

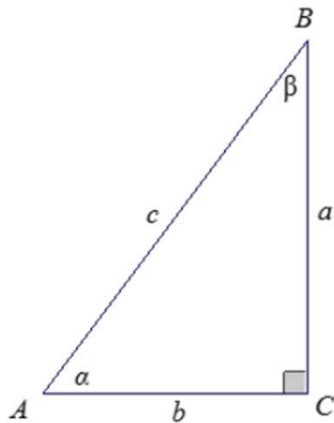
# Trigonometry Worksheets

## Sine and Cosine of Complementary Angles

If  $\alpha$  and  $\beta$  are the measurements of complementary angles, then we are going to show that  $\sin \alpha = \cos \beta$ .

In right triangle  $ABC$ , the measurement of acute angle  $\angle A$  is denoted by  $\alpha$ , and the measurement of acute angle  $\angle B$  is denoted by  $\beta$ .

Determine the following values in the table



$\sin \alpha$	$\sin \beta$	$\cos \alpha$	$\cos \beta$

What can you conclude from the results?

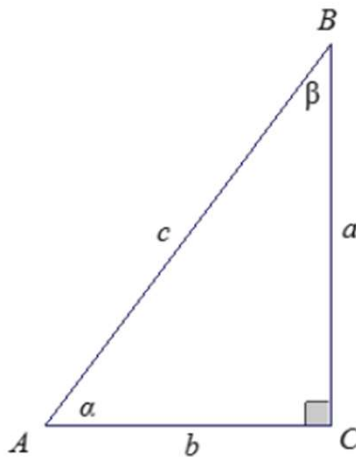
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Determine the following values in the table



$\sin \alpha$	$\sin \beta$	$\cos \alpha$	$\cos \beta$
$\sin \alpha = \frac{\text{opp}}{\text{hyp}} = \frac{a}{c}$	$\sin \beta = \frac{\text{opp}}{\text{hyp}} = \frac{b}{c}$	$\cos \alpha = \frac{\text{adj}}{\text{hyp}} = \frac{b}{c}$	$\cos \beta = \frac{\text{adj}}{\text{hyp}} = \frac{a}{c}$

What can you conclude from the results?

*Since the ratios for  $\sin \alpha$  and  $\cos \beta$  are the same,  $\sin \alpha = \cos \beta$ , and the ratios for  $\cos \alpha$  and  $\sin \beta$  are the same; additionally,  $\cos \alpha = \sin \beta$ . The sine of an angle is equal to the cosine of its complementary angle, and the cosine of an angle is equal to the sine of its complementary angle.*

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