



Activity III: Calculations from the Farm Answers

1. 1 acre = 160 square rods = $160 \times (16 \frac{1}{2} \times 16 \frac{1}{2})$ square feet = 43,560 square feet.

2. Answers will vary.

3. 100 yards = 300 ft, so the area of a football field is $300 \times 160 = 48,000$ square feet. That is 1.1 acres, or a little larger than an acre. If you shorten the field by 9 yards to a length of 91 yards you end up with 43,680 square feet which is very close to an acre.

4. To find we are looking for a number when taken times itself gives us 43,560 or in other words the square root of 43,560. That field would be approximately 209 feet on a side.

5. $43,560 \text{ square feet} / 16 \frac{1}{2} \text{ feet} = 2640 \text{ feet}$. 2640 feet is $\frac{1}{2}$ a mile.

6. Answers will vary.

7. We are looking for a number when taken times itself gives 5,227,200 or in other words, we are looking for the square root of 5,227,200. That field would be approximately 2286 feet on a side.

8 The combined length would be in the range of 17,424 to 17,472 feet or 3.3 miles. If you use a square plot (209 feet by 209 feet) then you have $209 \text{ ft} \times 12 \text{ inches/ft} = 2508 \text{ inches}$. $2508 \text{ inches} / 30 \text{ inches}$

per row = 83.6 rows. $83.6 \text{ rows} \times 209 \text{ feet (the length of the field)} = 17,472.4 \text{ feet}$.

$17,424 \text{ feet} / 5,280 \text{ feet/mile} = 3.3 \text{ miles}$. There are a number number of places one can round of

on this problem and different shapes of fields, but the answer in miles should generally come out to be 3.3.

Answers continued

9. Answers will vary as students may use the various foot measures they generated in problem 8. Every 4 inches is 3 seeds per foot. $17,424$ feet of row per acre \times 3 seeds per foot is $52,272$ seeds per acre. $52,272$ seeds per acre \times 120 = $6,272,640$ seed for a 120 acre field.
10. 120 acres \times 175 bushels per acre \times 56 lb. per bushel = $1,176,000$ lb. = 588 tons.