# Why Use GPS in the Classroom?

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What is the Global Positioning System (GPS)?

- These are a group of 24 satellites started in 1978 by the US Navy to locate people and things around the world.

- The United States Department of Defense maintains the GPS, but anyone with a receiver can use them.
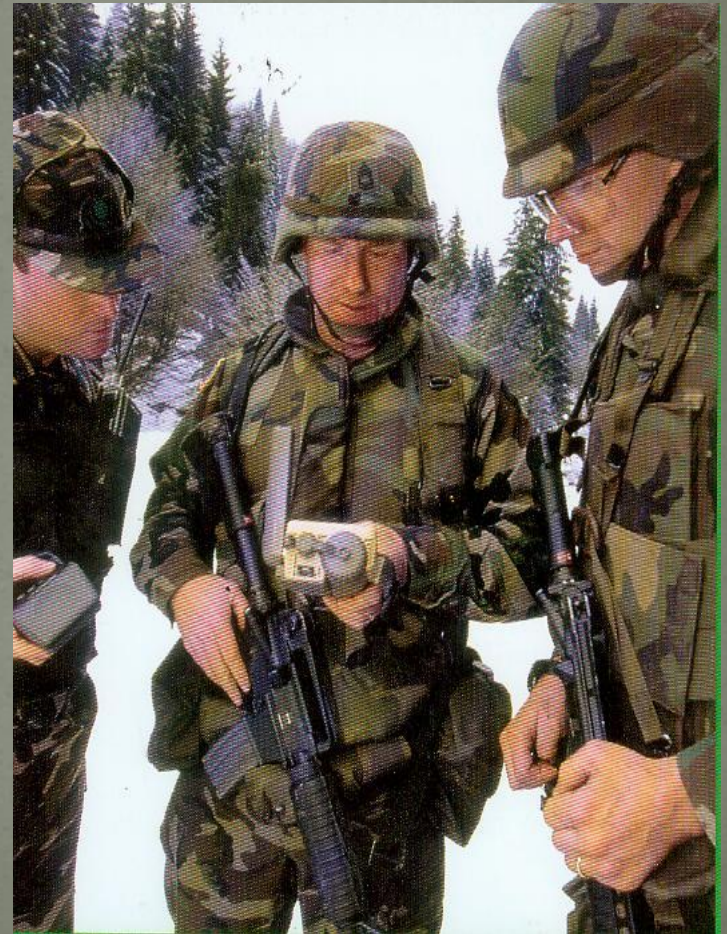
How does GPS Work?

- President Clinton made available to the public in 2000

- Mathematical principle called **trilateration** or **triangulating**

Source:
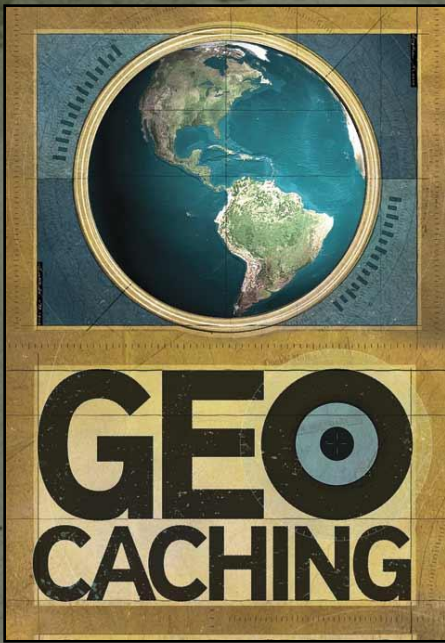http://electronics.howstuffworks.com/gadgets/travel/gps.htm
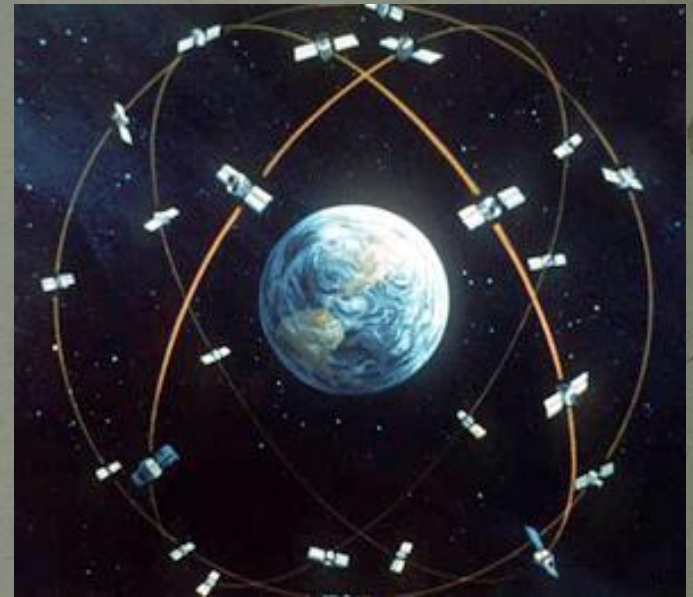
Uses of GPS

- Agriculture
- Aviation
- Disaster surveys
- Ground transportation
- Marine
- Military
- Public Safety
- Rail

- Recreation
- Surveying
- Space
- Timing

How will we use GPS?

We will use the Global Positioning System to understand that latitude and longitude are actual addresses to a place, which is the **absolute location**. We will also introduce a fun family hobby – geocaching!

What is Geocaching?

Geocaching is high-tech hide and seek using a GPS receiver to find hidden caches. It has been called the new sport for the 21st century!

What is a cache?

A cache is usually a waterproof container filled with a log book and sometimes prizes.

Source: http://www.geocaching.com/

How do you Geocache?

- Select a cache from a geocaching website that is near where you want to search.
- Gather your equipment.
- Enter the latitude and longitude coordinates (or waypoints) in to the GPS.
- Take an adult, drive as close to the area as possible, then hike to the site using your GPS receiver to lead the way.

- Once you get to about 10 feet, turn on your detective skills and search for the cache.

Think like a geocacher!

Watch out for geomuggles!

- After finding the cache, sign the logbook, if you take an item, put something back.

- Most importantly, **put the cache back in the exact spot you found it!**

Geocaching Guidelines

- Have someone with you!!!!!
- Tell someone where you are going!
- Be aware of your surroundings.
- Take water.
- Mark your starting point with your GPS.
- Respect the environment and the site.
- Don't forget to post your find and comments about the cache on the internet, but remember avoid "spoilers."

Caches near East Carolina University
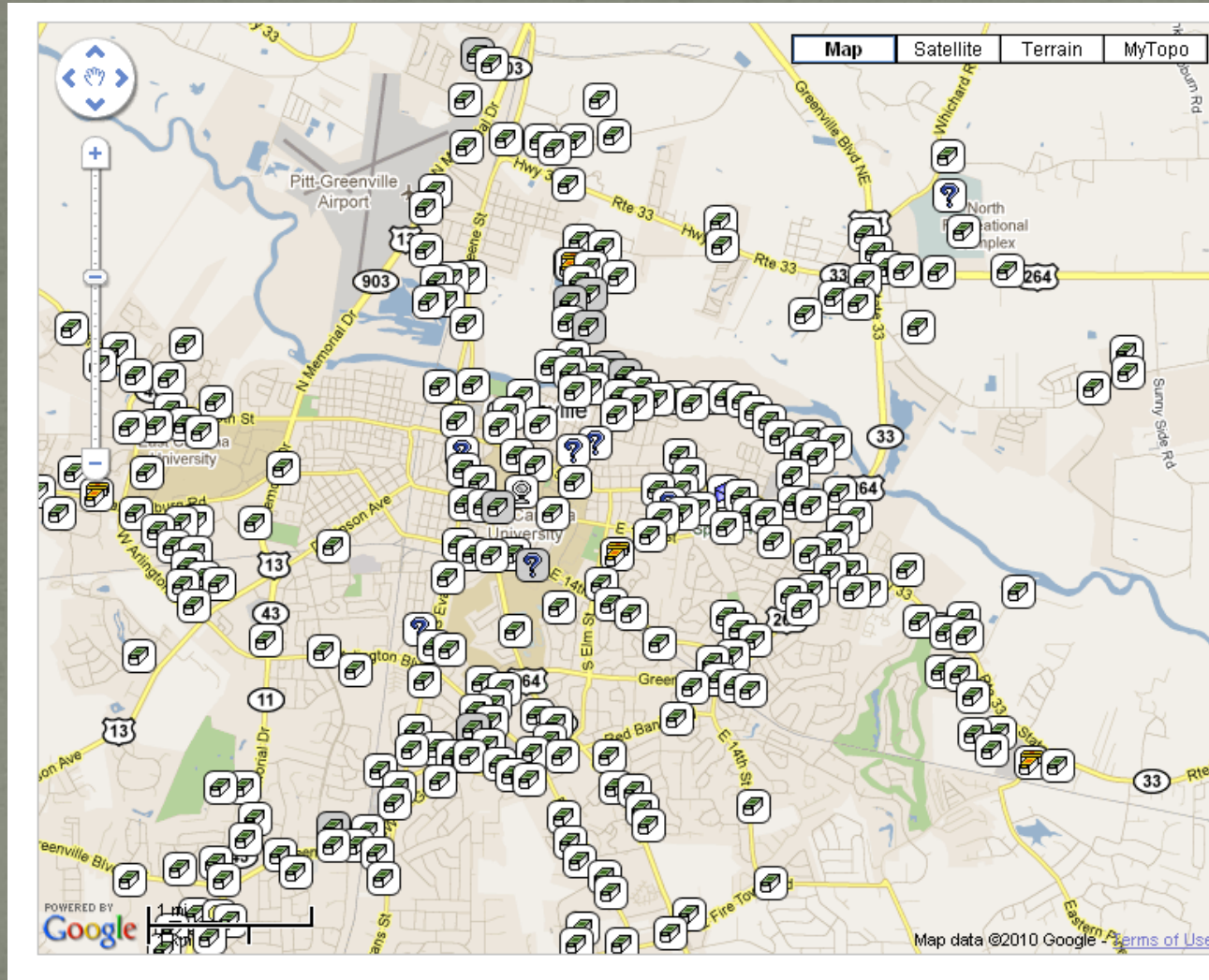
Source: Geocaching.com http://www.geocaching.com

Using GPS in the Classroom

"Tell me and I'll forget; show me and I may remember; involve me and I'll understand."
-Chinese Proverb

- Dropout Rate!

How is GPS useful to students?

- Facilitates inquiry-based learning
- Adaptable for any subject area
- Improves technological proficiency
- Fosters innovative instruction
- Increases student motivation

NC DPI GeoCaching

Agenda | Documents and Downloads | Equipment | Lesson Plans

Instructional Technology | NC Geocaching | Lesson Plans /

GPS Lesson Plans

GRADE	SUBJECT AREA(S)	LESSON/ ACTIVITY TITLE	DESCRIPTION	FILES TO DOWNLOAD	CONTRIBUTOR(S)
K-12	Computer Education	Computer Basics	This lesson is designed to expose students tot he basics of a computer.	**Computer Basics**	Guenevere Boney, Lenoir County Schools
GRADE 1	Social Studies Computer Skills	Community Cache	Students will use a GPS to move about the school grounds to locate 3 caches. Each group will find 3 separate caches that	**Community Caches 1** **Grid for Word Scramble**	Ashley Hood, Lenoir County Schools

Classroom Examples
- K-12
- Grade 1
- K-5
- Grade 3
- 3-5
- 3-6
- 3-8
- 3-12
- 4-6
- Grade 5
- 6
- 6-8
- 7
- 9-12
- Adaptable
- Professional Development

Source: NC DPI Geocaching
http://www.ncwiseowl.org/It/ncgeocache/LessonPlans.htm

GPS use at Arizona State University

- Dr. Alice Christie
- Dr. Christie's GPS and Geocaching Guide for Educators

http://www.alicechristie.org/geocaching/index.html

We'll look at these links:

- Steps in Creating a GPS/Geocaching Lesson
- Middle School: National Parks Lesson
- High School: Categorizing and Graphing Lesson

Can my library afford these?

Garmin eTrex H Handheld GPS Navigator
★★★★☆

- 1.1" x 2.1" grayscale display
- Stores 500 waypoints with symbol
- Automatic track log & waterproof

Quick Look

Order Online	Store Availability
$87.⁵⁴	Check Store for Availability
97¢ SHIPPING TO HOME	
In Stock	
Free shipping with **Site to Store**	

Grant ideas or borrowing from DPI!

Source: Walmart www.walmart.com December 28, 2010

Let's Try Ourselves
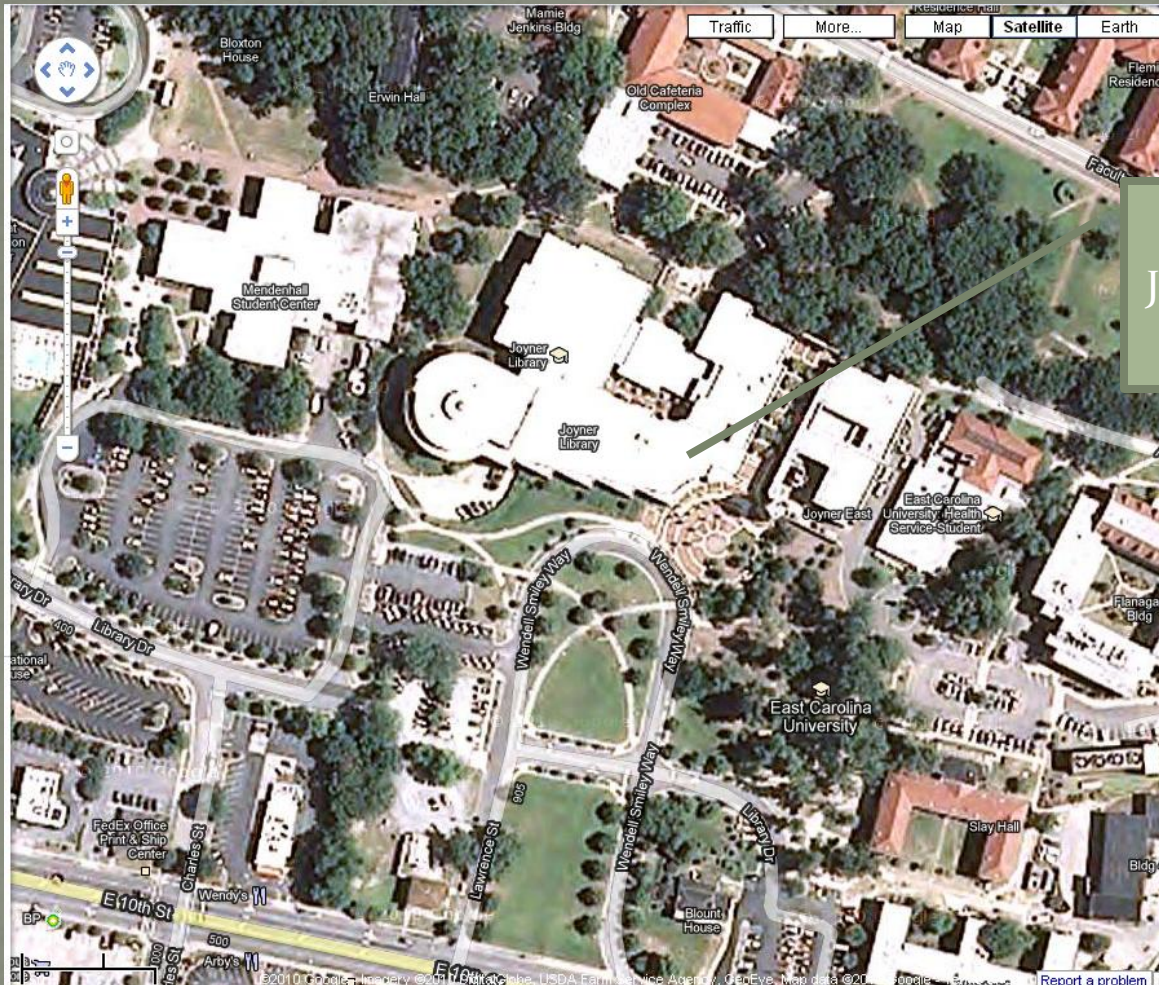
Joyner Library

Source: <u>Google Maps</u>

Getting Started!
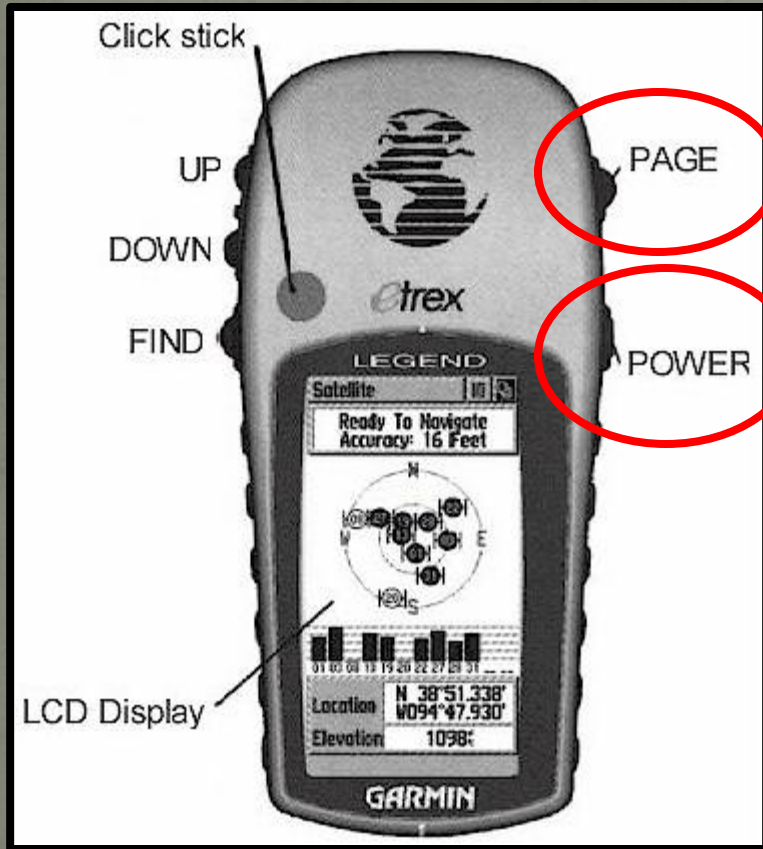
- Press the flat button on the right side of the GPS. Hold until it powers on.
- Press the Page button to navigate to the Main Menu.
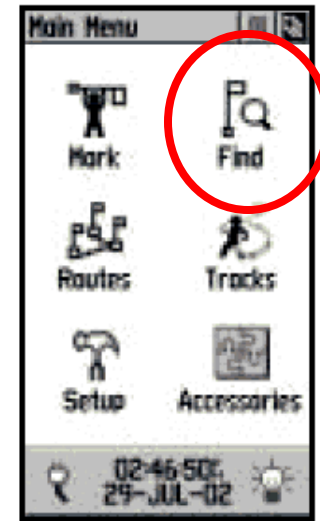
Pages
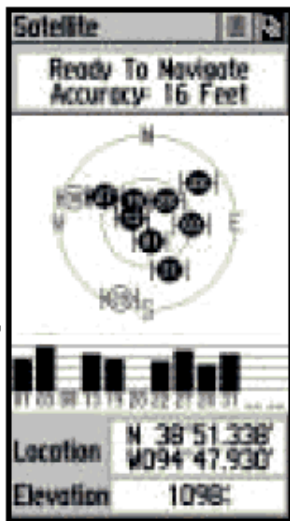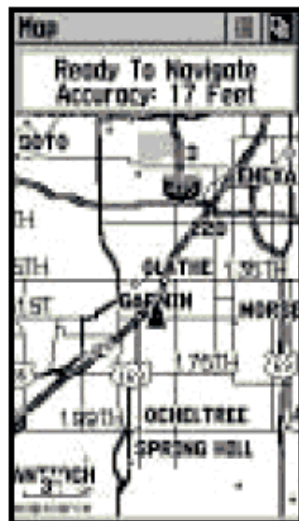
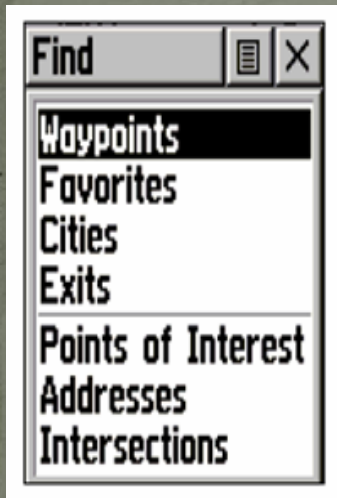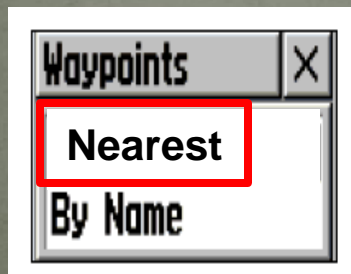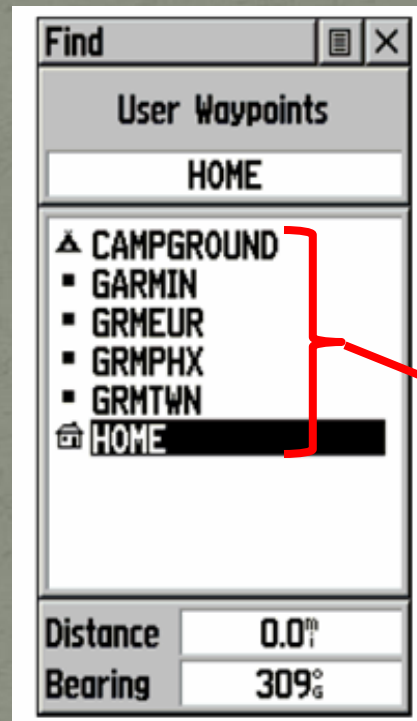| Satellite Page | Map Page | Navigation Page | Trip Page | Main Page |
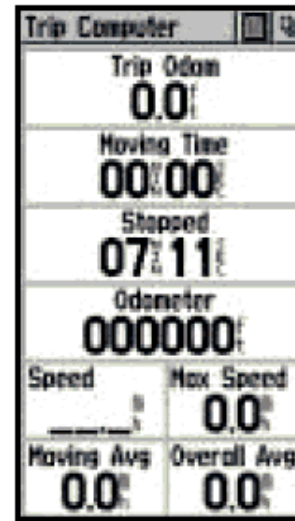
Finding a Waypoint
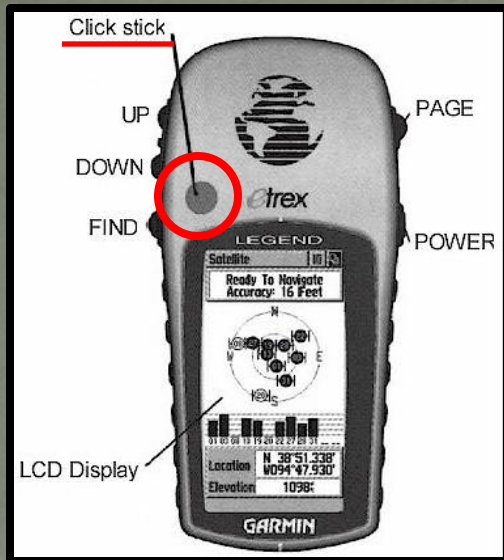

1. Choose **Waypoints**

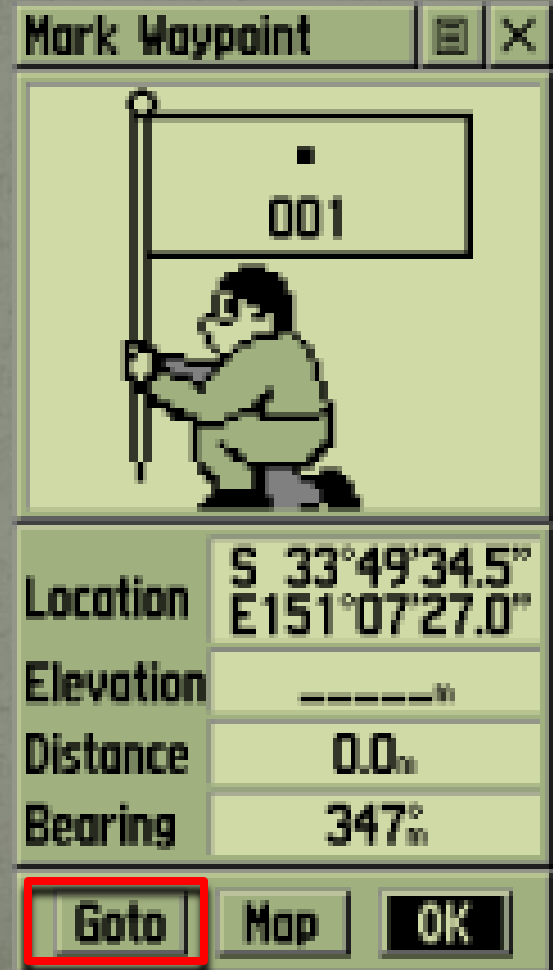**2.** Choose **Nearest**

3. Choose **from List**

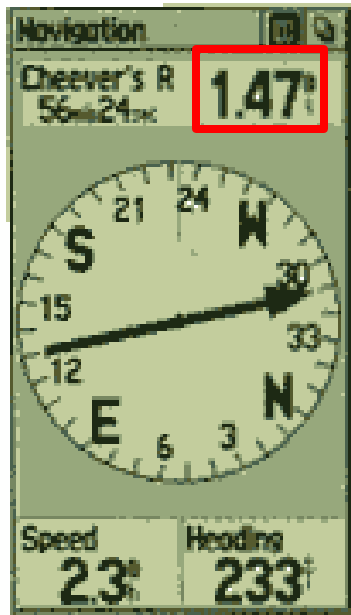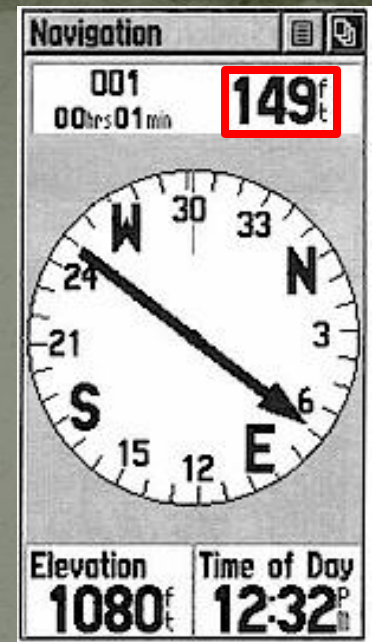Ours will say:
- RED
- YELLOW
- BLUE
- GREEN

Using the click stick select
- Select "**Goto**"

at the bottom of the screen..

Helpful Hints!

- Check to see if you are 15 feet or .15 miles
- Walk 5 steps to orient the compass
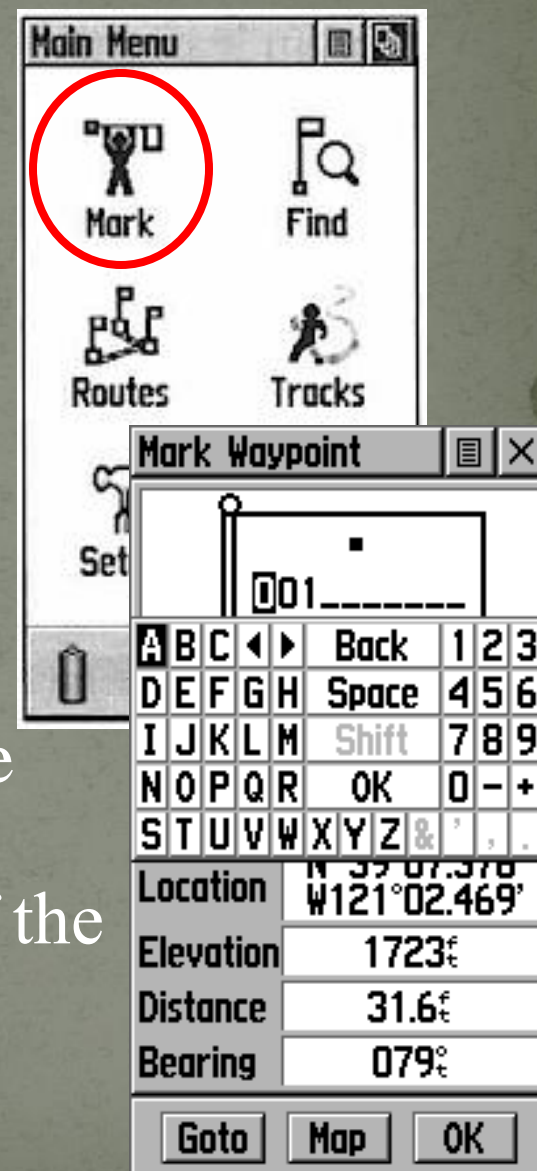- Move in the direction that the compass arrow is pointing.

- *Think like a geocacher!*
- *Watch out for geomuggles*

Navigation page

Marking a Geocache you hide!

- Stay with the group and within the boundaries set forth.

- Do not hide it in an area that has mud, standing water, briars, poison ivy, dangerous, etc.

- Finding a good hiding space.

- On main menu, click **MARK** over the space that your cache is hidden.

- Click inside the flag to name your cache using the abc keyboard. Click "OK"

- Then click "OK" again at the bottom of the screen to get back to main menu.

Oh the Places you will Go...