

HOW CAN A GPS HELP?

WHY A GPS?

HOW DOES A GPS WORK?

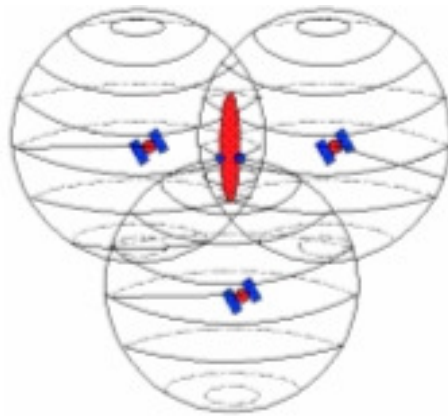
About The GPS Satellites

- There are 24-32 different satellites in space 2005
- They orbit the Earth every 12 hours in 6 different planes



<http://www.ozebiz.com.au/beacon/etrek.html>

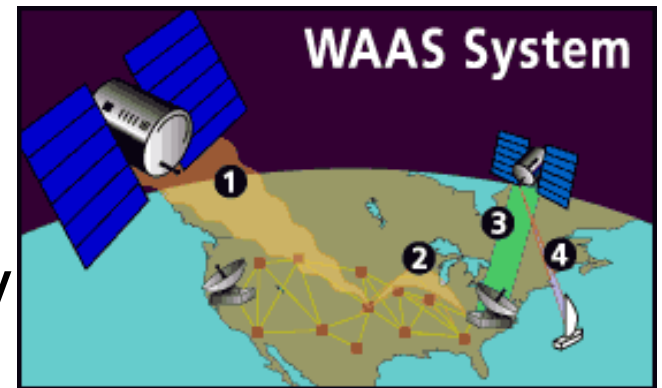
- A minimum of 4 satellite signals must be received by the GPS unit to determine a 3-D position



- GPS units can determine your latitude, longitude and altitude
- GPS is a system and has three major components: satellites, ground control systems and gps receivers (units)

About The GPS Satellites

- Most GPS units have an accuracy of <15 meters using the 24 satellites
- The Garmin eTrex Legend uses the 24 satellites AND 25 ground stations to increase the accuracy to <3 meters



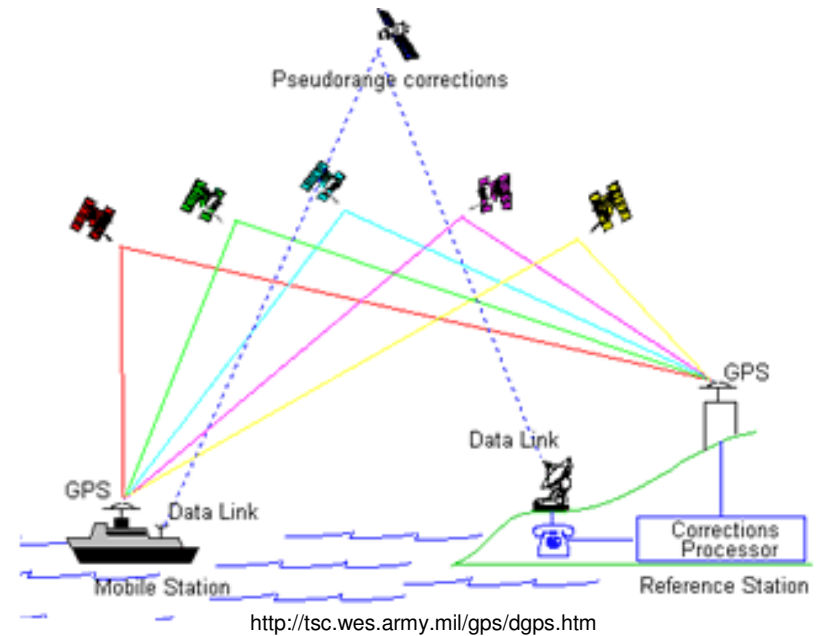
<http://www.garmin.com/aboutGPS/waas.html>

-This is called the WAAS
system

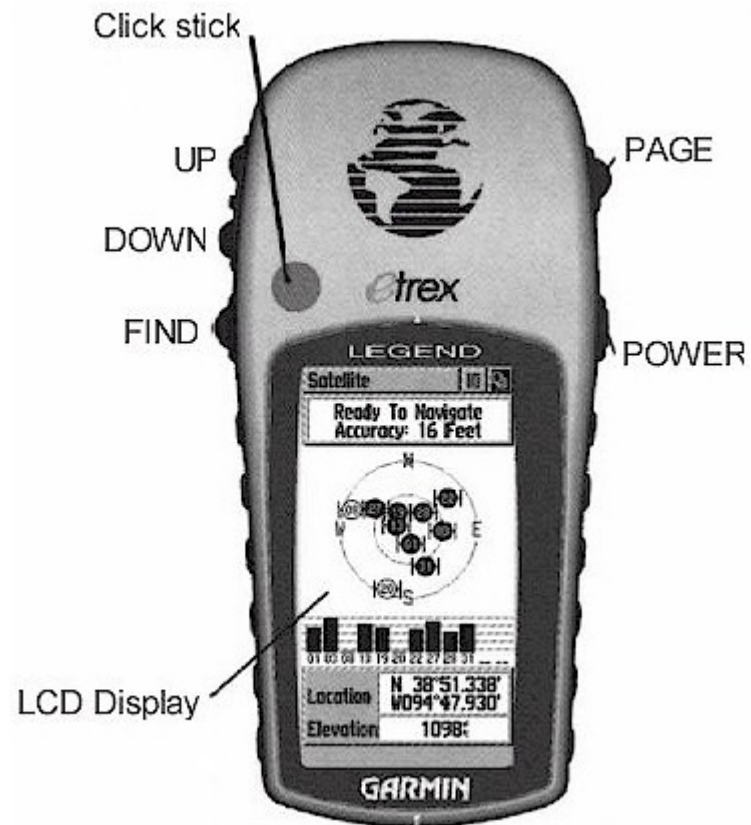
(Wide Area Augmentation System)

How Do GPS Units Work?

- GPS units DO NOT transmit satellite signals. They passively receive them
- They measure the distance between the GPS unit and the satellites

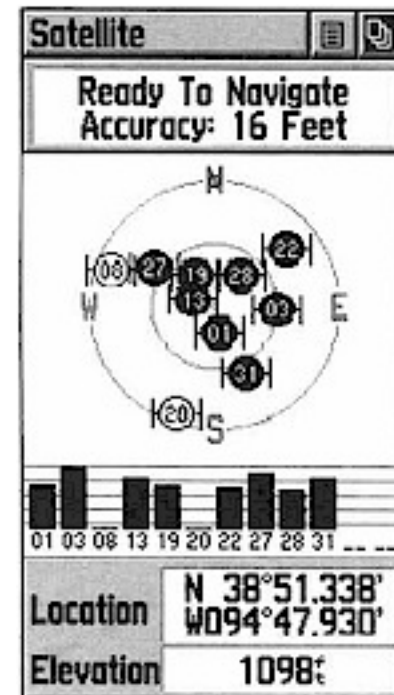


Garmin eTrex Legend



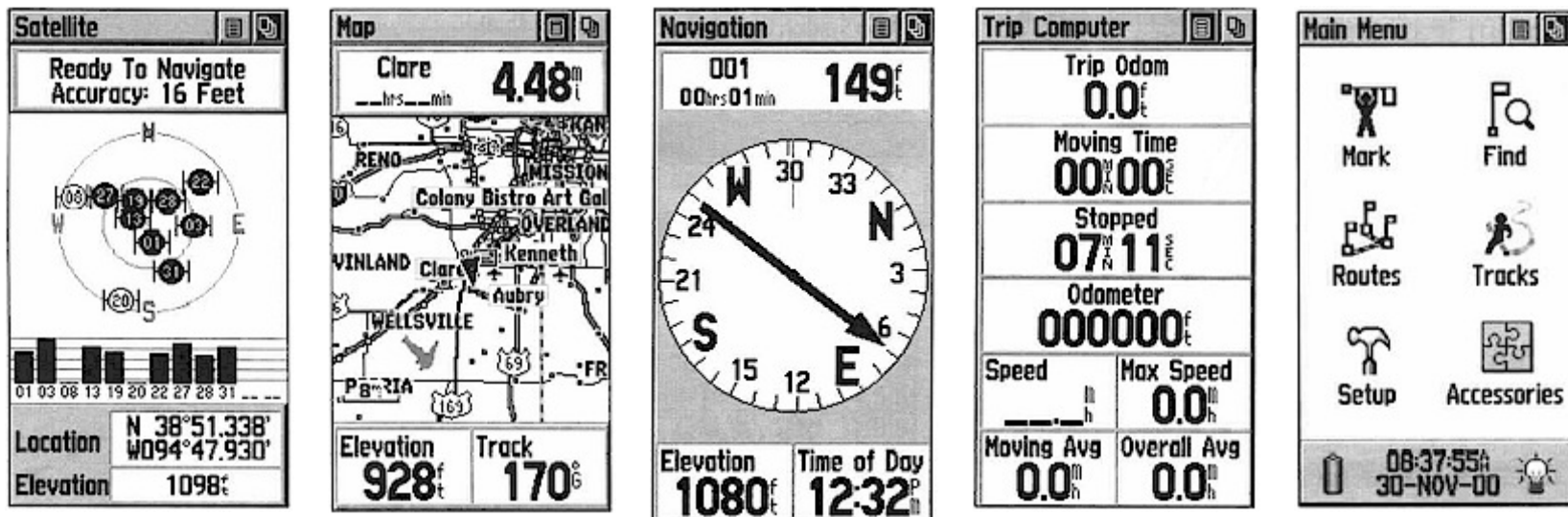
Power and Light Button

- Press and hold the Power Button to turn the unit on/off
- Press and release the Power Button and the light will come on
- You will see this page appear



Page Button

- Press the Page Button several times. You will see the display cycle through the main pages that look like this

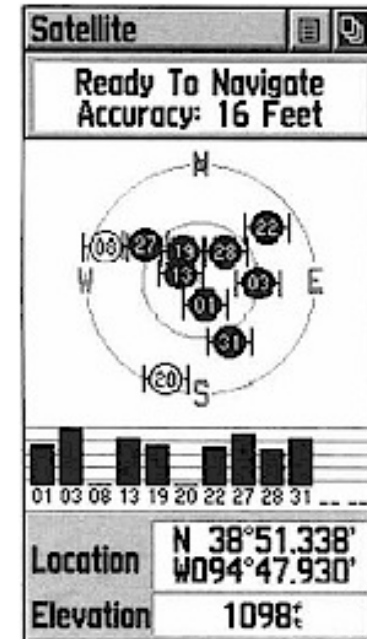


Satellite Page Map Page Navigation Page Trip Computer Main Menu

At any time you can press the Page Button and return to one of the Main Pages

Satellite Page

- Press the Page Button until you see the Satellite Page
- The Satellite Page provides a visual of the satellites being tracked
- The black circles indicate which satellite signals are being received
- The bars at the bottom show signal strength
 - 4 black bars are required for a proper signal



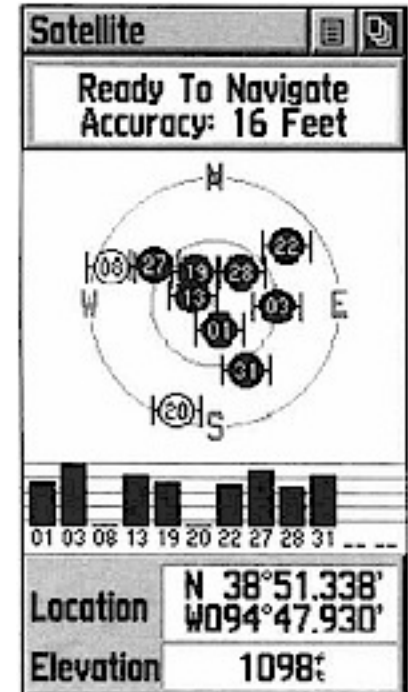
Satellite Page

- For the best satellite signal you should...
 - Be outdoors
 - Have a clear view of the sky
 - Hold the GPS unit flat and out away from your body



Satellite Page

- The bottom of the Satellite Page also shows your GPS location and elevation (After you have 4 bars)
 - The N or S line shows Latitude
 - The E or W line shows Longitude



Satellite Page

How many satellites are being used? _____

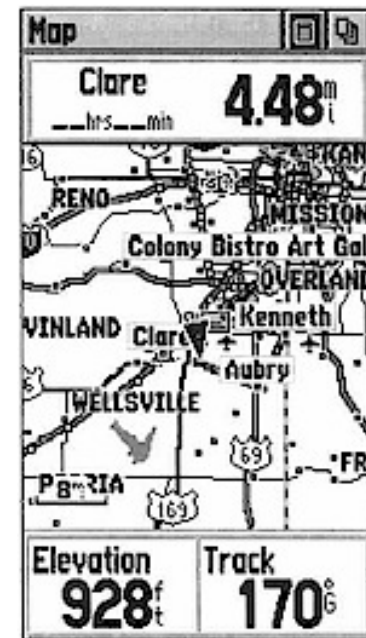
How many bars of signal strength do you have? _____

What is the GPS location of the Buzzard Hall?
(The building we were all in)

What is the elevation? _____

Map Page

- Press the Page Button 1 time or until you see the Map Page
- The Map Page displays your movements, waypoints, latitude & longitude
- The black arrow shows your location
- Press the Up & Down Buttons to zoom in and out on the map
- The numbers in the lower left show how much area is visible on that map



Map Page

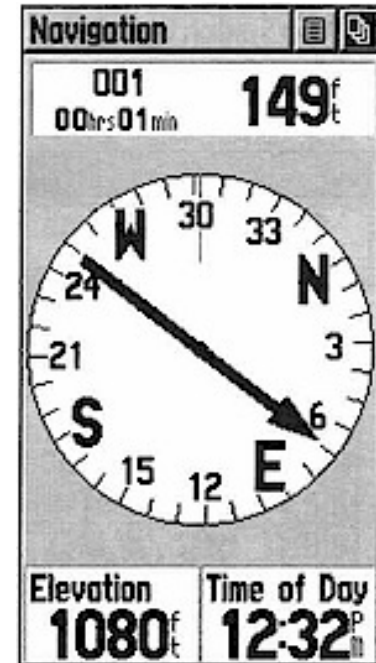
- Zoom in until you are at 100 miles.
 - What towns are visible? _____
-

- Zoom in until you are at 120ft.
- Walk around.
- What happens? _____



Navigation Page

- Press the Page Button 1 time or until you see the Navigation Page
- Walk from UNCC to the hotel

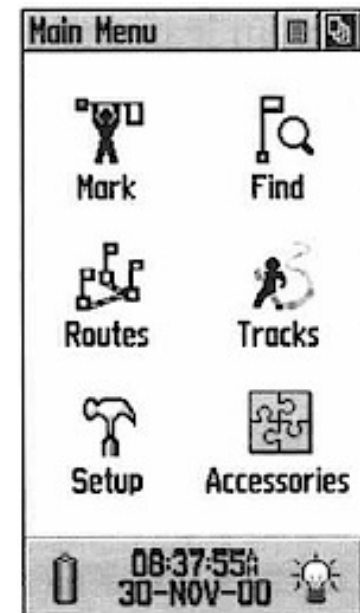


How fast were you walking? _____

What direction were you walking? _____

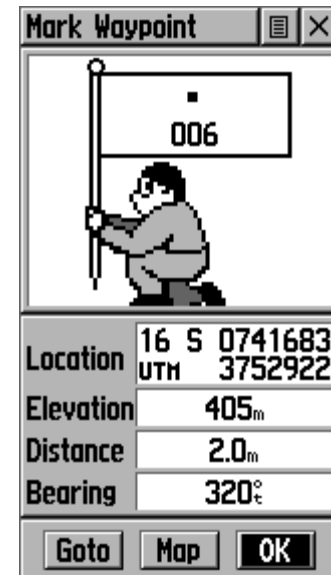
Main Menu Page

- Press the Page Button 1 time or until you see the Main Menu
- Walk to a point you wish to mark as a Waypoint (A Waypoint is a stored location in your GPS unit)
- Move the Click Stick up/down or left/right until the Mark icon is highlighted and press strait in
- The screen will change to the Mark Waypoint Page



Mark Waypoint Page

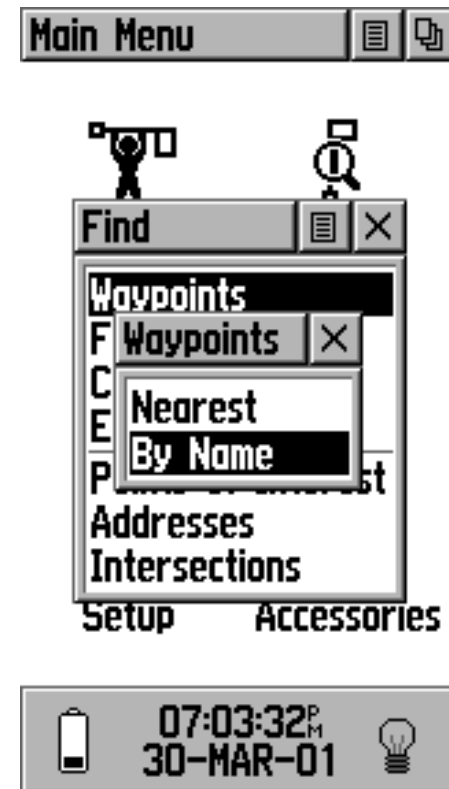
- This page comes up when you press the Click Stick straight in on the Mark icon
- You have marked this spot as a Waypoint
- A Waypoint is a stored location in your GPS unit
- Move the Click Stick up/down or left/right until the number in the flag is highlighted and press straight in



Mark Waypoint Page

- When you press the click stick straight in an alphabet screen will pop up
- Name your Waypoint by Moving the Click Stick up/down or left/right until the correct letter is highlighted and press straight in
- Do this until you have completed the name
- When you are finished naming your Waypoint click on OK

- Press the Page button until you are back to the Main Menu Page
- Move the Click Stick up/down or left/right until the Find icon is highlighted and press straight in
- The Find screen will pop up
- Select Waypoint
- Select By Name



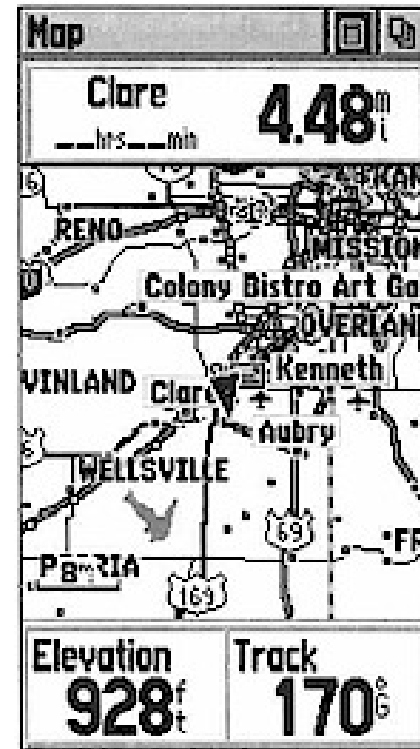
What Waypoints did you list in your GPS?

Returning To A Waypoint

- To Return to a Waypoint that you have already entered in your GPS unit repeat the previous page of instructions
- Next use the alphabet page to type the name of the Waypoint that you wish to return to
- Press OK when finished
- When your Waypoint is displayed, press Go To
- The Navigation Page will appear directing you to the Waypoint that you selected

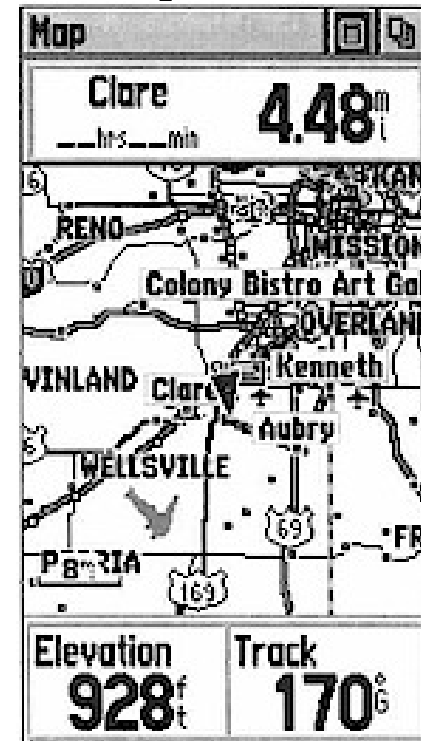
Map Page continued (Measuring Distance)

- Press the Page button until you are back at the Map Page
- Press the up and down buttons on the side of your GPS unit to zoom in close enough on your map to see all your waypoints



Map Page Continued (Measuring Distance)

- Move the Click Stick up/down or left/right until the single sheet of paper in the top right corner is highlighted (**Not the picture of several sheets of paper**) and press strait in
- A screen will drop down
- Choose Measure Distance



Map Page Continued (Measuring Distance)

- Use the Click Stick to move the white Reference Arrow to one of your Waypoints
 - When a box appears around the name of your Waypoint, you know you are on the correct spot
- Push the Click Stick strait in to select the Waypoint
(Notice that you can see the name and location of your Waypoint and you are 0.0 ft from it)

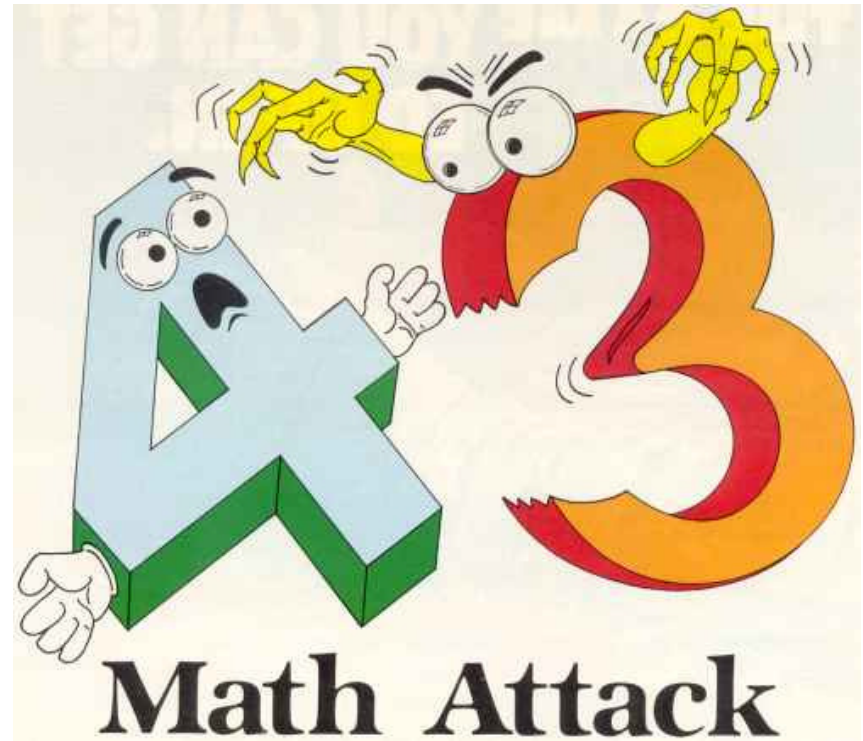
Map Page Continued (Measuring Distance)

- Now move the Click Stick to a 2nd Waypoint
(Remember that you know when you are in the correct location if a box forms around the name of the Waypoint)
- This time DO NOT press the Click Stick straight in.
(Notice that you can see the name and location of this 2nd Waypoint and its distance and direction from the first Waypoint)

Math Application: Area Calculation

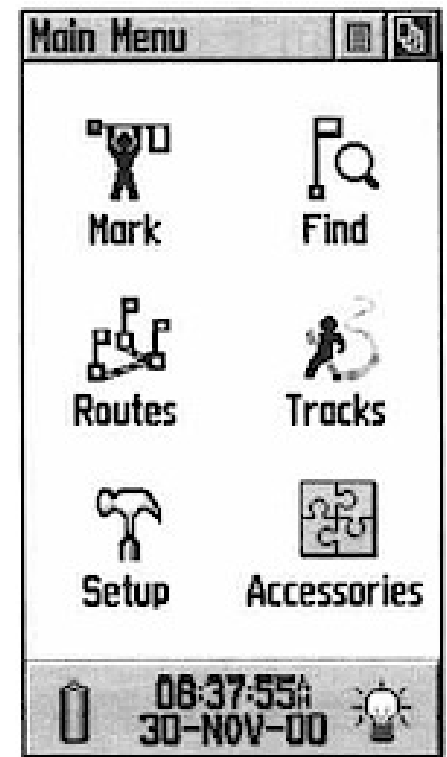
- You can use this feature to calculate Area

For those of us who don't want to use our brains to calculate ANYTHING... See the Area Calculation Via the Main Menu page



Area Calculation Via The Main Menu

- Press the Page button to return to the Main Menu page
- Move the Click Stick up/down or left/right until the Accessories icon is highlighted and press strait in
- Choose Area Calculator



Area Calculation Via The Main Menu

- It will appear that you have returned to the Map Page, but if you notice it is labeled Area Calculation page
- Walk to one street corner
- Press the Click Stick straight in to Start
- Walk to the next corner and turn

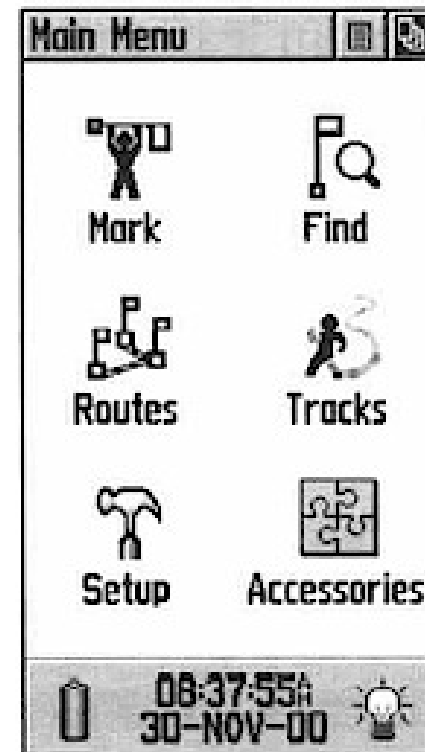


Area Calculation Via The Main Menu

- Continue doing so until you make a complete circle around the block and end up at the same location you began
- Press the Click Stick straight in to Stop
- The area is calculated for you!!!!
- What is the area of the land that block covers? _____

Main Menu Page

- Press the Page button to return to the Main Menu page
- Move the Click Stick up/down or left/right until the Find icon is highlighted and press strait in



Main Menu Page

- The Find screen will pop up
- Choose Cities
- Choose By Name
- Type in the name of your favorite city

How far is it from here? (Distance)_____

What direction?_____

THE END

- Hold the Power button until the GPS turns off

Helpful Hints...

- You can move the Click Stick up/down or left/right until the picture of several sheets of paper in the top right corner is highlighted and press straight in
- This allows you to choose which page you want to go directly to instead of using the Page Button to cycle through all the pages