

## Lab Framework

**Text:** Cord Applied Mathematics

**Unit number and title:** Unit 11 Using Signed Numbers and Vectors

**Short Description:** Learning Signed numbers by counting calories

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### Lab Title

## Counting Calories with Signed numbers

### LAB PLAN

**TEACHER:** Teacher Prep/ Lesson Plan

- **Lab Objective**

Students will be able to use signed numbers to calculate how much jogging it would take to equal the calories in a typical fast food meal.

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

Vocabulary – Calorie

Skills – Adding / Subtracting / Multiplying and Dividing Signed numbers.

Looking up information online.

- **Vocabulary**

Calorie

- **Materials List**

Access to a Computer lab for 1 period, lab worksheet if desired

- **State Standards addressed**

Math: A1.2.A Know the relationship between real numbers and the number line, and compare and order real numbers with and without the number line.

A1.2.B Recognize the multiple uses of variables, determine all possible values of variables that satisfy prescribed conditions, and evaluate algebraic expressions that involve variables.

A1.8.A Analyze a problem situation and represent it mathematically.

A1.8.B Select and apply strategies to solve problems.

A1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.

A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.

Reading: Component 3.2 Read to perform a task.

3.2.2 Apply understanding of complex information, including functional documents, to perform a task.

Writing: EALR 2: The student writes in a variety of forms for different audiences and purposes

EALR 3: The student writes clearly and effectively.

- **Leadership Skills**

**Students will practice working with partners and also present their findings to groups.**

- **SCAN Skills/Workplace Skills**

Interpersonal

A. Participates as a Member of a Team—contributes to group effort

F. Works with Diversity—works well with men and women from diverse backgrounds

Information: Acquires and uses information

A. Acquires and Evaluates Information

Technology: Works with a variety of technologies

A. Selects Technology—chooses procedures, tools or equipment including computers and related technologies

- **Set-up information**

The teacher should sign up for the computer lab ahead of time and prepare / print off worksheets if desired. Research various web sites that give statistics for fast food menu calories and calories from various exercises. If computer lab access is not available, you obtain calorie pamphlets from various fast food locations.

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

5-10 minutes: Warm up, Students will pick a fast food restaurant, a meal menu and an exercise.

5 minutes: Introduce lab: Teacher will introduce lab, give students sample web sites they may use, etc and assign partners as appropriate.

5 minutes: Partners decide on their menu / exercise together.

20-40 minutes: Students transition to computer lab. They look up the caloric information for their menu selection and total the calories for the meal. They then look up the calories that their exercise burns per minute or hour and calculate how many minutes they would need to work out to use all the calories from the meal. Students will then express the relationship in an equation form that evaluates to 0 using positive and negative numbers.

10-20 minutes: Go back down to classroom. Break students into larger groups and then present their findings to the groups.

- **Teacher Assessment of student learning** (scoring guide, rubric)

Students will turn in their results. Students will present their topic in groups

Grading

50% - Completeness of Lab

25% - Correctness of Mathematics

25% - Presentation

- **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

- Were they surprised by how many calories their meal had?

- What was the process they used to calculate how many minutes of exercise they needed?
- Why would it be a bad idea to actually burn all the calories you eat with exercise?
- What other applications use negative numbers?

# Washington

- **Optional activities**  
Signed number worksheets
- **Career Applications**  
Health, Financial, Construction, Science, Mechanical, etc.

# Applied

# Math

# Council

<https://wa-appliedmath.org/>

**LAB TITLE: Counting Calories**

**STUDENT INSTRUCTIONS:**

- **Statement of problem addressed by lab**  
How much exercise does it take to burn off the calories of one fast food meal?

- **Grouping instructions and roles**  
You will be grouped in partners.  
Roles: Partner 1: Internet Searcher, Presenter  
Partner 2: Writer

- **Procedures** – steps to follow/instructions
  1. Decide on your fast food menu and exercise. Write them down.
  2. Search the internet and write down the calories for each menu item.
  3. Add the calories together to get the total calorie count for the meal.
  4. Search the internet and write down the calories per minute or hour for your selected exercise.
  5. Calculate how many minutes you would need to exercise to match the meal calories. How many calories total is this?
  6. Write down the following equation
    - a. meal calories + the exercise calories burned = 0 calories
    - b. Fill out the equation with your numbers from steps 3 and 5.

- **Outcome instructions**

1. Menu Items	2. Calories
Total Calories	3.
Exercise	1.
Calories / Hour	4.
Calories / Minute	4.

Work for step 5.

Work for step 6.

7. Describe the method you used to find out how long you had to exercise to burn the calories.

• **Assessment instructions** (peer-teacher)

	Self Assessment	Teacher's Assessment
<p>1. How complete was your worksheet?</p> <p>a. (0-25) missing two or more sections.</p> <p>b. (25-40) missing one section.</p> <p>c. (40-45) missing no sections</p> <p>d. (46-50) above and beyond requirements</p>		
<p>2. How accurate were your mathematics?</p> <p>a. (0-10) Calculation incorrect, little explanation.</p> <p>b. (11-15) Calculation correct, little explanation.</p> <p>c. (16-20) Calculation correct, some explanation</p> <p>d. (21-25) Calculation correct, complete explanation</p> <p>e.</p>		
<p>3. Presentation</p> <p>a. (0-10) Hasty presentation</p> <p>b. (11-20) Presentation describes meal, exercise, method and results</p> <p>c. (21-25) Presentation describes meal exercise, results and other possible application with enthusiasm.</p>		
<p>Total Score (out of 100)</p>		