  $c^2$ :

You should have got:

$$\sin^2 x + \cos^2 x = 1$$