Foundation Skill Series
Using Declination

A declination value represents the difference between *magnetic North* and *True North*, for a specific location. Declination degree values can be either expressed as Easterly and Westerly, or as positive and negative values. Easterly declinations are represented as positive values, and Westerly declinations are represented as negative values. For example, your current location could be represented as a Westerly declination of 15 degrees, or as a declination value of -15 degrees.

Let's look at a few examples to help you understand how to use your declination values:

Example 1

First of all, let's assume you know you current declination value to be -12 degrees (this is the same as 12 degrees Westerly), and you want to be traveling in a true 72 degree path. When you try to determine your current bearing, your compass indicates you are traveling with a bearing of 72 degrees from magnetic north. Knowing your declination value (-12) however, you determine that you are actually bearing a course 60 degrees from True North (compass value + declination value = 72 - 12 = 60). At this point, you realize in order to actually travel 72 degrees from True North you will have to add 12 degrees to your planned bearing, and set your compass to 84 degrees. Now traveling at a bearing 84 degrees from magnetic north, you are actually traveling 72 degrees from True North.

Example 2

If you have declination value of -20 (this is the same as 20 degrees Westerly), then when your compass indicates you are bearing a 90 degree course, you are actually bearing at 70 degrees. If you really do want to head with a bearing of 90 degrees, you will have to set your compass to a bearing of 110 degrees, to compensate for your local error.

Example 3

If you have declination value of +10 (this is the same as 10 degrees Easterly), then when your compass indicates you are bearing a 90 degree course, you are actually bearing at 100 degrees. If you really do want to head with a bearing of 90 degrees, you will have to set your compass to a bearing of 80 degrees, to compensate for your local error.

Reviewing the above examples you will realize it is important you understand exactly how to use your declination value, as your adjustments are different for determining your current bearing and charting a new bearing.

Determining Your Current Bearing

If you are asking yourself "What direction am I really heading?" you will need to take your compass reading and add your declination value. This is your "True" direction. Meaning, this is your direction with respect to true north. (Remember, if you add a negative number, you are actually subtracting a value)
Referencing examples from above?

Example 1: 72 + (-12) = 60

Example 2: 90 + (-20) = 70

Example 3: 90 + 10 = 100

Setting Your Correct Bearing To Travel

If you are asking yourself "How do I travel a true 120 degrees?", you will need to take your desired heading and subtract your declination value. This will compensate for the error. (Remember, if you subtract a negative number, you are actually adding a value)
Referencing examples from above (if you want a true bearing of 120 degrees)?

Example 1: 120 - (-12) = 132

Example 2: 120 - (-20) = 140

Example 3: 120 - 10 = 110

Another way to think about this scenario is doing the opposite of your declination value. For example if you declination value is -15, then you will add 15 to the compass bearing to adjust for this error. And if your declination value is +15, then you will subtract 15 from the compass bearing to adjust for this error.