

GPS Class

Collin County Adventure Camp

Time: 45 minutes

Location: Camp Athletic Field

Summary: Students use a GPS receiver to go to six points around the edge of the field. They collect points at each stop using a scavenger hunt list. An adult is with each group will facilitate.

Equipment needed:

- GPS for each group
- Scavenger hunt list for each group, and pen or pencil
- “Diameter” Rope for each group.

Background:

A GPS (*Global Positioning Satellite*) receiver uses at least four and up to eight satellites that orbit the earth in “geo-synchronous orbit” (they stay at the same place above the earth, over the United States). The receiver takes a few minutes to communicate with the satellites, and then it can show the location of the receiver. The GPS’s we use are accurate within a few meters. A GPS can locate you on a map, tell you the direction of travel (like a compass), and your speed of travel, too.

Two readings provide the coordinates:

Latitude (position north to south). You might think of these as rings around the earth; the Equator is the middle latitude (and is the biggest latitude circle), and is labeled 0 degrees. The arctic and Antarctic circles are also latitude lines. 90 degrees north is the North Pole, 90 degrees south is the South Pole. Each degree is divided into 60 Minutes.

Longitude (position east to west). You might think of these as lines like sections of an orange. All longitude lines are the same size, the whole circumference of the earth, and all of them intersect with the North AND South Poles. Longitude lines are called Meridians, and two famous Meridians are the Greenwich Meridian (goes through Greenwich, England), and the Prime Meridian, whose bearing is Zero degrees.

Learning:

Students should gain familiarity with a GPS unit, how it works, and how it is replacing the compass.

Students should increase awareness of and appreciation for the natural world.

Procedure:

- A) Divide into groups of approximately 8 each (one third of 25 students). Each group needs
- B) Groups may go to any station they wish. It is best to go to a station where no other group is already. Each group needs an adult chaperone, a hunt list, a pencil, and a GPS.
- C) Groups may not collect anything (except litter), or disturb the land. Where a judgment is required, the adult should take the responsibility to do so.
- D) The group must walk to the exact GPS coordinates before starting the scavenger hunt, before even looking at the paper!
- E) Once the coordinates are found, one person must stand on the knotted end of the rope, at the exact coordinates. The circle that is made by the rope's diameter is the boundary for the activity.
- F) The group may do or find any of up to EIGHT things on the master list. Once done, the item must be crossed off (you can do each thing only once!). The adult should verify they found the item (DO NOT collect!). They will earn a "point" for each thing they do. The class is meant for learning, so, please, the adults are invited to add their knowledge and enthusiasm to the activities.
- G) Everyone in the group participates in each item, one at a time. Each item done or found must be shown to the ENTIRE group before working on the next item.
- H) The activity should utilize the natural surroundings, unless it directs you otherwise.
- I) You may power down the GPS during periods of non-use. It powers back up pretty quickly.
- J) When time is up, the leader will call everyone together, and tally the points.

Working The GPS Unit:

1. Press the black button (it has a circle with a line across it – power symbol) on the right side of the unit.
2. Press the enter button (same as the enter button on a computer keyboard). It will now attempt to locate at least six satellites. Sometimes this takes a few minutes.
3. Press the "NAV" button. This takes you to the screen that measures latitude, longitude, and elevation. It should have a "Location" section, "Elevation" section, and "Date/Time."
4. NOTE: DO NOT press the "MARK" button. This button adds a station to the unit's memory. This would add all kinds of un-needed stations to the memory! Also, the "Light" button on the left uses a lot of battery power, please help conserve energy!
5. TO TURN THE GPS OFF: Push the Power button again. It will say, "Powering down in 4 seconds," or the like.

Location Coordinates:

Station 1 Corner	33 degrees 22.830 N	096 degrees 28.098 W
Station 2 Corner	33 degrees 22.824 N	096 degrees 28.059 W
Station 3 Midway east	33 degrees 22.898 N	096 degrees 28.055 W
Station 4 Corner	33 degrees 22.968 N	096 degrees 28.059 W
Station 5 Corner	33 degrees 22.977 N	096 degrees 28.120 W
Station 6 Midway west	33 degrees 22.896 N	096 degrees 28.100 W

The list of items:

(You may check each item off ONCE, as the group does it. Collect only litter, nothing natural!)

1. A seed spread by birds
2. A seed spread by wind
3. A seed spread by animals
4. Evidence of erosion
5. Hear a bird
6. Hear a different bird
7. Evidence of an insect
8. Part of an insect
9. A live insect
10. A white wildflower
11. A pink wildflower
12. A yellow wildflower
13. A cedar tree
14. Dandelion
15. A musky smell
16. A piney smell
17. Crystals
18. Clay (it feels greasy when you rub the rusty soil between your fingers)
19. Pretty clouds
20. Evidence of a mammal
21. A pool of water
22. The whole group sings a song together
23. Three pieces of litter (you can collect and dispose of this!)
24. A flowery smell
25. A rough texture
26. A smooth texture
27. An animal trail
28. An animal home
29. See a bird
30. See another bird
31. See a reptile
32. See a wild mammal
33. Fifteen seconds of silent peace
34. Two different grasses
35. A ten degree temperature difference
36. Water percolating
37. A diseased plant
38. A vine
39. Alternate leaves
40. Opposite leaves
41. Taste a piece of grass
42. Evidence of layers of soil / sand
43. See a butterfly or moth
44. Make a weather forecast by looking western sky
45. Estimate the wind speed
46. See an ant
47. A fruit
48. A spider
49. Site a line from the edge of a shadow to a plant to the sun
50. A spider web
51. A natural footprint
52. The whole group forms a perfect circle
53. Everyone stands at once where they can only see nature; nothing man-made
54. A sad thing
55. A good thing
56. A marvelous thing
57. Evidence of nature being repaired
58. A hardwood tree useable for lumber
59. A softwood tree useable for lumber
60. Make a leaf rubbing
61. The compass direction to the top point of the athletic field shed
62. The compass direction to the top point of the dining hall
63. Which side of the tree does moss grow on, can you prove it?
64. The entire group does 10 jumping jacks together