

Grade 8---Mathematics

The **academic expectation** addressed by “Feuding Farmers” is

2.8 Students understand various mathematical concepts and use them appropriately and accurately.

The **core content** assessed by this item includes

Number/Computation Concepts

- Add, subtract, multiply, and divide rational numbers to solve problems
- Compute large and small quantities and check for reasonable and appropriate computational results

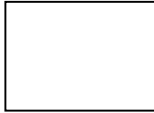

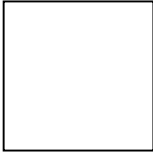


Geometry/Masurement Skills

- Use formulas to find area and perimeter of triangles and quadrilaterals, area and circumference of circles, and surface area and volume of rectangular prisms.

Feuding Farmers

Farmer John and Farmer Jill are very competitive neighbors. Farmer John's garden starts out being 11 yards x 10 yards and Farmer Jill's garden starts out being 10 yards x 10 yards. Desiring to have the largest garden on the street, Farmer Jill increases the length and width of her garden by a yard each. To retaliate, the next day Farmer John increases the length only by two yards. On day three, Farmer Jill again increases her garden's length and width by one yard (see chart below). Continuing this pattern, answer the following questions:

- a) What was the perimeter of Farmer John's garden on Day four?
- b) On what day will the increase in the area of Farmer John's garden not be enough to overcome the increase the area of Farmer Jill's garden?
- c) How many square feet did Farmer Jill's garden increase from Day 1 to Day 7?

	<u>Farmer John</u>	<u>Farmer Jill</u>
Start	 11 yards 10 yards	 10 yards 10 yards
Day 1	No Change	 11 yards 11 yards
Day 2	 13 yards 10 yards	No Change
Day 3	No Change	 12 yards 12 yards

Score	Description
4	Student answers all parts of the question correctly and shows all work including a graph of the problem or completion of the started chart.
3	Student answers two of the three parts correctly and shows their work.
2	Student answers two of the three parts correctly, but there is no work shown.
1	Student answers one part of the question correctly.
0	Response is totally incorrect or irrelevant.
Blank	No response.

Correct Answers:

- a) Day 5 Perimeter=15 yards +15 yards +10 yards + 10 yards = **50 yards**
- b) **DAY 8**-After Farmer Jill's increase on Day 7, her garden's area is 196 square yards. On Day 8 after Farmer John's increase, his area is 190 square yards. So on Day 8, Farmer John's increase in garden size was not enough to overcome Farmer Jill's increased garden.
- c) Day 1 area = 1089 square feet. Day 7 area =1764 square feet.
1764-1069= **675 square feet.**