

## Lab Framework

**Text:**CORD Classic

**Unit number and title:** 12 Scientific Notation

**Developed by:**Pat Eckel

**Date:** 6/28/07

### Lab Title

## Walking To The Moon

**Contact Information:** eckelpatrick@newport.wednet.edu

**Short Description:** Use scientific notation to figure out how many steps and how long to walk to the moon.

## LAB PLAN

**TEACHER:** Teacher Prep/ Lesson Plan

- **Lab Objective**

The Student Will Convert Large Numbers to Scientific Notation

- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)

Conversion factors, measurement skills, how to place info into calculator to convert to scientific notation

- **New Vocabulary**

scientific notation

- **Materials List**

Stop watches, tape measures, scientific calculators

- **GLEs addressed**

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Math: 1.1.1 Understand and use scientific notation.

1.1.5 Compute using scientific notation.

Reading: 4.2.1 Apply understanding of complex information, including functional documents, to perform a task.

Writing: 3.3.1 Uses legible handwriting.

3.3.6 Uses complete sentences in writing.

- **Leadership Skills**

**2.1 The student will communicate, participate, and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals.**

- **SCAN Skills**

A. Performs basic computations.

B. Records information completely and accurately

- **Set-up information**

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)

The students will be assigned to groups of three. Each team will have a stopwatch and each member will have a calculator and an information gathering form. Students will work together to help each other collect the data to complete the assignment. a group leader will be selected to help make sure the group has the materials they need and keep them on task. Time frame--50 minutes

- **Teacher Assessment of student learning** (scoring guide, rubric)
  - Teacher observation
  - Rubric
  - Grading of lab sheets
- **Summary of learning** (to be finished after student completes lab)
  - discuss real world application of learning from lab
  - opportunity for students to share/present learning
  
- **Optional activities**
  
- **Career Applications**
  - Any occupation when one has to convert large numbers into more manageable numbers to work with

**LAB TITLE:** Walk To The Moon

**STUDENT INSTRUCTIONS:**

- **Statement of problem addressed by lab**

How many steps would you have to walk, and how long would it take you to walk to the moon?
- **Grouping instructions and roles**

Students will work in groups of three. One student will walk at a normal pace for a distance of ten yards, premeasured. One of the students will count the steps; the other will time the walker. This will be done four times
- **Procedures – steps to follow/instructions**

Each time the walker completes the task the timer and the counter will record their results on the data sheet. The data will be averaged out so they have an average of how many steps and how long it took the walker to walk the ten yards. The group will then determine how many steps it would take the walker to walk a mile, and how long it would take, (miles per hour).

The group then must determine how many steps it would take to walk to the moon, and how long it would take the walker to get there. The answers will be recorded using scientific notation.

Special note: The moon is 398,000 miles from the earth.
- **Outcome instructions**

Once you are completed with the project be prepared to show your findings with the rest of the class and turn in all worksheets to the instructor for grading.
- **Assessment instructions (peer-teacher)**

Teacher observation, rubric, and graded work sheets

## Lab Data Collection

**Student:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Unit:** 12 \_\_\_\_\_

**Lab Title:** Walking To The Moon

**Criteria:** Write the problem/objective in statement form

**Data Collection:** Record the collected/given data

1 <sup>st</sup> Walk	Number of steps _____	Time _____
2 <sup>nd</sup> Walk	Number of steps _____	Time _____
3 <sup>rd</sup> Walk	Number of steps _____	Time _____
4 <sup>th</sup> Walk	Number of steps _____	Time _____

**Calculations:** Complete the given calculations to solve for an answer(s)

**SHOW ALL WORK ON SEPARATE PAPER**

Average number of steps taken to walk ten yards \_\_\_\_\_

Average time it took to walk ten yards \_\_\_\_\_

Convert the time to miles per hour (5,280 ft to a mile) \_\_\_\_\_

How many steps will it take to reach the moon? \_\_\_\_\_

Convert the steps to scientific notation \_\_\_\_\_

How many days will it take to walk to the moon \_\_\_\_\_

Convert the amount of days to scientific notation \_\_\_\_\_

**Summary Statement:**

**Other Assessment(s)**