

Navigation Background Information Sheet

What is navigation?

Navigation refers to the ability to determine position and direction of travel. Navigating a certain area can be done in a variety of ways using a variety of techniques. Our own Earth has given us the ability to figure out where we are and where we need to go. A couple different techniques for navigating are, using a compass and using the sky and stars.

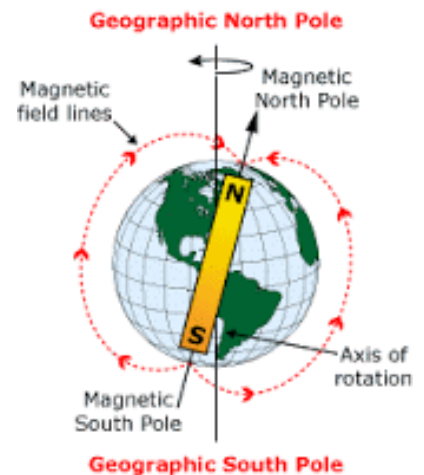
Compass

A compass is an instrument used to find the 4 different cardinal directions; North, South, East, and West. A magnetic compass is the type of compass most often used. It works using the Earth's own magnetic field. The Earth produces a magnetic field that pulls to both the North and the South. A magnetic compass contains a magnetized needle in the center that continually gets pulled by the magnetic field of the Earth pointing the needle North and South. This is called "magnetic North" and "magnetic South." While using a magnetic compass works for most navigational scenarios, it is



Dial Compass

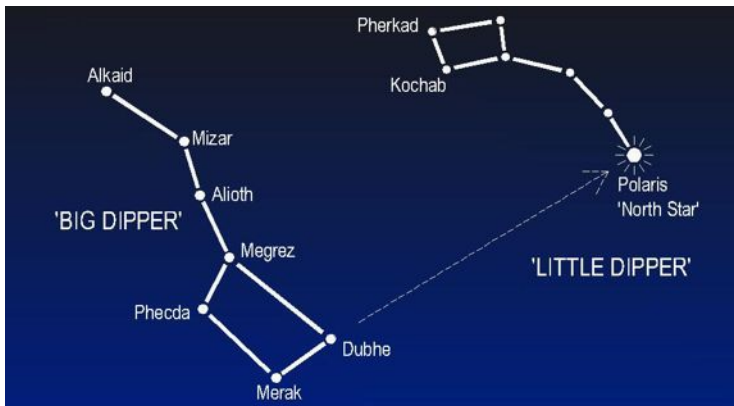
not the most accurate way to find direction. The magnetic fields of the Earth are constantly changing throwing off a magnetic compasses ability to point directly North and South. A more accurate way to find direction is to locate "true North" or "geographic North." True North is found using the longitudinal lines of the Earth that all intersect at the North Pole. By using a compass with a 360° dial and taking a bearing you can get a true North direction.



Geographic Direction vs. Magnetic Direction

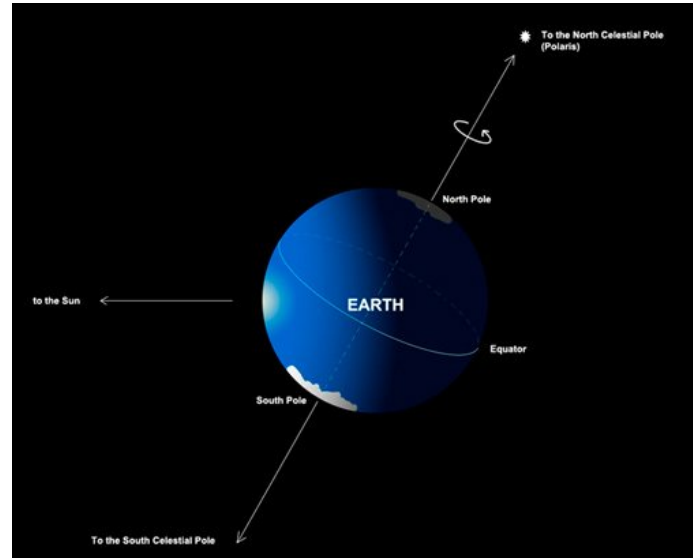
Stars

People have been using the sky and stars for navigation for thousands of years. Some stars up in the night sky are so far away from planet Earth that they never seem to move. As a result of this, people can use the stars as an improvised “compass,” pointing them in the direction they want to go in. The best example of a star that always points in the same direction would be Polaris, better known as the North Star. Polaris lies directly in line with the Earth’s axis giving it the Northernmost position in the sky and therefore never moving out view from Earth. You can find Polaris by looking for the Little Dipper.



How to find Polaris

The Sun rises in the East and sets in the West every single day. With this knowledge, we can figure out where both East and West are located no matter where we are in the world. If we know even just one cardinal direction we can also figure out where all the rest are. The drawback to using the sun as a “compass” is that it can only be done in the daylight. This technique will also not work if it is very cloudy outside because the Sun will be behind the clouds.



Polaris in relation to the Earth

Polaris is the last star in the handle of the Little Dipper. There is a problem with being able to navigate using the stars and that is that you can only see the other stars at night. Our star, the Sun, is so much closer to us that its light drowns out all the other light from the stars. Fortunately, there is another method for navigation that can be used during the day and that is using our very