

Setting Waypoints

One of the most essential functions of a GPS receiver is to be able to record coordinates of certain locations. Most receivers facilitate this process by memorizing geographic longitude, latitude and elevation when pressing one or several buttons, or entering coordinates using a keypad.

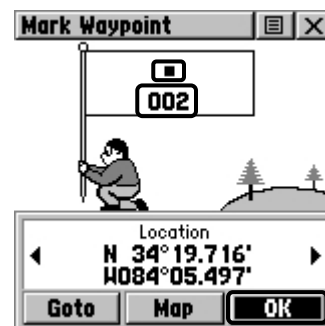
Explorer's Guide

Before You Start

Take a map of the state where you live. Use a pencil to mark 3-5 specific places that you visited last year. How did you do that? How can you let someone else know the locations you've marked without providing the names of geographic objects? What coordinates would you pass over?

Learning by Doing

1. While outside, setup at least two waypoints that correspond to two locations identified by the instructor. If using a Garmin Rino receiver¹, go to the **Main Menu** page (shown below) to select and press **Mark**. A three-digit automatically-generated number (002 is shown below) and a future mark symbol will appear. Before you press **OK**, select and press this number to provide a new name for this waypoint. Select and press the symbol to change it as well. Then return to OK and press it so that the receiver would relate geographic coordinates (longitude, latitude and elevation) with the name and symbol specified.



2. In addition to the waypoints created, add at least two waypoints by entering geographic coordinates provided by the instructor. In this case, while inside the classroom, follow the same steps as before, but modify both **Location** lines before pressing **OK**.
3. In the table below, summarize all the waypoints created. Description column should specify the type of a waypoint (e.g., flag, tree, chalk mark, etc). Method column should specify whether coordinates were obtained on-the-spot or entered manually.

¹ Most GPS-related exercises in this set of activities are based on Garmin Rino 110 units, but other handheld receivers can be suitable as well.

Symbol	Name	Latitude	Longitude	Description	Method
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Leave Latitude and Longitude columns blank if you failed to record both coordinates when creating these waypoints outside.

4. Use **Map** page and zooming tools to display all the waypoints created. Can you describe their relative position with respect to each other as well as to the other objects available in the base map (roads, rivers, towns, etc.)?

How Does It Work

Marking a waypoint is one of the basic functions of most GPS receivers. These waypoints (sometimes called points, markers, or landmarks), are a combination of a user name and symbol with a pair of geographic coordinates and, if recorded outside, elevation. In general, there are three way of creating waypoints:

1. **On-the-spot location marking** is the most popular method when receiver is used to log its current readings. A user specifies name and symbol, but does not alter measured geographic coordinates. This method is used when you need to remember location of a given object (e.g., parked car before a long hike in the wilderness).
2. **Keypad entry** is similar to on-the-spot location marking, but can be done anywhere and the user modifies geographic longitude and latitude using a keypad entering functionality. This method is used to mark the location before you physically get there (e.g., coordinates of your friend's home so that you could find it easier).
3. **Electronic transferring** is similar to the keypad entry, but is accomplished using an interface with personal computer and, in most cases, specially designed software. This method is used when dealing with a large number of waypoints (e.g., routes of travel, soil sampling locations in an agricultural field, etc.).

Additional Challenge

Use keypad entry to create waypoints in other states and countries. Use a map or globe to select pairs of geographic coordinates and use receiver's base map to validate your selections. If a computer with appropriate software (e.g., MapSource) is available, create a set of waypoints on the computer and transfer them to the GPS receiver.

Vocabulary

Waypoint is a recorded set of coordinates (longitude latitude and sometimes elevation) associated with a given name and a symbol that relates to a specific location around the world.

Interesting to Know

Many professionals are creating waypoints each day to guide their field technicians to proper locations. For example, it is typical when an agronomist sets up the locations for soil or crop sampling using his or her computer to make sure that these locations are well distributed across a field.

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