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

**Problem: Using multiples to solve a real life situation**

Cicadas spend most of their lives underground. Some populations of cicadas come above ground every 7 years, while others come up every 11 years. Although cicadas do not cause damage directly to fruits and vegetables, they can damage orchards because the female makes slips in trees to lay her eggs.

Stephan’s grandfather told him a bout a terrible year when the cicadas were so numerous that they wrecked the buds on all the young trees in his orchard. Stephan conjectured that both the 7-year and the 11-year cicadas came up that year. Assume that Stephan’s conjecture is correct.

1. How many years after an appearance of 7-year and the 11-year cicadas together will both types of cicadas appear together again? Show or explain how you found your answer.
2. Suppose there were 6-year and 8-year cicadas and came up this year. How many years will elapse before they all come up together again. Show or explain how you found your answer.
3. For questions A and B, tell whether the answer is less than, greater than, or equal to the product of the cicada cycles.