

# Trigonometry Worksheet 8 - Answers

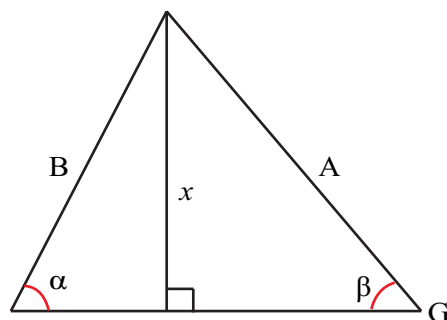


Figure 1

Refer to Figure 1 to complete the questions 1 - 6 to prove the Law of Sines.

1. Find  $\sin \alpha$ .

$$\sin \alpha = \frac{x}{B}$$

2. Find  $\sin \beta$ .

$$\sin \beta = \frac{x}{A}$$

3. Solve for  $x$  in terms of  $\beta$ .

$$x = A \sin \beta.$$

4. Solve for  $x$  in terms of  $\alpha$ .

$$x = B \sin \alpha.$$

5. Prove the Law of Sines.

$$A \sin \beta = B \sin \alpha \implies \frac{\sin \alpha}{A} = \frac{\sin \beta}{B}$$

6. In a triangle, side  $x$  is opposite a  $23^\circ$  angle and a side length of 17 is opposite a  $38^\circ$  angle. What 10.69

7. In a triangle where the side opposite a  $104^\circ$  angle has length 5, find the length of the side opposite a  $42^\circ$  angle.

$$3.45$$

8. An angle of  $65^\circ$  is contained in between two sides of lengths 12 and 14. What is the side opposite the  $65^\circ$  angle?

$$14.10$$

9. In a triangle with adjacent sides of length 10 and 22, and the included angle measuring  $17^\circ$ , find the length of the third side.

$$b = 12.71$$

10. A triangle has side lengths of 18, 23, and 31. What is the measure of the angle opposite the side of length 18?

$$34.92^\circ$$