

Lab - Triangulation



Name:
Section:
Date:



Introduction: Triangulation is a common practice in wildlife biology when locating animals using radio telemetry (locating animals fixed with radio collars). It allows us to zero in on the approximate location of a tagged animal by determining the direction the animal is from two different locations. The tools necessary for triangulation are a GPS or compass, a detailed map of the area and a ruler.

Triangulation is also used in astronomy, to find the distance of far away objects; in geology, to determine the origin of earthquakes; and in orienteering, finding your way in the wilderness.

The following activities will help you to understand the practice of triangulation and give you practical experiences locating remote objects at unknown distances.

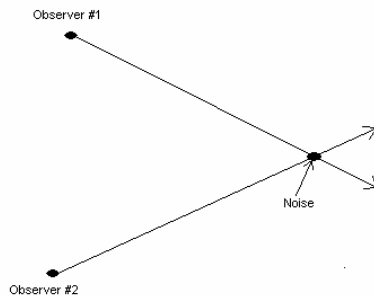
Objective: In this activity students will use a sound in order to determine its location using triangulation.

Materials: Blindfolds (two per group), yarn or rope, tape measure, marker, noisemaker

1. **Task #1:** Pick a location outside. Blindfold one student (observer) and have another student positioned some distance away (noise maker). Have the non-blindfolded student make a noise and tell the blindfolded students to point in the direction of the noise and give an approximate distance. Take off the blindfold and have them measure the distance to the person making the noise. How close were they? Record in data table below.

2. **Task #2:** Next, blindfold two students (observers) and place them with a helper at least 75 feet apart. Reposition the person making the noise and have both blindfolded students point in the direction of the noise (see figure 1). Helper must then determine the direction they are pointing using a GPS or compass. Have the noisemaker place a marker where they were standing. The helpers should hold the end of a rope or yarn at the position of the blindfolded students while the students who are blindfolded walk in the direction of the noise until both pieces of rope or yarn cross. How far from the actual spot of the noisemaker did the lines intersect? (Intersect Difference - Int. Diff.) Record in data table below.

Figure 1



3. Repeat task two a second time and record results in the table below.

| TASK #1 | Distance Guessed | Actual Distance |
|------------|------------------|-----------------|
| Observer 1 | | |

| TASK #2 | Direction (NESW) | Int. Diff. (m) |
|------------|------------------|----------------|
| Observer 1 | | |
| Observer 2 | | |

| TASK #2 (Part 2) | Direction (NESW) | Int. Diff. (m) |
|------------------|------------------|----------------|
| Observer 1 | | |
| Observer 2 | | |

Questions:

1. Based on the data collected in Task #1, was your observer good at determining the distance to the sound? How far off were they?
2. Based on the data collected in Task #2, were your observers good at determining the direction to the sound? How far off were they (approximately)?