NAVIGATION TOOLS: Getting to Know Your GPS Receiver - Compass Page

ASK

What is the purpose of a compass? How does a compass work with GPS? What is important about the direction North?

In this section, you will learn about the compass page on a GPS receiver and the importance of a proper North setting.

INVESTIGATE: THE COMPASS

The purpose of a compass is to help determine direction. A standard magnetic compass is... All GPS receivers include a compass. The compass on a GPS receiver can provide a lot more information than the standard magnetic compass.

The compass feature of a GPS receiver can help the user determine the current direction called the heading and the desired direction called the bearing. The GPS receiver has a pointer on the Compass Page which will provide direction to a selected destination. The GPS receiver has a compass ring that indicates the direction of North relative to direction you are going.

The hash mark at the top of the Compass Ring indicates the heading.

NORTH SETTING

It is very important that your GPS receiver has the right setting for the North. This is important because the direction of North can have at least three to four settings on your GPS receiver. You will also need to know your North setting if you are comparing your GPS receiver information with another GPS receiver, paper map, or standard compass. Refer to your owner’s manual on how to set or check the setting for True North, Grid North, Magnetic North, or User North.

True North: (also known as Geographic North) is the geographic North Pole where all longitude lines meet. All maps are laid out with true north directly at the top. Unfortunately for the wilderness traveler, true north is not at the same point on the earth as the magnetic North Pole which is where your compass points.

Grid North: is a navigational term referring to the direction northwards along the grid lines of a map projection. It is contrasted with true north and magnetic north.

Magnetic North: Think of the earth as a giant magnet. The shape of the earth’s magnetic field is roughly the same shape as the field of a bar magnet. However, the earth’s magnetic field is inclined at about 11° from the axis of rotation of the earth, so this means that the earth’s magnetic pole doesn’t correspond to the Geographic North Pole and because the earth’s core is molten; the magnetic field is always shifting slightly. The red end of your compass needle is magnetized and wherever you are, the earth’s magnetic field causes the needle to rotate until it lies in the same direction as the earth’s magnetic field.

Helpful Tip: You must be moving for the GPS receiver to provide a directional reading. The GPS receiver should be used as a compliment to other navigational tools such as paper maps, magnetic compass, and human knowledge. The GPS receiver can be vulnerable to battery power and local conditions such as bad weather or obstruction of building, hills, and trees.
CREATE

Getting Started: paper, pencil or pen, paper map, GPS receiver, and magnetic compass

- Without the aid of a GPS receiver, paper map, or compass draw a simple map marking North, South, East, and West of your present location. Face North based on your map; compare your map with others in the group.
- On a paper map, find two cities north of your present location. Discuss how you might get to these cities using a GPS receiver, compass, and paper map.
- Find the setting button for True North, Grid North, and Magnetic North on your GPS Receiver. Set your GPS to True North.

DISCUSS

- How is a compass helpful in finding a location?
- What did you learn about the direction North from this activity?
- What is the difference between a heading and a bearing?

REFLECT

- How can understanding North help you?
- Why should a GPS receiver only be a compliment to other navigational tools, such as a paper map and magnetic compass?

References and Sources: Garmin GPS Receivers Owners Manual; USGS; Mark Clifford, Virginia Tech Extension; Greg Clark, University of Illinois of Extension