

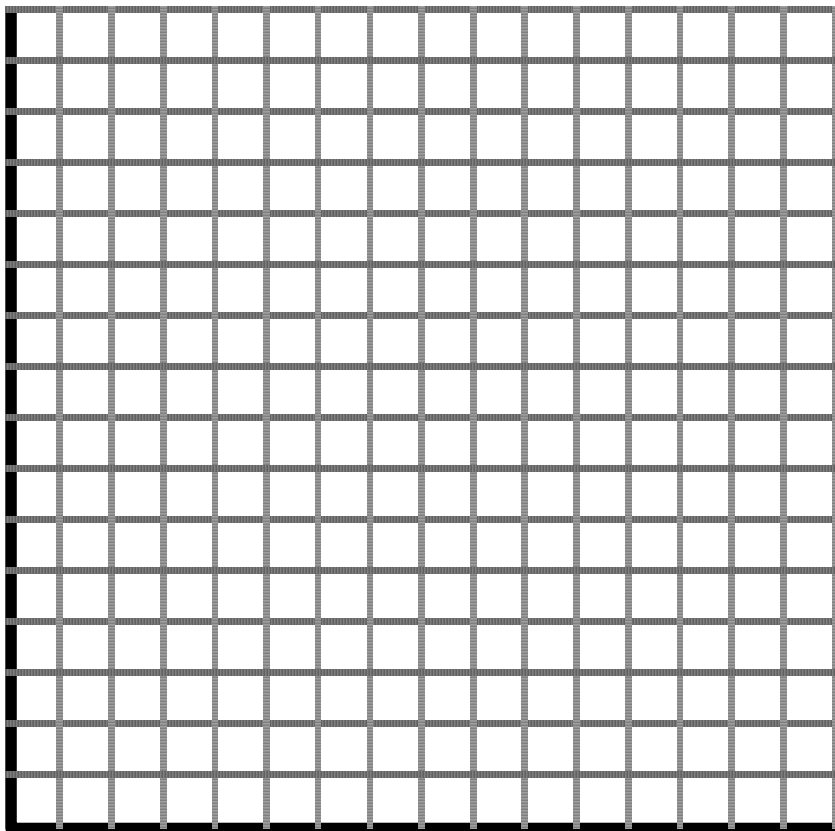
Activity 6: Growth and Decay

1. Predict the population of buffalo in the game reserve by looking at the table and a scatter plot. Use a trend line to predict the population in the year 2000.

Year	1980	1982	1984	1986	1988	1990	1992	1994	1996
Buffalo	50	75	90	115	145	165	180	200	230

2. Predict the population of Wolves in the game reserve by looking at the table and a scatter plot. Use a trend line to predict the population in the year 2000.

Year	1980	1982	1984	1986	1988	1990	1992	1994	1996
Wolves	10	20	30	60	95	135	155	180	220



3. In 1995 it was reported that there were 60,000 centenarians in the U.S. A researcher predicted a 7% annual growth rate and claimed that the number of centenarians would reach 232,000 by the year 2015. Verify the result.
4. A popular sports utility vehicle bought for \$40,000 in 2000 was predicted to depreciate at a rate of 15% each year. When will the value be half of the original price?
5. A scientist uses a model to predict wildlife populations. The results are shown. Determine the models she uses.

<b>Year</b>	2000	2001	2002	2003	2004	2005	2006	2007
<b>Deer</b>	1500	1545	1591	1639	1688	1739	1791	1845
<b>Bison</b>	600	570	542	514	489	464	441	419

6. The Consumer Price Index is estimated to double from 100 to 200 in 10 years. Determine a linear model of the form  $y=mx+b$  (where  $x$  is time in years and  $y$  is CPI) for the relationship and explain what the parameters  $m$  and  $b$  mean. Determine an exponential model of the form  $y=ab^x$  (where  $x$  is time in years and  $y$  is CPI) for the relationship and explain what the parameters  $a$  and  $b$  mean.