



Drexel-SDP GK-12 ACTIVITY

Activity: Cartography and Your School

Subject Area(s) Measurement

Associated Unit Landforms, module 1

Associated Lesson None

Activity Title Cartography and Your School

Grade Level 6 (4-6)

Lesson Dependency None.

Time Required: 1 Hour

Group Size 3

Expendable Cost per Group \$0

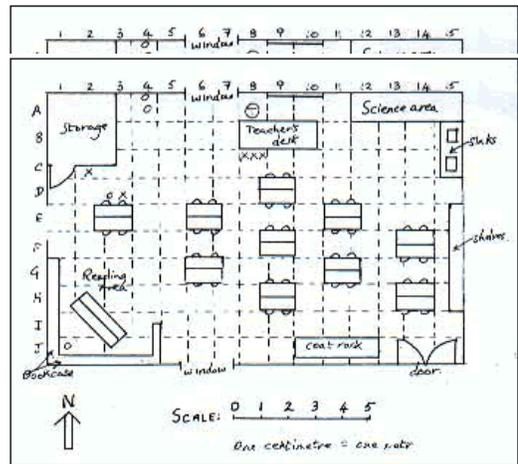


Image 1

ADA Description: Picture shows a classroom floor plan

Caption: A classroom floor plan.

Image file name: fig07Aclass.gif

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Summary

In this activity, your team is going to construct a floor plan of an assigned part of your school. Your map will include an outline of the area, drawn to scale, and your map will also show the

significant objects in the area, also drawn to scale. Lastly, you will show how your room is oriented on the compass rose, showing the directions North, South, East and West.

Engineering Connection

Measurement and scale drawings are crucially important to mechanical engineers. Every car on the road today was once a scale drawing. Similarly, the civil engineers who helped to build our schools also made use of blueprints, the scale drawings representing the scale of the building and all of its doors and windows. In this exercise, students will practice cartography, or mapmaking, to make a scale drawing of their school.

Keywords

Cartography, measurement, estimation, scale drawings.

Educational Standards (PA)

- Math: Measurement and Estimation 2.3

Pre-Requisite Knowledge

Some practice in using a ruler or tape measure.

Learning Objectives

After this activity, students should be able to:

- **Make a scale drawing**
- **Locate North, South, East and West on their drawing**
- **Represent objects and landmarks in a legend**

Materials List

Each team needs:

- A yardstick, ruler or tape measure
- Graph paper

Introduction / Motivation

Engineers commonly make use of scale drawings to comprehend the details of an engineering design. For example, a jet engine for an airplane will be drawn so that it fits on a single piece of paper. These drawings include labels and legends that describe what each symbol means. In this activity, your team is going to construct a floor plan of an assigned part of your school. Your map will include an outline of the area, drawn to scale, and your map will also show the significant objects in the area, also drawn to scale. Lastly, you will show how your school is oriented on the compass rose, showing the directions North, South, East and West.

Vocabulary / Definitions

Word	Definition
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Scale drawing	The process of drawing a figure either enlarged or reduced in size from its original size.
Legend	The key to the meaning of symbols and pictures on a map.
Compass rose	A figure displaying the orientation of the cardinal directions, north, south, east and west on a map.
Perimeter	The sum of the length of the sides of a polygon.
Area	Amount of surface, measured in square units.

Procedure

Background:

Group Roles:

Surveyors, Recorder, Mathematician, Drafter, Analyst (each student is an Analyst)

Procedure:

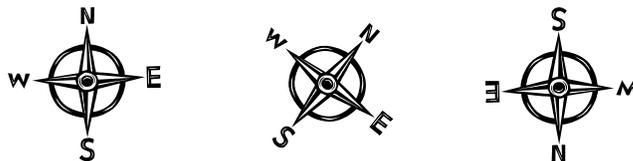
Step 1: Determine the scale of your map in metric units. The perimeter of your area will help to determine the scale, since it is the largest area we need to fit on the map. Draw the scale on the map.

Step 2: Draw the perimeter of the area on the graph paper, using the scale that you've determined in Step 1. Include the location of any doors and windows.

Step 3: Identify the significant objects in the area. Measure their locations in metric units from each of two adjacent walls (that is, two walls that meet at the same corner), and use your scale to draw this object's location on the graph paper. Represent the objects' perimeters as closely as possible. You can use rectangles or circles to represent irregularly shaped objects.

Step 4: Use symbols to label each object. Objects of the same type share the same symbol. (For example, we might assign a star to label each desk.) Add a legend to your map identifying the meaning of each symbol used.

Step 5: Add a compass rose, and orient its direction to show where North, South, East and West are in relation to one of the walls. For example, it could be any one of these orientations:



Step 6: Ask the students if they can explain to you the objects and orientation of their map.

Safety Issues

- None

Troubleshooting Tips

Make sure the students understand whether they are using the English or metric units of measurement.

Investigating Questions

How did you represent irregularly shaped objects? Did you have any trouble figuring out which way is North and how did you resolve it?

Assessment

Pre-Activity Assessment

Perform a quick oral quiz of the vocabulary.

Activity Embedded Assessment

None

Post-Activity Assessment

Question 1: What is the scale of your map?

1 Square = _____ centimeters

1 Square = _____ meters

(this number might be a fraction or decimal)

Question 2: What is the area of the space you have mapped? How did you calculate this?

Question 3: Explain to someone how to find one of the objects on your map, using both a distance calculated from your scale, and the compass rose. (For example, "Walk 3 meters north from the door, turn left, and walk another 2 feet to find the teacher's desk.")

Use the following rubric to evaluate the students' maps.

You will be evaluated on a scale from 0 to 4 on:

_____	_____	_____	_____	_____
Scale	Measurement	Compass	Writing	Presentation

Contributors

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