

2. Using a serial cable and the “Easy GPS” program, download the points to a desktop computer in the lab.
3. Convert the data to a format that is importable into ArcGIS.
4. In ArcCatalog, create a new polygon shapefile called “Areas” with the following state plane projection:
NAD83 StatePlane California VI FIPS 0406 Feet.
5. In a new blank map in ArcMap, add the San Diego County boundary shapefile first. Then, add the new “Areas” polygon shapefile.
6. Add the xy coordinates (GPS points) to the map. Use the same coordinate system and datum that were used within the GPS receiver. (Geographic Coordinates, North America, NAD1983). Then, export the newly added xy coordinate data to a shapefile. Add the new points shapefile to the map and remove the xy coordinates.
7. Using the ArcEditor Toolbar, create polygons using the points shapefile for reference and save your edits in the new “Areas” shapefile you created.
8. Buffer the newly created polygons to a distance of 100 feet. Name the output “AreaBfr”.
9. Using the results of the buffer (“AreaBfr”), calculate the area of the buffer polygons. To do this, perform the following steps:

How to calculate AREA:

- a) In ArcCatalog, select the shapefile (“AreaBfr”) that you want to calculate area for (note, it must be removed from ArcMAP before you can edit it in ArcCatalog).
- b) Select the preview tab and then change the view (dropdown at bottom of preview window) to “table”.
- c) Click on the “table options” icon in the lower left, add a new field and title it “Area” with the long integer option, then “OK”. Then, click on any other folder in the catalog tree to deactivate the AreaBfr shapefile.
- d) Then, open ArcMap and display the shapefile.
- e) Open the editor toolbar and “start editing” using the shapefile you want to calculate area for.
- f) Open the attribute table for the shapefile. Right-click on the “area” header at the top of the new field and choose “Calculate Geometry”.
- g) Select “Area” and “Square Feet”, using the coordinate system of the data source.
- h) The area of each polygon will be calculated and the results will be displayed in the attribute table, in the new Area field.
- i) Save your edits and stop editing.

10. In the same manner that you added a new field above (except, now select “text” as the attribute type), add new fields for the other attributes that you recorded in the table on page 1 into the points shapefile attribute table. *Note, if you already added this information in when you created your points text file, then you probably already have the attribute data from the table on page 1 in your points shapefile attribute table. If so, then skip this step.* Then, in ArcMAP, with editing initiated, type in the attributes into each field within the attribute table.

11. Add into ArcMap a second data frame and put **at least 2** reference data layers into each frames. You can use the Grossmont College georeferenced image (.tif), the RoadsAll shapefile, or other reference data from SanDAG for each frame. Display your reference data underneath the newly created shapefiles in two separate data frames. In one of the data frames, include the new “Areas” shapefile and in the other data frame include the “AreaBfr” shapefile.

12. Insert the attribute table that contains the area calculation results (the “AreaBfr” attribute table) into the display and arrange the layout. To do this:

- Switch to “Layout View”.
- Open the attribute table for “AreaBfr”.
- At the top of the attribute table, select <Table Options>.
- Under the options menu, select <Add Table to Layout>.
- Rearrange the layout to effectively display the “Areas” shapefile with reference data, the “AreaBfr” shapefile with reference data, and the attribute table that contains the area results.
- Insert a title, legends (that include meaningful labels for the colors and symbols used in your map), north arrow, scale bar, and a brief summary of the process executed to arrive at your results.
- Insert your first and last name within the layout.

13. Once you are done with step 12, create a final presentation of your results in PDF format. To do this:

- Select <File>, then <Export Map>.
- In the “Save In” dropdown menu, select your GPSpro folder.
- In the “Save As Type” dropdown menu, select <PDF>
- Name the file “**GPSfinal***lastname*.pdf”
- Verify that under the <General> options tab, the “Output Image Quality” is set to “Best”.
- Click <Save>

14. Email your PDF presentation of your results to your instructor as an attachment no later than 7pm on the due date.