

Lab Framework

Text:CORD Classic

Unit number and title:10 - Working with Scale Drawings

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Lab Title ROAD TRIP!!!

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Short Description: Using a road map of Washington State, students will plan a 5 day road trip. Students must travel to a minimum of 3 different cities or towns (not including the student's home-town). Students must travel a minimum of 500 miles. Students will calculate approximate traveling distances and traveling times. The road trip must begin and end at the group's home-town.

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

The students will be able to calculate the miles traveled from the scale map. Students will also estimate travel times between destinations.

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

Vocabulary:

Scale

Proportion

Measurement Techniques:

Use fractional/metric ruler

Determine/Identify scale of map

Formulas:

Time(t) = Distance(d)/Rate(r)

- **New Vocabulary**

Ratio

Direct Proportion

Convert

- **Materials List**

Washington State road map (1 per team)

Fractional/Metric ruler (1 per team)

Pencil

Paper

Calculator

Itinerary Work Sheet (1 per student)

- **GLEs addressed**

Math:

1.1.4 Understand the concept of inverse proportion and apply direct and inverse proportion.

1.1.8 Apply estimation strategies in situations involving multi step computations of rational numbers using addition, subtraction, multiplication, division, powers, and square roots to predict or determine reasonableness of answers.

1.2.3 Apply unit conversions within measurement systems, U.S. or metric, to maintain an appropriate level of precision.

Reading:

Writing:

3.3.1 Uses legible handwriting.

3.3.2 Spells accurately in final draft.

- **Leadership Skills**

- Group skills**

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

- **SCAN Skills**

- Arithmetic

- A. Performs basic computations

- Mathematics

- B. Uses quantitative data to construct logical explanations for real world explanations

- Writing

- B. Records information completely and correctly

- Thinking Skills

- Seeing things in the minds eye

- A. Organizes and processes symbols, pictures, graphs, objects or other information

- **Set-up information**

- Divide students into groups of 3 - 4

- Supply clerk retrieves required materials

- Create preliminary itinerary

- Calculate traveling distances to all destinations

- Modify itinerary to meet minimum requirements

- Re-calculate traveling distances as needed

- Calculate estimated traveling times to each destination

- Modify itinerary as needed

- Complete final travel itinerary

- After all students have finished, each individual is to complete a peer evaluation form and attach it to his/her final travel itinerary.

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)
 - Minimum of 3 class periods
 - Group supply clerk
 - Group recorder (preliminary itinerary only)
 - Distribute distance map measuring tasks equally among the group
 - Final travel itinerary with calculations to be done individually
- **Teacher Assessment of student learning** (scoring guide, rubric)
 - Teacher observation
 - Grading rubric
 - Grading of lab sheets
 - Peer evaluation forms
- **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
 - peer evaluation forms
- **Optional activities**
 - Set a pre-determined budget
 - Identify all travel expenses (food, gas, lodging, entrance fees, etc....)
 - Calculate all travel expenses
 - Modify proposed travel plans to meet budget
- **Career Applications**
 - Long Haul Truck Driver
 - Tour Guide

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STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**

Using a road map of Washington State, students will plan a 5 day road trip. You must travel to a minimum of 3 different cities or towns (not including the your home-town). You must travel a minimum of 500 miles. You will calculate approximate traveling distances and traveling times. The road trip must begin and end in your home-town.
- **Grouping instructions and roles**
 - Supply Clerk
 - Collect required materials for the group
 - Return map and ruler to their proper location at the end of each period
 - Recorder
 - Record all preliminary data on the preliminary travel itinerary
 - Individual
 - Participate in measuring tasks equally
 - Calculate traveling distances and traveling times
 - Complete final travel itinerary
 - Complete peer evaluation form
- **Procedures** – steps to follow/instructions
- Divide students into groups of 3 - 4
- Supply clerk retrieves required materials
- Create preliminary itinerary
- Calculate traveling distances to all destinations
- Modify itinerary to meet minimum requirements
- Re-calculate traveling distances as needed
- Calculate estimated traveling times to each destination
- Modify itinerary as needed
- Complete final travel itinerary
- After all students have finished, each individual is to complete a peer evaluation form and attach it to his/her final travel itinerary.
- **Outcome instructions**
 - After completion of the final itinerary, the group will present their travel itinerary to the class.
 - Turn in completed travel itinerary and all related worksheets
- **Assessment instructions** (peer-teacher)
- Teacher observation - follow directions carefully
- Grading rubric -use to insure all criteria is being met
- Peer evaluation forms - evaluate the effectiveness of each team member, excluding yourself

Lab Data Collection

Student: _____ **Date:** _____

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Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

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

Summary Statement:

Other Assessment(s)