Lab Framework

Text: Cord Classic

Unit number and title: Units 15 Using Formulas to Solve Problems

  Short Description: Calculating the material and associated costs in fencing a yard

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Lab Title
Fencing a Yard

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

  Students will use formulas to find a solution to a situation involving a perimeter. Students will be able to read and write formulas, rearrange formulas to fit their problem and use a calculator to solve various parts of the problem.

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

  Problem solving Techniques, Estimating Answers, and Working with Shapes in Two Dimensions

- **Vocabulary**

  Vocabulary related to problem solving, working with formulas and shapes.

- **Materials List**

  Situation papers, calculator

- **State Standards addressed**

  Math: A1-4-A Write and solve equations and inequalities with one variable. A1-1-B Solve problems that can be represented by linear functions, equations and inequalities A1-8-A Analyze a problem situation and represent it mathematically. A1-6-B Make valid inferences and draw conclusions based on data. A1-8-F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.

  Reading: 1.1 Use word recognition and word meaning skills to read and comprehend text. 1.2 Use vocabulary (word meaning) strategies to comprehend text. 3.1 Read to learn new information. 3.2 Read to perform a task. 3.3 Read for career applications.

  Writing: 2.2 Writes for different purposes. 2.4 Writes for career applications.

- **Leadership Skills**

  1.1 The student will analyze, refine and apply decision-making skills through classroom, family, community and business and industry (work-related) experiences. 1.4 The student will be involved in activities that require applying theory, problems solving, and using critical and creative thinking skills while understanding outcomes of related decisions.

- **SCAN Skills/Workplace Skills**

  Construction

- **Set-up information**

No setup necessary for this classroom activity

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
  Should be able to complete in one 50 minute period

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

- **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

LAB TITLE: Fencing a Yard
STUDENT INSTRUCTIONS:

You know an elder neighbor who is wants to fence his yard. He has contacted a company that builds fences and gave him a quote of $2,500.   On his fixed income he can't really afford this amount. So you offer to build the fence for him at cost plus $500 for your labor.

The dimensions of the property to be fenced is as follows:

←--- 120 feet ---→

96 feet

Back Yard

←   24 feet   →   ←16 feet →

House
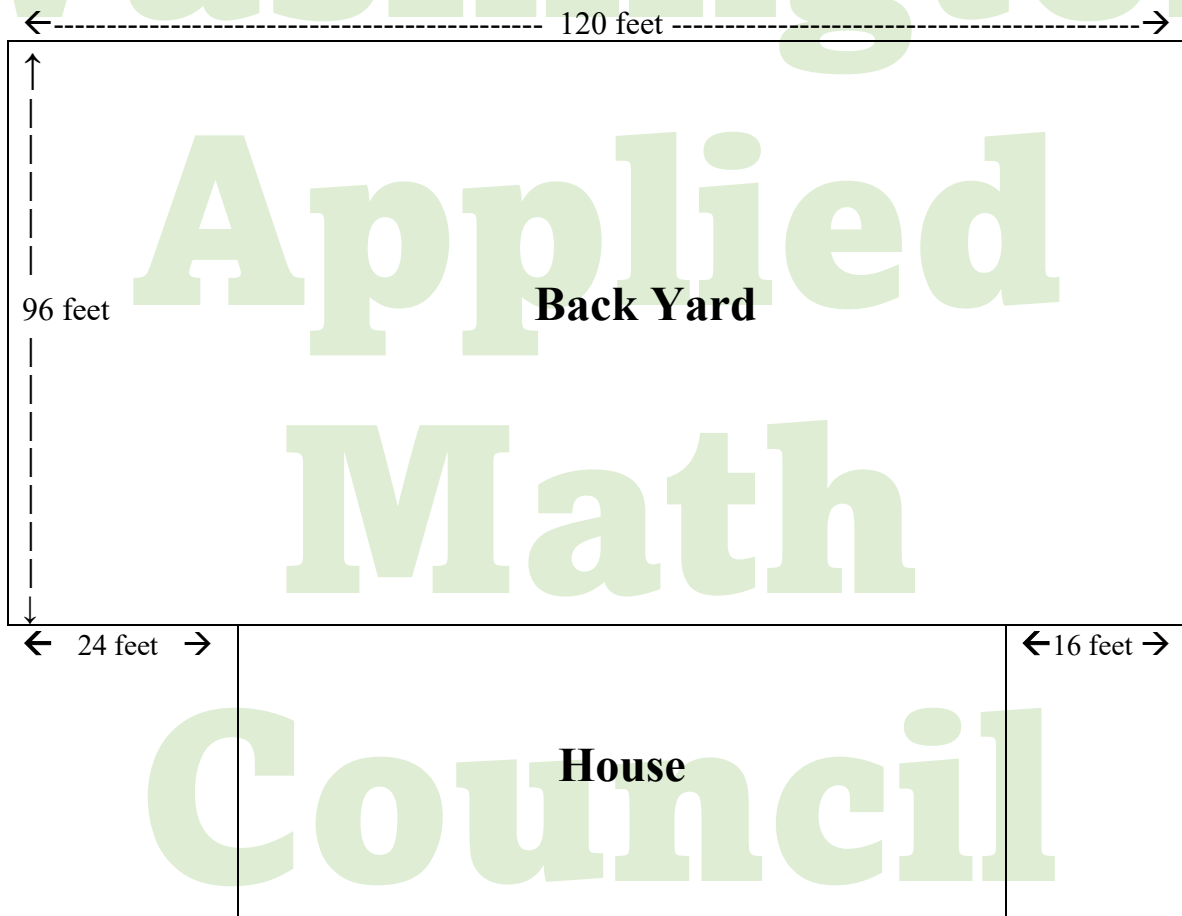
Use the data below to determine the actual cost of the fence:

1. He would like to space all the fence posts evenly around the property somewhere between 7 foot and 10 feet apart.

2. The cost of material is as follows:

Posts	Pressure Treated 8 foot 4 X 4	$ 6.98 each
Rails	8 foot 2 X 4	$ 1.99 each
	or 10 foot 2 X 4	$ 2.39 each
Boards	6 foot 1 X 6	$ 1.29 each
	(actual width of boards 5 ¾ inches)	
Concrete	80 pound bag	$ 5.49 each
Nails	20 pounds	$36.97 total

3. You plan to put 40 pounds of concrete around each post.

4. The boards will go on side by side with a ¼ inch gap between each

5. You will use two rails between each post to fasten the boards to.

Calculations:

1. Write a simple formula to calculate the number of 8' 4" X 4" posts needed.

2. Use the formula above to calculate the number of posts needed.

3. Write a simple formula to calculate the number of 6' 1" X 6" boards needed.

4. Use the formula above to calculate the number of boards needed.

5. Write a simple formula to calculate the number of 2 X 4 rails you will need.

6. Use the formula above to calculate the number of rails needed

7. Write a simple formula to calculate the number of 80lb bags of concrete you will need.

8. Use the formula to calculate the number of bags you will use.

9. What will be the distance between your posts be?

Costs:

Total cost of Posts $_____

Total cost of Rails $_____

Total cost of Boards $_____

Total cost of Concrete $_____

Cost of Nails $_____

Sub-Total Material Cost $_____

Sales Tax @ 8.9% $_____

Labor Cost $_____

Total Cost for the Fence $_____

Summary Questions:

Is your cost less then that of the fencing company? _____

Based on all this information will you be helping your neighbor by building his fence for him?