

## Flash Cards: Law of Sines

**Directions: Answer the following.**

1. Using the Law of Sines, find the length of side b if a equals 16, the measure of angle A equals 43 degrees, and the measure of angle B equals 62 degrees.
2. Using the Law of Sines, find the measure of angle C if b equals 22, the measure of angle B equals 71 degrees and c equals 20.
3. Using the Law of Sines, find the measure of angle P given side lengths p equals 15, q equals 14 and r equals 18.
4. Find the missing parts of the triangle below. The triangle has angles X and Y and one angle that is not labeled but has measure 68 degrees. The side opposite the 68 degree angle is 48, the side opposite X is 50 and the side opposite Y is y.

Answers:

1. The sine of A over a equals the sine of B over b. The sine of 43 degrees over 16 equals the sine of 62 degrees over b. Cross multiply to get b times the sine of 43 degrees equals 16 times the sine of 62 degrees. B equals 16 times the sine of 62 degrees divided by the sine of 43 degrees, which is approximately equal to 20.71.
2. The sine of B over b equals the sine of C over c. The sine of 71 degrees over 22 equals the sine of C over 20. Cross multiply to get 20 times the sine of 71 degrees equals 22 times the sine of C. 20 times the sine of 71 degrees divided by 22 equals the sine of C. 0.8596 is approximately equal to the sine of C. Take the inverse sine of both sides. 59.27 is approximately equal to C. The measure of C is approximately equal to 59.27 degrees.
3. The Law of Sines cannot be used when three sides are given.
4. The sine of X over 50 equals the sine of 68 degrees over 48. Cross multiply to get 48 times the sine of X equals 50 times the sine of 68 degrees. The sine of X equals 50 times the sine of 68 degrees divided by 48. The sine of X is approximately equal to 0.9658. Take the inverse sine of both sides. X is approximately equal to 74.97. The measure of angle X is approximately equal to 74.97 degrees.

The measure of angle Y equals 180 minus 68 minus 74.97 equals 37.03 degrees.

The sine of 68 degrees over 48 equals the sine of 37.03 over y. Cross multiply to get y times the sine of 68 degrees equals 48 times the sine of 37.03 degrees. Y equals 48 times the sine of 37.03 degrees divided by the sine of 68 degrees. Y is approximately equal to 31.18.