Design a Garden

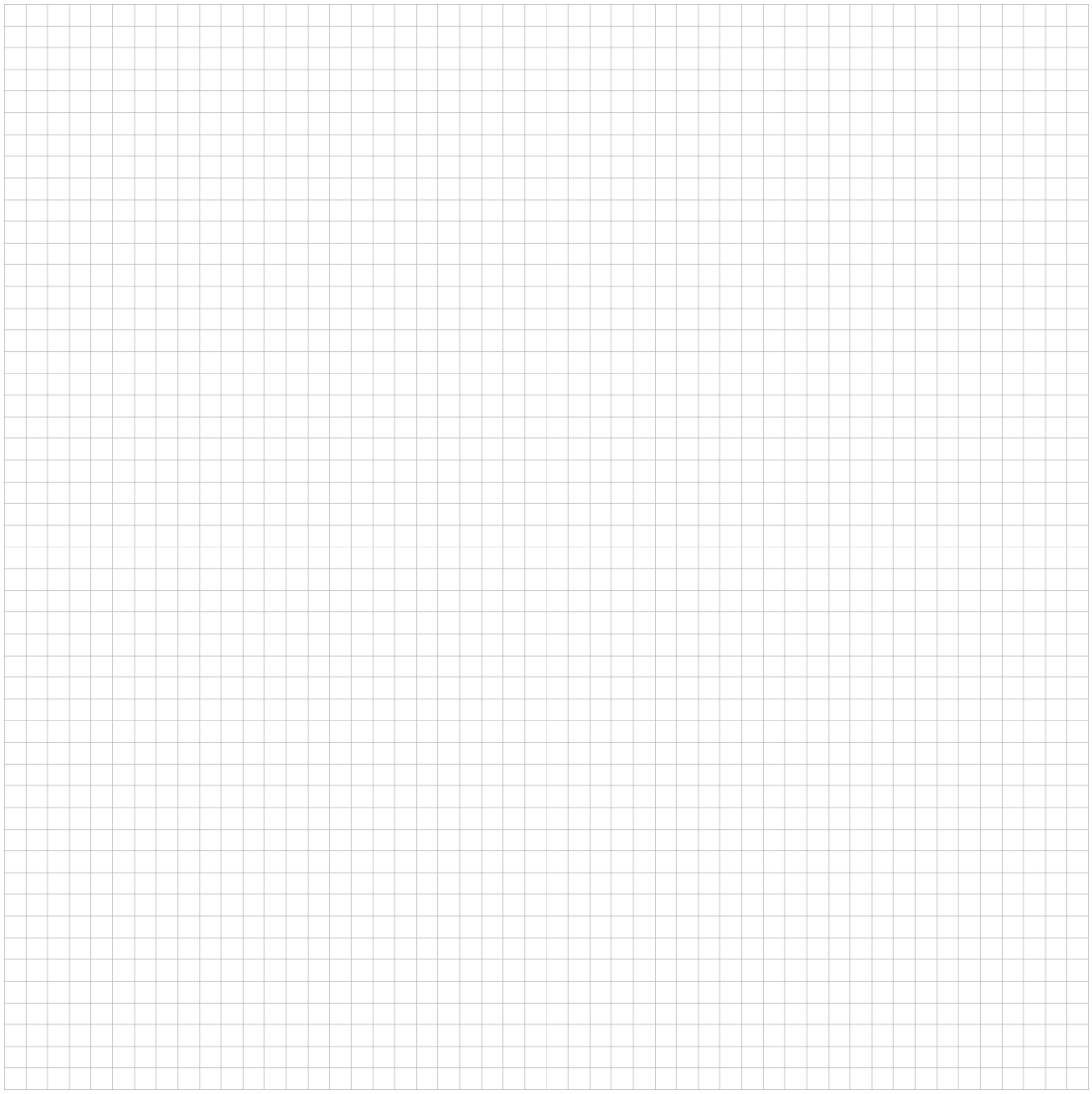
You are volunteering at a community center. The director of the center has asked you to design a garden and to determine the amount and cost of materials to build the garden, including wood, soil, and plants.

Part A

The director has asked you to design different sections of the garden that meet the following conditions:

- Section 1 must be shaped like a square.
- Section 1 must have an area between 26 square feet and 50 square feet.
- Section 2 must be shaped like a rectangle but must **not** be a square.
- Section 2 must be exactly twice the area of Section 1. On the grid below, draw your design for Section 1 and Section 2.

Be sure to label each section (1 or 2) and include the dimensions. Each box in the grid represents 1 square foot.



Based on your design, complete the following table:

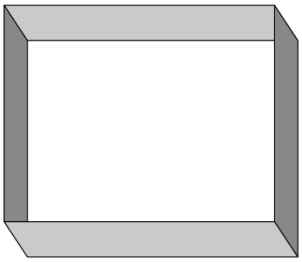
Section	Area (square feet)	Perimeter (feet)
1		
2		

Part B

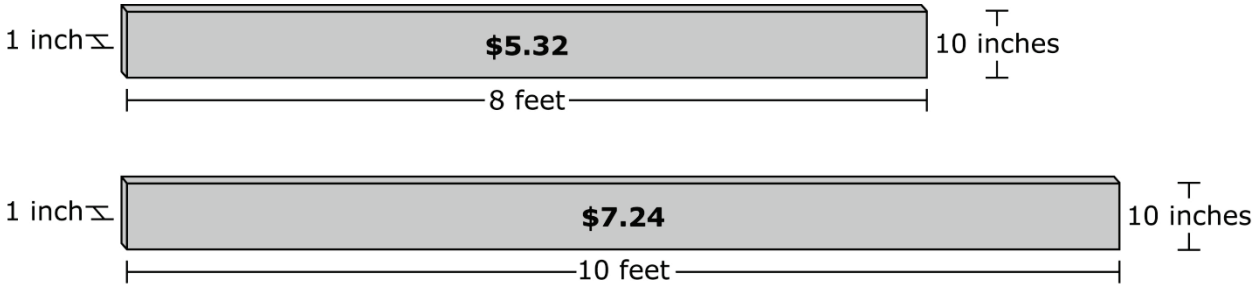
Building Planter Boxes

The director would like the sections to be contained in planter boxes that are 20 inches deep. You must buy the wood to construct the planter boxes for Section 1 and Section 2.

As seen in the picture below, a planter box is a rectangular prism that is filled with soil. It has no top or base.



Morris Hardware Store offers pressure-treated wood in two different lengths.



What is the minimum amount of wood that needs to be purchased to construct a planter box for both Sections 1 and 2? Explain your answer using diagrams, pictures, mathematical expressions, and/or words.

You plan to buy the wood to make the planter boxes from Morris Hardware Store. Using the information above, what is the **minimum** cost to buy the amount of wood needed for both boxes? Use mathematics to justify your answer.

This is the end of Session 1.

Part C

Buying Plants

The director would like you to buy and plant carrots and tomatoes in the garden.

You will plant carrots in Section 1 and tomatoes in Section 2. Each plant must be 1 foot away from the sides of the planter box and 1 foot away from each other. How many carrot plants and tomato plants do you need to buy? Provide mathematical justification for your answer.

Number of carrot plants _____

Number of tomato plants _____

You have a choice of two stores to buy the carrot plants and tomato plants, as shown below.

	Greenthumb Garden Mart	**Lawn & Garden Depot**
Carrots	$1.29 each	$7.92 for 6
Tomatoes	$1.89 each	$8.70 for 6

Based on the unit rate, write an equation to represent the total cost to purchase any number of tomato plants at the Lawn & Garden Depot. In the equation, let C represent the total cost of the tomato plants in dollars and n represent the number of tomato plants bought.

What is the minimum amount you will need to pay to buy the carrot and tomato plants. Provide justification for your answer.