

# Baseline & Offset Mapping



## Objectives:

Students will be able to:

- \*create a map of a large area.
- \*document biotic and abiotic components of a defined area

## Author:

Ecology Explorers team  
adapted from Map Making  
with Children

## Time:

50-60 minutes

## Grade Level:

6-12

## Standards:

AZ Standards

Science as Inquiry Process

Geography

Specific Standards on page  
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## Background:

Baseline & offset mapping is one technique you can use to quickly create a map of a relatively large area. Maps created this way can be very precise depending on the amount of time allocated to this activity. Maps are a great way of recording abiotic and biotic (specifically plants) data in a specific area. They can be used to identify areas for further study and can be used over time to record any changes. This method is often used by landscape architects to document man-made and natural features.

## Advanced Preparation:

Decide on the location and the main features you will be mapping. Try to find an area with an obvious baseline and borders. Student groups of three to four work well with this activity.

## Materials:

- clipboard
- pencils
- tape measures (50m)
- rulers
- graph paper
- white paper
- stickers
- several different colored pens

## Recommended Procedure:

- 1) Pick a baseline: this is a fixed line from which all your measurements will be taken. It is best to have the baseline be something permanent (really nice if it is oriented N-S or E-W), like a fence, the side of a building, the side of a parking lot, sidewalk etc.).
- 2) Have all the students create a freehand drawing of the area being mapped. Discuss with the students what items (trees, benches, sprinklers, etc.) are to be included in the map. The drawing should be from an aerial perspective.
- 3) Have students compare their freehand drawings. Are they the same? What is different? Have the students select one of the drawings to use for recording the baseline-offset measurements.
- 4) If you have groups of four, two students can record the measurements, two students can take the measurements.
- 5) Demonstrate measuring an object from the baseline, making sure the measurement is at right angles to the baseline (use a t-square, book, heavy paper, right triangle). Demonstrate the importance of using the right angle by measuring the distance from an object to the baseline using different angles

- Decide on the accuracy you want: Do children need to measure the both sides of a tree trunk or just estimate the middle? Do you want to measure the canopy of a tree?
  - Discuss whether it is better to measure the offset from the baseline to the object or from the object to the baseline.
6. Record distance from baseline (called the offset) and distance along baseline for each object. This is similar to using X and Y coordinates in graphing. The “X” coordinate is the baseline and the “Y” coordinate is the offset. The point is usually recorded as (X,Y)

7)Drawing the accurate map onto graph paper

- Large paper works best
- Locate the baseline on your graph paper
- Divide your map baseline into the same number of segments as your real baseline
- Locate objects by counting the appropriate number of units and placing a dot on the paper (you could use stickers or symbols)
- Add a title, scale, legend, compass rose to your map

### Evaluation:

Evaluate the completed map for accuracy (all the items on the map in the appropriate location) and map elements (title, scale, legend, compass rose).

### Resources:

Sobel, David. 1998. Mapmaking with Children. Heinemann: Portsmouth, NH. 164pp.

### Standards

#### AZ Science

C2-GR5-8-PO1  
 C2-GR6-PO3  
 C2-GR6-8-PO4, PO5  
 C2-GRHS-PO1, PO3, PO5

#### AZ Social Studies

*Geography*  
 C1-GR5-PO6  
 C1-GR6-8-PO1 .  
 C1-GRHS-PO1  
 C5-GRHS-PO4  
 C6-GR6-PO2  
 C6-GR7-8-PO3  
 C6-GRHS-PO1

