**Basic Geocaching**



**Minnesota School Forest Program**

[www.mndnr.gov/schoolforest](http://www.mndnr.gov/schoolforest)

**Overview:** Students use Garmin eTrex20 GPS units and a basic worksheet to learn about GPS coordinates.

**Addresses MN Social Studies Standards (2011 version for rulemaking):** 5.3.1.1.1 , 6.3.1.1.1 , 7.3.1.1.1 , 8.3.1.1.1 , 8.3.1.1.2

**Materials:** One Garmin eTrex20 for each student or pair of students.

**Objectives:**

* After the lesson, students will understand latitude, longitude, coordinates, and be able to navigate outdoors with a GPS unit.
* After Student Practice 1, students will be able to create a track and a simple trail map.
* After Student Practice 2, students will be able to use their GPS units to find a number of geocaches hidden by the teacher.

**Procedure**

Teacher will set up geocaches ahead of time using the Teacher page, “Geocaching With Your Students Using Garmin eTrex20s”

Edit the attached worksheets to meet your classroom needs.



**Student Practice**

Waypoints are locations you record and store in the device. Each waypoint has a **latitude** and **longitude**. A pair of latitude and longitude is also known as a **coordinate.** A series of waypoints creates a track.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Press **Menu**
2. Walk to starting location.
3. Select **Mark Waypoint.**

To save the waypoint without changes, select **Done.** (Toggle to bottom of the screen.)

4. Walk to next location and repeat steps 3 and 4

**Record your track here**

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| --- | --- | --- |
| **Waypoint #** | **Latitude** | **Longitude** |
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5. When you finish your track, press **Menu**

6. Select **Map.** Your track should appear. The  position icon represents your location on the map. As you travel, the position icon moves. You can use the Thumb Stick to move the map to different areas. You can also select the up and down buttons  or  to zoom in and out of the map.

**Sketch your track** **here**. Make sure you mark your waypoints.

**TURN OFF YOUR GPS UNIT. Press light button until unit is turned off. Remove batteries.**

**Student Page: Find the Geocaches!**

*You will need to enter waypoints (the latitude and longitude) into your GPS unit.*

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Press **Menu**.

2. Select “**Where To**?”

3. Use Thumb stick to toggle **Coordinates**

4. Press thumb stick to get to keyboard, toggle using arrow keys to enter the coordinates your teacher gives you.

5. **Start walking.** As you walk around outside, watch the GPS screen. It will tell you how many feet away you are from the cache. As you get down to 10-20 feet away from the cache location, put the GPS unit in your pocket and look for the cache with your eyes. Caches can be behind trees, under logs, or hidden in leaves, etc.

6. When you find one cache, describe the location**.**

**7. Enter new waypoints for the next cache and repeat the process. Good luck!**

|  |  |  |  |
| --- | --- | --- | --- |
| ***Get from teacher*** | | |  |
| **Cache #** | **Latitude** | **Longitude** | **Description of Location** |
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**TURN OFF THE GPS UNIT when you’re done. Remove the batteries and give them to your teacher.**