I. Goal:

Map geologic formations and strike/dip in the Finny region using handheld GPS units.

II. Classroom Exercise: Setting up GPS

The following ArcPad options should be reviewed in the options dialogue however they should already be set correctly. Please let me know if anything is not set as described before you change it.

Access the ArcPad options dialogue box by tapping the tools button  on the main menu. The options dialogue contains 12 pages, shown as tabs on the top of the dialogue, which can be scrolled through using the left/right hand arrow in the upper right hand side of the dialogue.

Page	**Value**
Protocol	Protocol=NMEA 0183 GPS Datum=WGS84
GPS	Trimble, SkyWalker, & NavMan: Port=COM2; World Type: Port=COM7 Trimble: Baud=9600; World Type, SkyWalker, & NavMan: Baud=4800 Parity=None; Data Bits=8; Stop Bits=1
Quality	Maximum PDOP=6 PDOP (Position-Dilution of Precision) is a measure of accuracy related to the geometry of the satellites that the GPS unit is currently tracking. Typically a PDOP of 6 or less is acceptable.
Capture	Check Enable Averaging Number of points to average: Points=20 Vertices=20
Alerts	All on
Local	Restore Location off DST Distance Alert= 25 m
Display	Metric
Font	Specify default fault, not important
Paths	<u>Trimble</u> Default Maps & Data Path: \SC Card\Ireland System Files Path: \Program Files\ArcPad\System Applets File Path: \ Program Files \ArcPad\Applets <u>Pocket PCs</u> Default Maps & Data Path: \SC Disk\Ireland System Files Path: \SD Card\ArcPad 6.0.3\System Applets File Path: \SD Card\ArcPad 6.0.3\Applets <u>NavMan & SkyWalker</u> Default Maps & Data Path: \Storage Card\Ireland System Files Path: \Storage Card\ArcPad 6.0.3\System Applets File Path: \Storage Card\ArcPad 6.0.3\Applets
ArcIMS	Specifies settings to connect to an ArcIMS service. We will not use this.
Locale	English
AUX	Specifies communication settings for other auxiliary serial ports.

III. Classroom Exercise: Creating New Point Layer

1. Tap the dropdown arrow to the right of the Open Map (file folder) button to display the dropdown list. (Note: see the next page of the handout for helpful images.)

2. Tap New Layer. The New Shapefile dialog box is displayed.

3. Choose the type of shapefile that you want to create from the Type dropdown list. You should choose **POINT**.

4. Tap the + button to open the Field dialog box and define the fields for your new shapefile's dBASE table.

5. Type the name of the first field that you want to create in the new dBASE table. Please type **STUDENT**.

6. Choose the field type: Text, Numeric, Date, or True/False. Choose **TEXT**.

7. Type the length of the new field and, optionally, the precision for Numeric fields (0 for your fields). The length should be **15**.

8. Tap OK to create the new field. Repeat steps 4 through 8 to define additional fields. The new fields and their definitions are listed in the New Shapefile dialog box.

Name	Type	Length	Precision
STUDENT	Text	15	n/a
STRIKE	Numeric	3	0
DIP	Numeric	2	0
DIP-DIR	Numeric	3	0
UNIT	Text	15	n/a
Photo	Text	15	n/a

VERY IMPORTANT: You must use right-hand notation when entering the strike. Please see an instructor if you have questions about this.

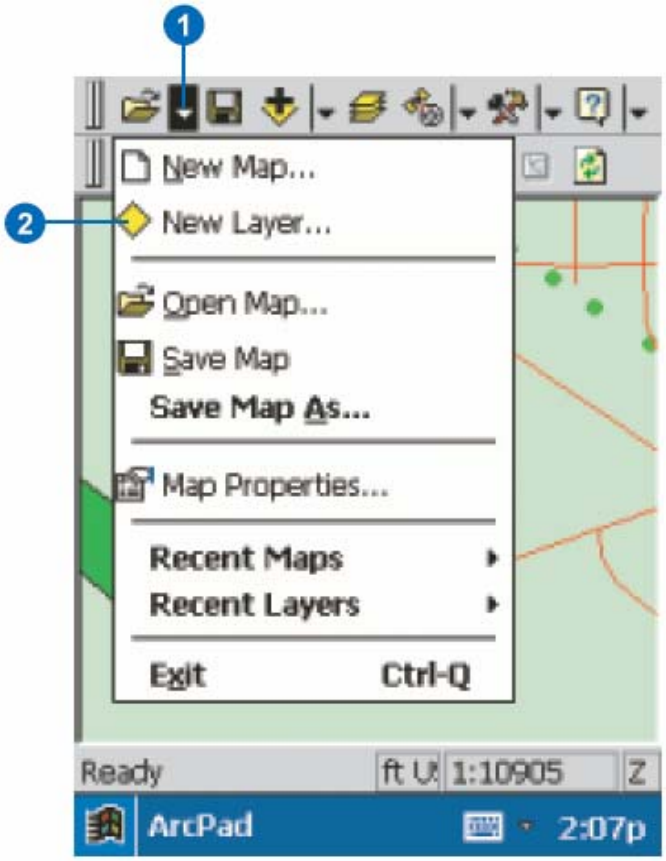
9. Tap OK when you have defined all of the required fields for the shapefile's dBASE table.

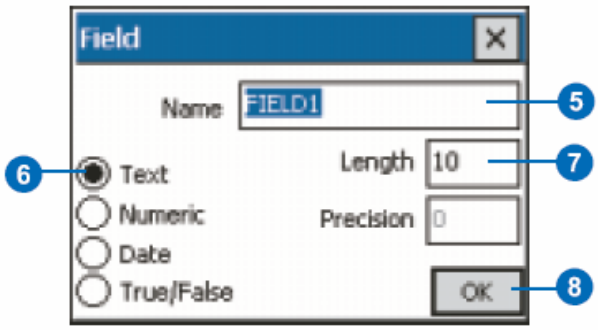
10. Type the name of the new shapefile. The name of this shapefile is **Finny<group name>**. The suffix <group name> should be some thing that you can use to identify your group because all these shapefiles will be placed on one flash key when we visit the Galway GIS lab. Initials work well.

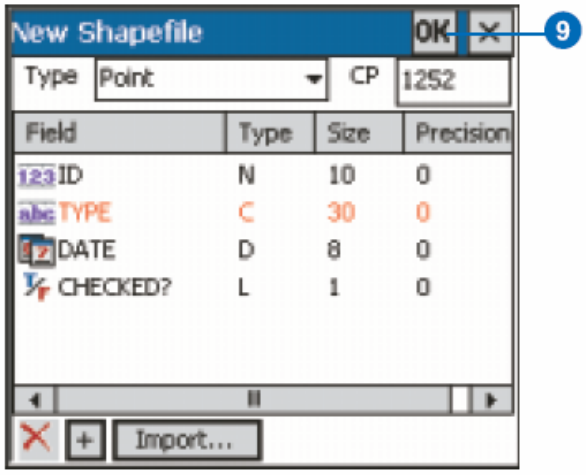
11. Choose the folder and location where you want to save the new shapefile. Please save your new shapefile in the **Ireland** folder, type is **shapefile**, and location is **SC Disk**.

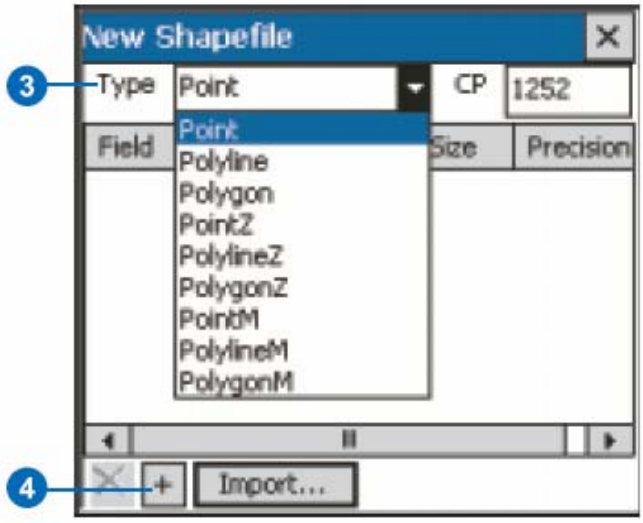
12. Tap OK to complete the task and create the new shapefile. The shapefile will be created and added to the current map.

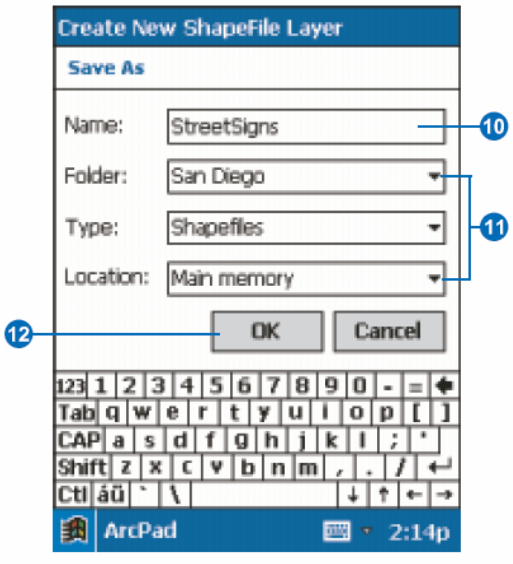
13. The added shapefile will also be checked for editing, and the Edit/Drawing toolbar will be displayed. The editing option should be turned off until we get into the field. So, go to "layers" and tap (unselect) the check box under the pencil next to your new shapefile. Tap OK when finished.

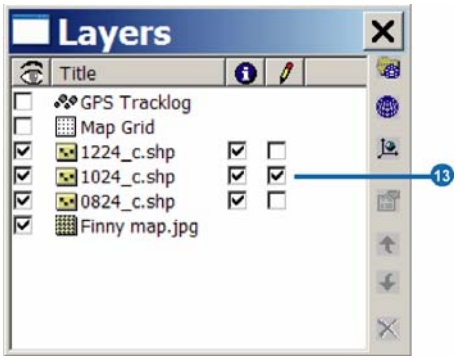

1
2
New Map...
New Layer...
Open Map...
Save Map
Save Map As...
Map Properties...
Recent Maps
Recent Layers
Exit Ctrl-Q
Ready
1:10905
ArcPad
2:07p


Field
Name
FIELD1
5
6
Text
Length
10
7
Numeric
Precision
0
Date
True/False
OK
8


New Shapefile
OK
9
Type
Point
CP
1252
Field
Type
Size
Precision
ID
N
10
0
TYPE
C
30
0
DATE
D
8
0
CHECKED?
L
1
0
Import...


New Shapefile
3
Type
Point
CP
1252
Field
Size
Precision
Point
Polyline
Polygon
PointZ
PolylineZ
PolygonZ
PointM
PolylineM
PolygonM
4
Import...


Create New ShapeFile Layer
Save As
Name:
StreetSigns
10
Folder:
San Diego
Type:
Shapefiles
11
Location:
Main memory
12
OK
Cancel
ArcPad
2:14p


Layers
Title
GPS Tracklog
Map Grid
1224_c.shp
1024_c.shp
0824_c.shp
Finny map.jpg
13

IV. Collect and Edit Test Data

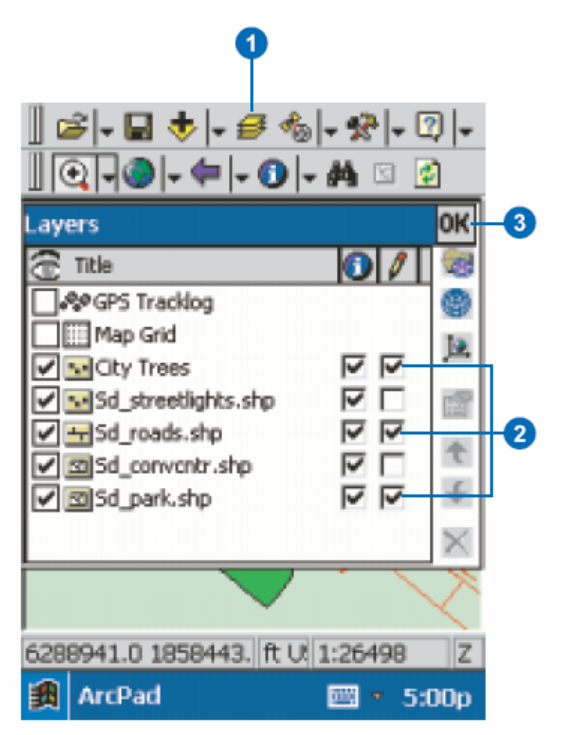
Go outside and collect one data point, make up the attribute data. These sample data are only being collected for practice and will be deleted so the attribute values are irrelevant.

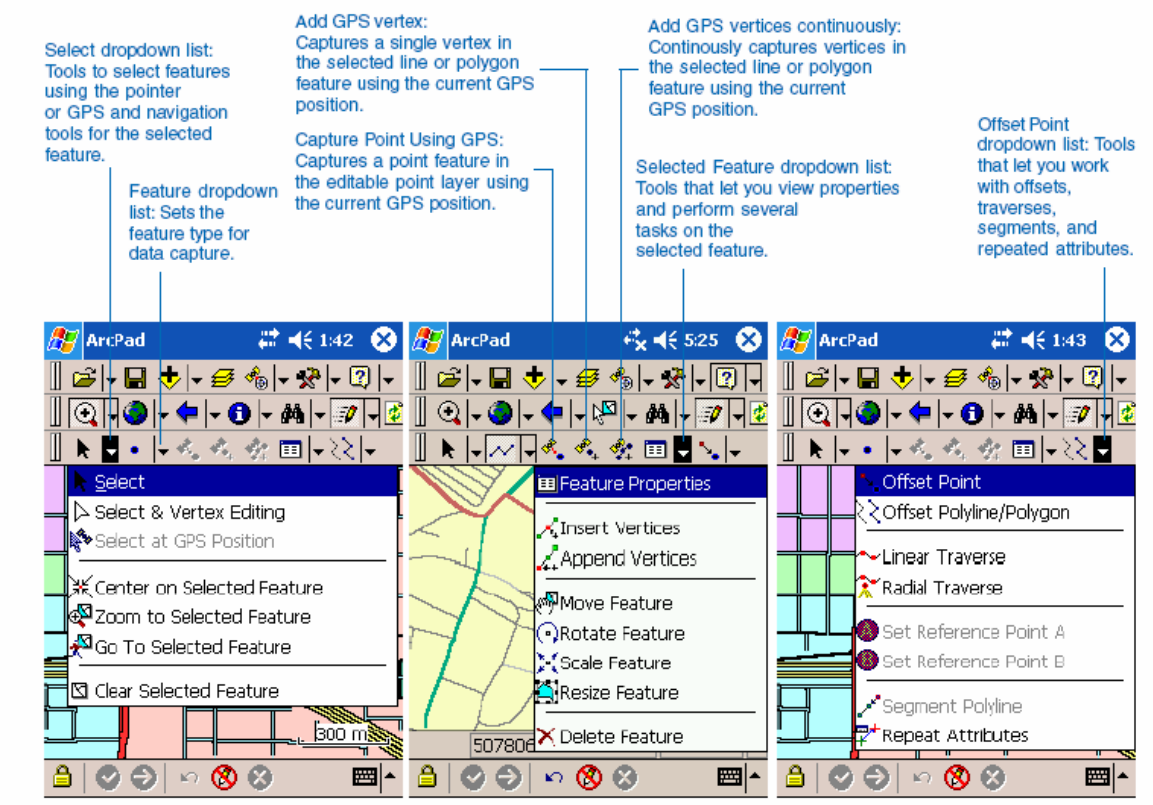
Select layer (or shapefile) to edit:

1. Tap the Layers button to open the Layers dialog box.

2. Check the Edit check box for each layer that you want to edit. The edit box it in the column under the pencil.

3. Tap OK. The Edit/Drawing toolbar will be displayed if it is not already displayed. See figure of the editing toolbar on the next page.



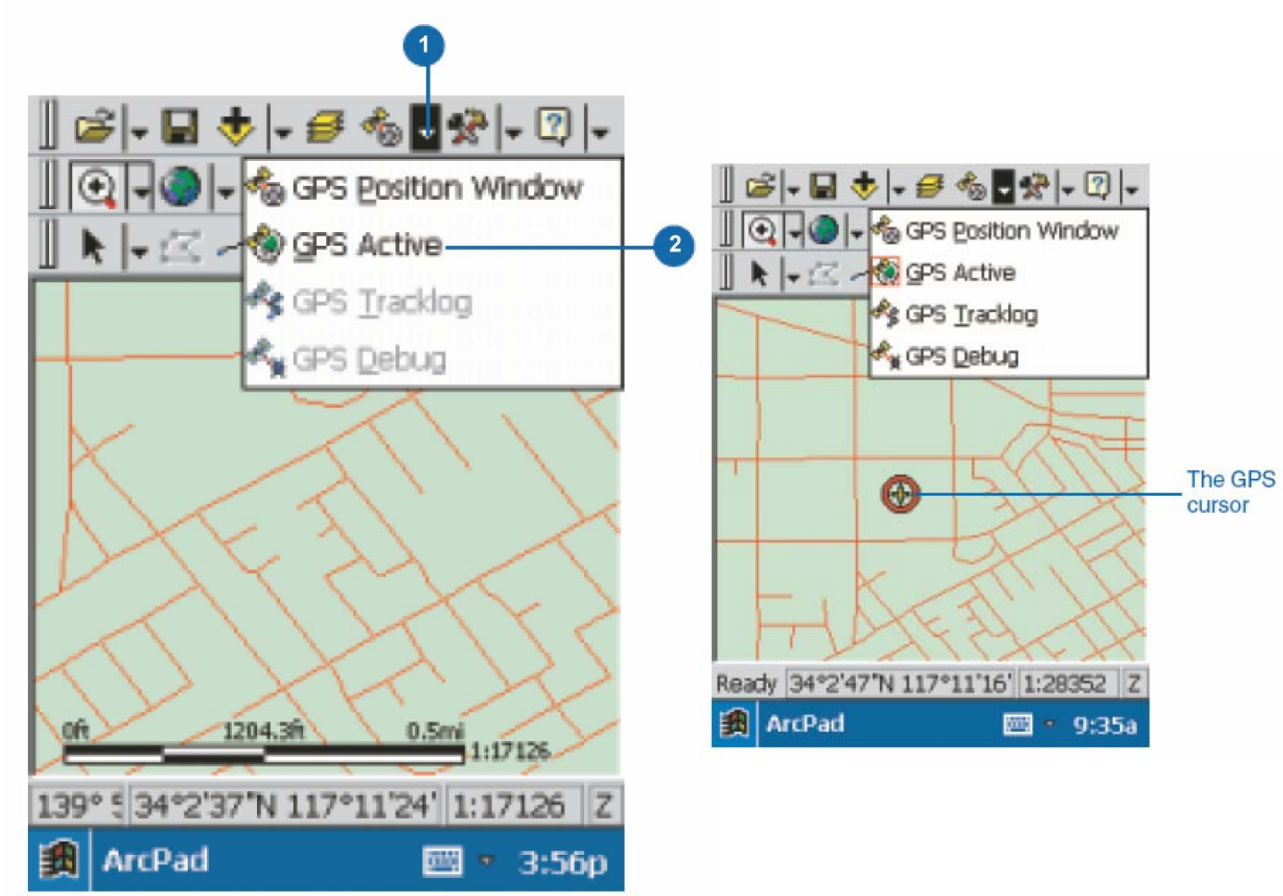


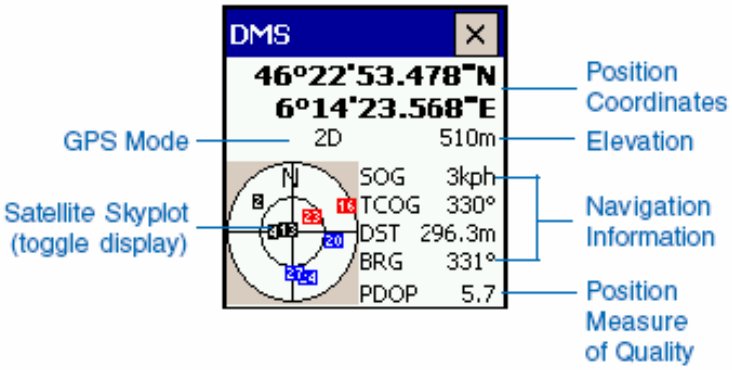
Activate the GPS:

1. Tap the arrow to the right of the GPS Position Window button to display the dropdown list.

2. Tap GPS Active.

3. The GPS cursor is displayed when the GPS is active and is located at the current GPS, or last known, position. The GPS cursor is shown with a slash when using the last known GPS position. The GPS Active icon is also highlighted with a red box in the pull down menu when the GPS is active. To see how many satellites have been located and that the current status/coordinates are turn on the GPS Position Window.





Capture the Waypoint:

1. Tap the GPS Point button to capture a new point feature at your current location. The Feature Properties dialog box or custom edit form is automatically displayed after the new point feature has been created.

2. The Geography page shows a progress bar, which counts down from the specified number of GPS positions to average to zero.

3. The GPS position averaging status is also displayed in the title bar—for example, 30%.

4. Tap Attributes tab to display the Attributes page. Type the attributes for the new point feature. You can type in the attributes while the GPS location is being collected.

5. Tap OK to save the attributes and complete the new point feature. If you tap OK before the averaging is complete, a dialog box will display asking whether you want to terminate the GPS position averaging. You can also tap the "X" button if you want to cancel the capture of the new point feature. The point feature and any attributes that have been typed in will be deleted.

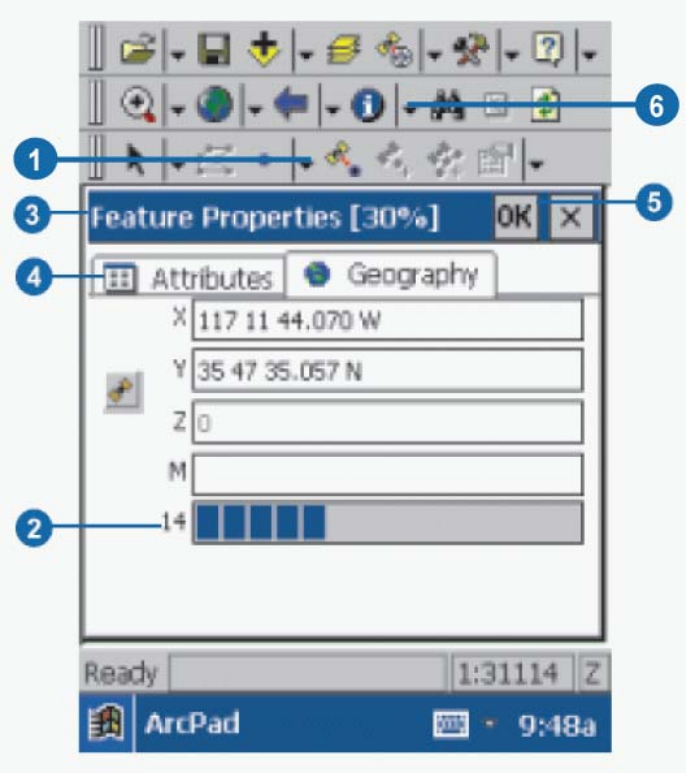
6. After you collect the point go back and check all the attributes and location to see that everything was recorded correctly. To check the attribute information use the identify feature. Tap the identify button and then select the newly defined point. The attributes you just typed in should be displayed in the pop-up dialogue.

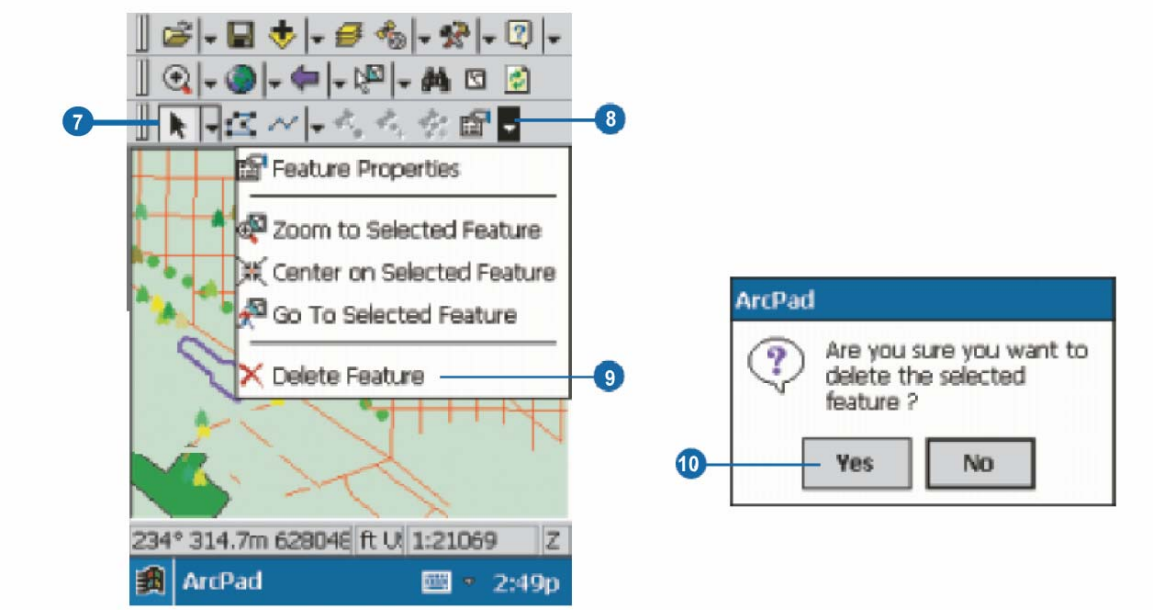
7. Since this is only a practice point you should delete it. Select the feature using the select tool which is the arrow on the far left of the edit tool bar. Tap directly on the point you just created. You will see a dashed box around the point once it is selected.

8. Tap the dropdown arrow to the right of the Feature Properties button to display the dropdown list.

9. Tap Delete Feature.

10. Tap Yes to confirm that you really want to delete the selected feature. The selected feature is deleted.





V. Field Exercise: Finny

Collect Data

We have now covered everything you need to know to collect your data. Be sure to record your field notes and take some pictures because you may have to defend your decision later.

To summarize:

1. Find an out crop.
2. Collect the waypoint (coordinates) from the GPS.
3. Add attribute information.