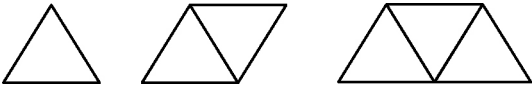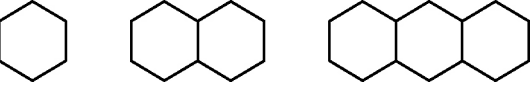Name: _____   Date: _____

Chapter 10 Problems of the Week

1. A certain type of insect produces one offspring every two days and lives for a total of eight days.
   a) Starting with one insect, what would be the maximum number of insects alive on day eight?
   b) What changes after day eight? How does this affect the growth pattern?

2. At a board meeting, everyone shakes hands with every other person at the meeting. If there are 21 handshakes, how many people are at the meeting?

3. Continue each pattern for 15 more values. Then, describe each sequence.
   a) 1, 4, 9, 16, 25, 36, …
   b) 1, 1, 2, 3, 5, 8, …
   c) 1, 3, 6, 10, 15, 21, …

4. Beth plans on using buttons to form the outline of a square. Each side of the square has ten buttons. How many buttons are needed to make the outline?

5. A toy train set contains triangular cars, square cars, and hexagonal cars. If the side of each car is 1 cm, calculate the perimeter of each train as a car is added, to a total of ten cars. Write an expression to describe each train. Then, graph the results.
   Hint: The visuals show the first three cars.
   a)
   b)
   c)

6. A mountain bike trail was built over four different terrains. A biker can travel at an average speed of 30 km/h on the first section, 25 km/h on the level part, 5 km/h on the uphill, and 50 km/h on the downhill. Each section takes about 15 min.
   a) Write an expression to evaluate the length of each section of the course. Explain what each part means represents.
   b) Use the expression to determine the length of each section and the total length of the course.
   c) Create a distance–time graph that shows each section of the course. Use the graph to explain which trail sections are the hardest and the easiest.