



## Appendix D: Magnetic Declination - page 1

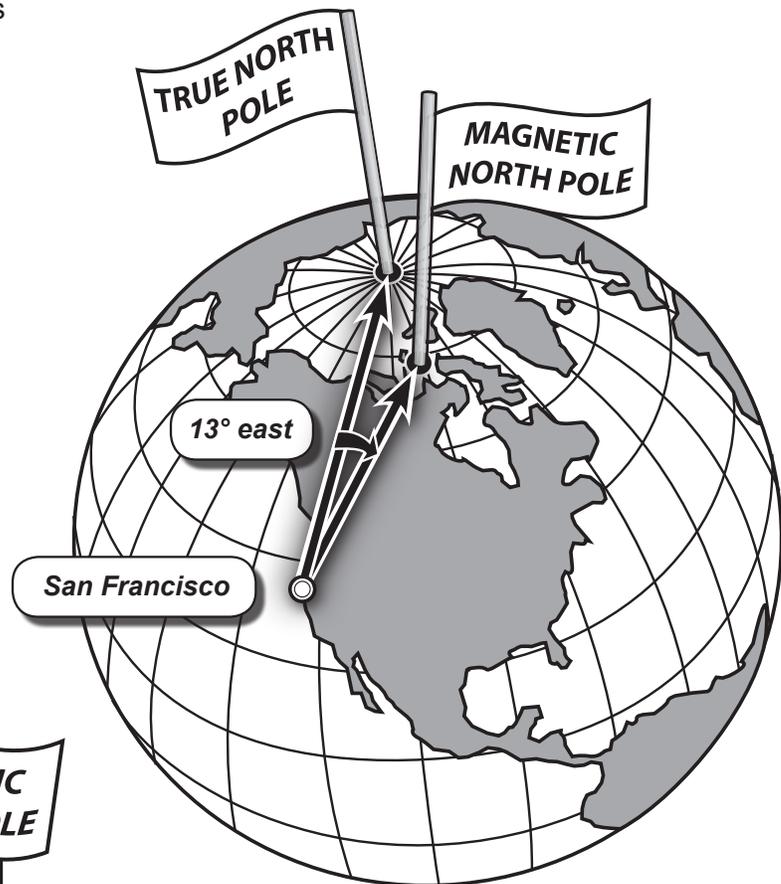
You might be surprised to know that a magnetic compass does not usually point to the true north pole. The compass needle actually points to a different place called the **magnetic north pole**. The magnetic north pole is in northern Canada.

Not only that, the magnetic north pole is moving! It's traveling in a northwesterly direction at about **26 miles per year**. The magnetic pole also wanders daily around an average position.

The angle between the magnetic north pole and the true north pole is called **magnetic declination**.

This angle changes over the course of time, and the values shown here may be different when you read this.

The angle between magnetic north and true north also depends on where you are on the Earth's surface.



*Viewed from San Francisco, the magnetic north pole is about 13° to the east of the true north pole.*

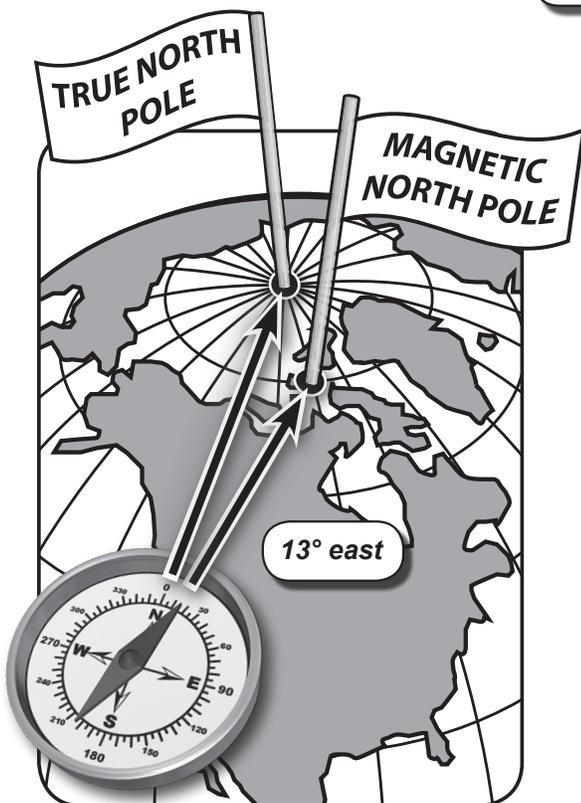
### **East Declination**

Suppose you were in San Francisco, and wanted to find the true north pole with a compass.

If you pointed the "N" of the compass toward the true north pole, the **compass needle** would point 13 degrees to the right (or east) of north.

We say that the magnetic declination in San Francisco is 13 degrees east.

**REMEMBER:** *These measurements are constantly changing. When you read this San Francisco's declination may be different.*



*In San Francisco a compass needle reads 13° east when the "N" (north cardinal point) points true north.*



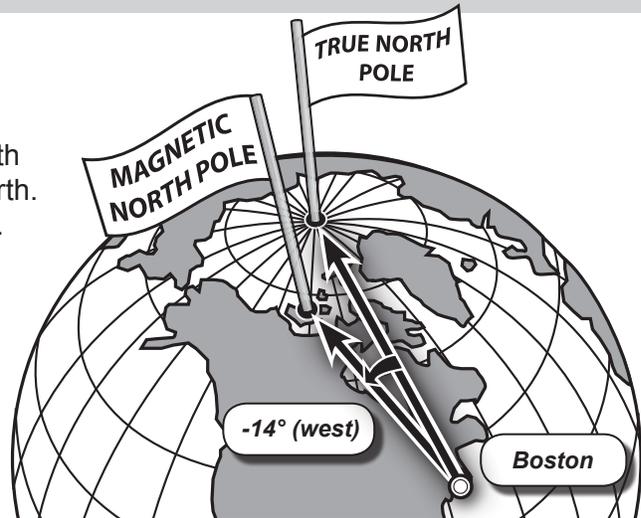
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### West Declination

At the time of this writing, in Boston magnetic north is about -14 degrees to the left or **west** of true north. This is also called west declination of 14 degrees.



*In Boston, a compass needle points about 14 degrees west of north when the "N" points toward the true north pole.*



*Viewed from Boston, the magnetic north pole is about 14° to the left of the true north pole.*

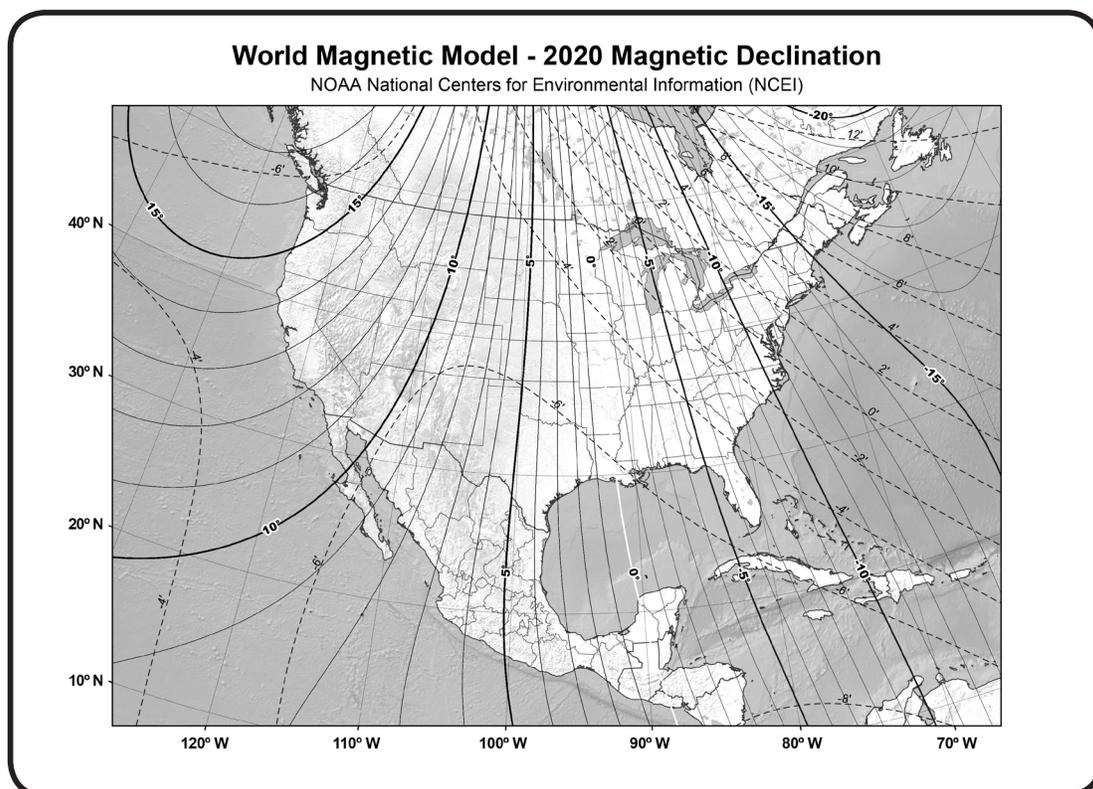
### Finding Magnetic Declination for Your Location

To find true north or south for any location, visit one of these online magnetic declination calculators:  
<https://www.magnetic-declination.com>

OR:

<https://www.ngdc.noaa.gov/geomag/calculators/magcalc.shtml#declination>

Current magnetic declination maps are also available online at the National Geophysical Data Center:  
<https://www.ngdc.noaa.gov/geomag/WMM/image.shtml>



*courtesy of NOAA: [https://www.ngdc.noaa.gov/geomag/WMM/data/WMM2020/wmm\\_north\\_america\\_2020.pdf](https://www.ngdc.noaa.gov/geomag/WMM/data/WMM2020/wmm_north_america_2020.pdf)*