

Why Do I Need to Know Trig?
Applications of Trigonometric Ratios

Trigonometry is simply a fancy word that means triangle geometry and trigonometric ratios have a wide array of applications. Some of these applications are simple, far-reaching, and will be explored in depth (no doubt) over the course of your course in trigonometry. Other applications are advanced and specialized; as a result these may not be covered in the course, but you may run into them depending on your profession later in life. Here I will discuss a few of the applications for all of the students are intelligent enough to use the word “why”.

Some of the most basic applications of trigonometric functions are used to tell us things we do not know about a given triangle. If we are given a pair of sides and an angle (some restrictions may apply), trigonometric functions can tell us what the measure of the remaining sides and angles are. In fact, this simple application is so useful that the trigonometric relationships have been manipulated into two laws, (the law of sines and the law of cosines), which can quickly give us information about the sides and angles of triangles. The law of cosines can be thought of as a more general Pythagorean theorem.

A basic calculation that any third grader can do is to compute the area of a triangle when given the base and height. But what if we are given a triangle and we don't know the height? A more general method of area calculation can be used on triangles through the application of trigonometry when given two sides and the included angle.

Depending on your career and further education, you may run into trigonometric functions in a variety of settings. Any event that repeats, (is periodic in nature), can be represented by some combination of trigonometric functions. In physics, trigonometric functions are used to describe waves and can be applied to light and sound. Musicians may learn more about their music by looking at the harmonics of waves. Engineers must know about waves and resonance in order to avoid disastrous consequences (google the “Tacoma Bridge”).

By having a basic understanding of trigonometric functions you will be prepared for more advanced and career specific applications later in life.