Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Your class has decided to plant a vegetable garden in an area next to the playground.

You will use plastic edging to show where the garden will go and how large of a space will be used. The edging measures 48 feet in length. The school has designated an area 15 feet by 10 feet that can be used. Your teacher has decided to leave some space inside the designated area to add a table for working with the plants.

1. Determine the area of at least three gardens that have a perimeter of exactly 48 feet.
2. Choose one of the gardens you think is the best choice for the area that has been designated and explain why you think it is the best one.

Space to be used:

15 feet

10 Feet

150 square feet

**Standards addressed by this task:**

3.MD.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.

3.MD.5a A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

3.MD.5b A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

3.MD.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

**Teacher Notes:**

* Before students engage in the problem scenario, explore the concepts of perimeter and area with them and ensure that they have a developing understanding of these concepts.
* Convene students in a meeting area to introduce the context and describe the problem scenario. You can have students work in groups, partner pairs, or individually.
* On the board, record the dimensions of the area designated for the vegetable garden. Label two opposite sides 15 feet and the two remaining sides 10 feet. Pose the following questions:
  + How can you determine the perimeter of the rectangle that makes up the garden? (Remind students that the perimeter of one side cannot exceed the 15 feet or the 10 feet respectively)
  + How can you determine the area of the rectangle that makes up the garden?
* Let students work on the task, then ask them to come back together and share their thinking. Ask them these questions:
  + When you changed the dimensions of the rectangle but kept the same perimeter, did the area remain the same? Why, or why not?
  + The vegetable garden has a perimeter of 48 feet [*write* perimeter- 48 feet *on the board*]. How much area of the designated space will the vegetable garden cover?
  + How much area of the designated space is left for the table?