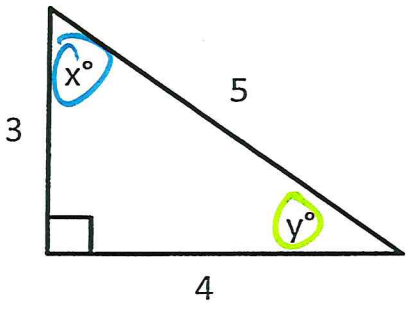
Sine and Cosine Function Relationship

Write all possible trig functions for both variables:



x°

$\sin(x) = \frac{4}{5}$

$\cos(x) = \frac{3}{5}$

$\tan(x) = \frac{4}{3}$

y°

$\sin(y) = \frac{3}{5}$

$\cos(y) = \frac{4}{5}$

$\tan(y) = \frac{3}{4}$

Do you notice any patterns or similar ratios?

$\cos(x) = \frac{3}{5} = \sin(y)$ $\quad$ $\sin(x) = \frac{4}{5} = \cos(y)$

What must be true about x and y (the 2 non-right angles) in any right triangle?

$x + y = 90°$ $\quad$ They are complementary angles!

If $x + y = 90$ (if you have 2 complementary angles), then

$\cos(x) = \sin(y)$ and $\sin(x) = \cos(y)$.

Conversely,

If $\cos(x) = \sin(y)$ or $\sin(x) = \cos(y)$, then $x + y = 90°$.