

Path Tracking

In addition to waypoints, many handheld GPS receivers have capability to operate with routes and tracks. Path tracking is one of the most useful functions when it comes to agriculture and natural resource management. For example, one of the primary operations when dealing with precision agriculture is to create a field boundary.

Explorer's Guide

Before You Start

While inside a room or in a hallway, make a looped pathway by placing a point one grid length apart in a given direction on the gridded paper every time you make a step. Try to maintain the same length of each step. Work with a partner to ease the recording process. Did your graph result in a loop? If not, why? How would you be able to make your friend draw the same path via a phone without camera?

Learning by Doing

1. In **Tracks** page, setup track log to **Time**-based using 1 s interval and turn the logging on. Walk a directed pathway when recording the pathway. When done, switch to the Map page and discuss your log. Zoom in to spots when you see a relatively high density of points. What does it tell you about speed in that part of track?
2. Use **BackTrack** option to return to the beginning of your track following the same path.
3. Use **Area Calculation** page to make a path around designated lawn or a small field and determine the area you walked around.

The area is equal to _____ acres.

How Does It Work

Unlike routes, which combine existing waypoints, track logging provides the ability to continuously record geographic coordinates. Such recording can be done using one of the following three options:

- **Time** option is the most popular when geographic coordinates are recorded with specified time frequency. Even when one does not move, recorded points will be spread around actual location because of the GPS receiver errors.
- **Distance** option can be used when receiver is moved and new geographic coordinates are recorded when certain distance from a previous record is achieved.
- **Auto** option provides the capability to adjust density of recordings according to the travel behavior (straight and fast motion will result in fewer data points than a slow and curved path).

When using time-based recording, high density of points suggest slow travel speed. When saving a track, many receivers simplify them to save memory (only active log contains all the data points). When memory is full, new coordinates can either be skipped, or make the oldest records erased.

If track is downloaded to a computer it can be used to analyze the nature of the pathway (shape and geography) or behavior of the traveler (speed). This option is helpful when tracking animals and other unpredictable subjects. Saved tracks can also be used to repeat the same pathway in the original or reverse direction. This is helpful when trying to return to the camp after a long hike in the wilderness.

Additional Challenge

Sign your name or initials using a GPS receiver. In other words, make your pathway according to the letters you'd like to display and log your track when making a line.

Vocabulary

Route is a sequence of waypoints.

Track is a series of timed geographic coordinates recorded into the memory of GPS receiver or a data logger.

Interesting to Know

Employers use GPS to track their employees. The tracking of employee location information is a steadily growing practice among businesses.

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Last updated: May 12, 2008