Determine if each relationship is linear, exponential, or neither. Explain how you know.

1) $f(x) = \frac{1}{3}(x + 2) - 7$

2) $f(x) = x^2$

3) $f(x) = 5\left(\frac{1}{4}\right)^x$

4)   Hannah wants to know how many crayons a certain box holds. Each row contains two more crayons than the row before it.

The population of a certain type of bird is decreasing in the mid-west. At the beginning of 2010, the area contained 350,000 birds. The amount of birds in this area decreases by 20% each year.

    5) Create a table, graph, and explicit equation for the situation. **LABEL EVERYTHING!**

0	
1	
2	
3	
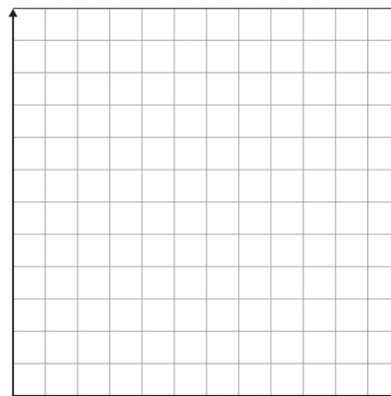
Equation: _____

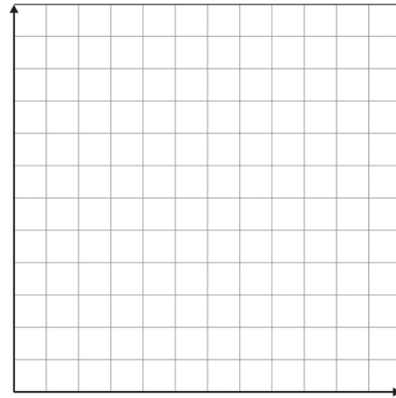6) Is the relationship in #5 Linear or Exponential?

7) Is the relationship in #5 Discrete or Continuous?

George collects hats. He already has 3 hats and decides to add 2 hats to his collection every year.

   8) Create a table, graph, and explicit equation for the situation. **LABEL EVERYTHING!**
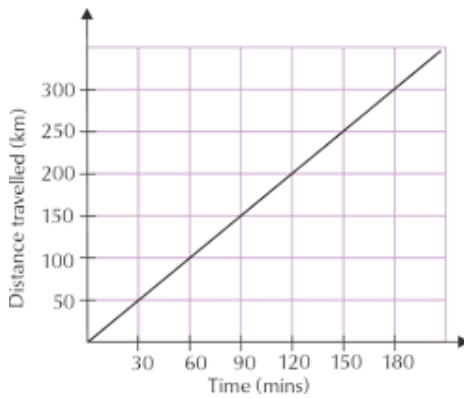
0	
1	
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Equation: _____

9) Is the relationship in #8 Linear or Exponential?

10) Is the relationship in #8 Discrete or Continuous?

11) Is the relationship shown below linear or arithmetic?

12) Is the relationship shown below linear or arithmetic?