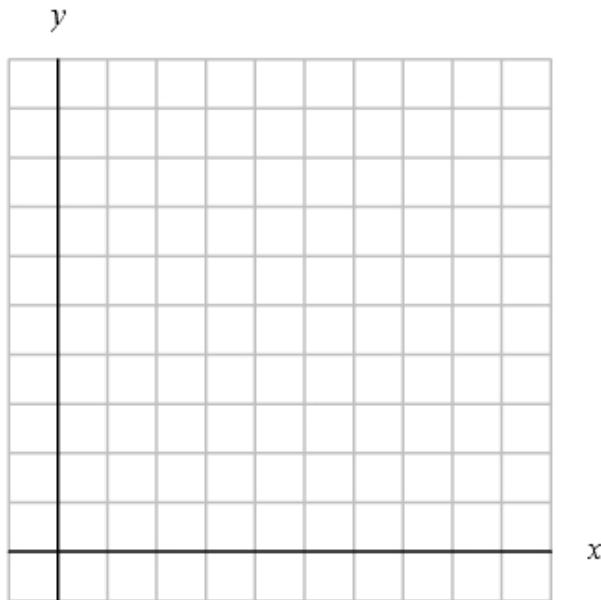


# Escalation Investigation

Name \_\_\_\_\_

The population of deer in Jackson County has been on the increase for the past 10 years. In the year 2000 the population was at 11,572. Over time the population has increased at a rate of 15%. The table below models the relationship between the years since 2000 and the population of deer.

*Label your x and y-axis and choose an appropriate scale.*



<i>Years After 2000</i>	<i>Deer</i>
0	11,572
1	13,308
2	15,304
3	17,600
4	20,240
5	23,275
6	26,767
7	30,782

**Write your answers in complete sentence!!**

1. How much did the population of deer increase from year 0 to year 2? How much did the population increase from year 4 to year 6?
  
2. What is the rate of change the population is growing at?

## Escalation Investigation

3. What type of function would best model the escalation of a population?  
Explain your reasoning.
  
4. The **growth rate** is the percent at which the population is increasing by each year. What is the decay rate for the Jackson County population of deer?
  
5. The **growth factor** is the percent left when you add the growth rate with 100%. What is the growth factor?
  
6. You can write an equation for the population of deer after  $x$  years using  $V(x) = a(b)^x$  where,  $a$  is the starting value and  $b$  is the factor. What is the equation for  $V(x)$ ?
  - a.) What will be the population this year? In 20 years? In the year 2110?
  
  - b.) Could the population of deer have started at 0 deer? Explain how this is shown by looking at the table. Explain how this makes sense in real-life.