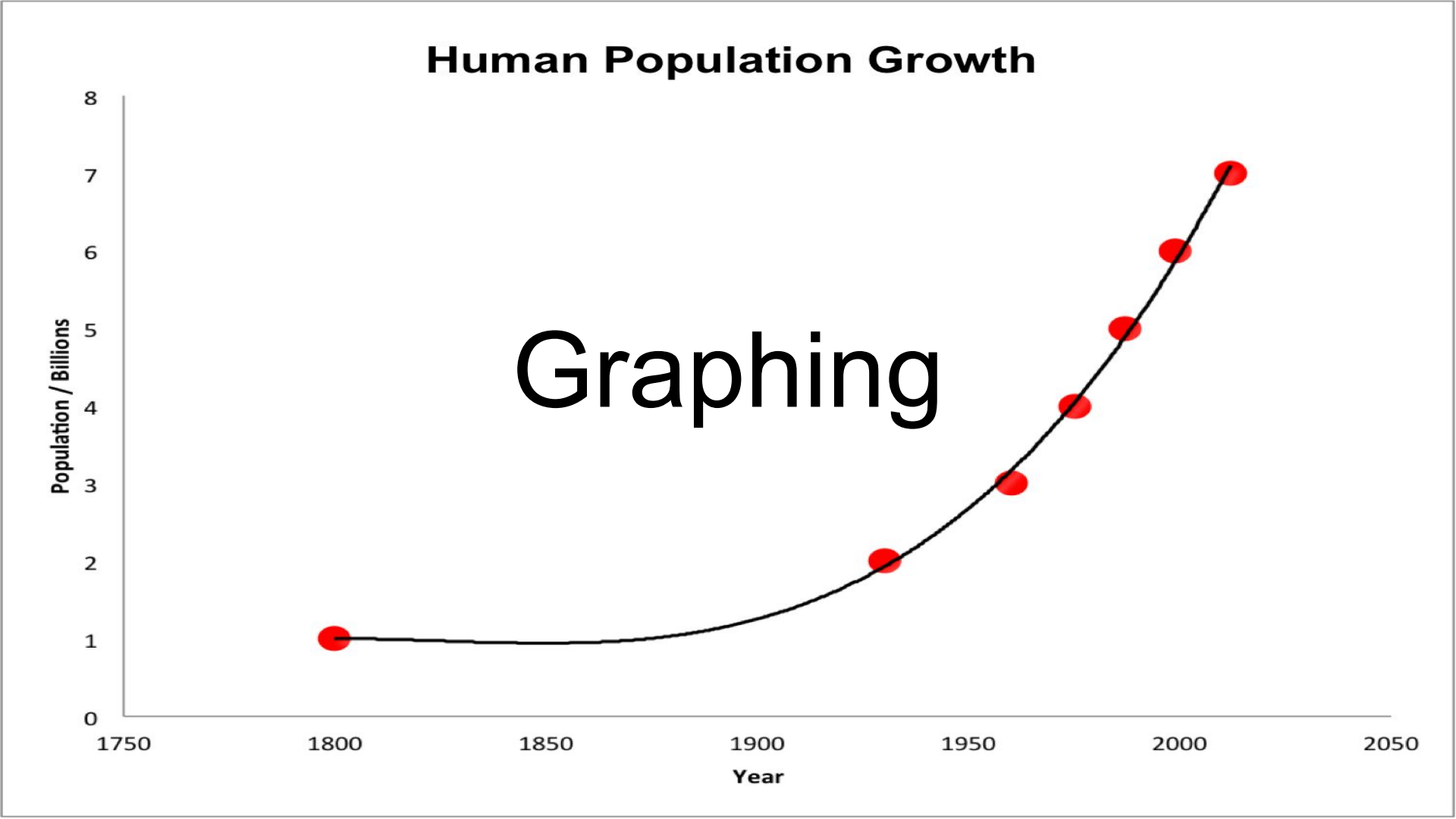
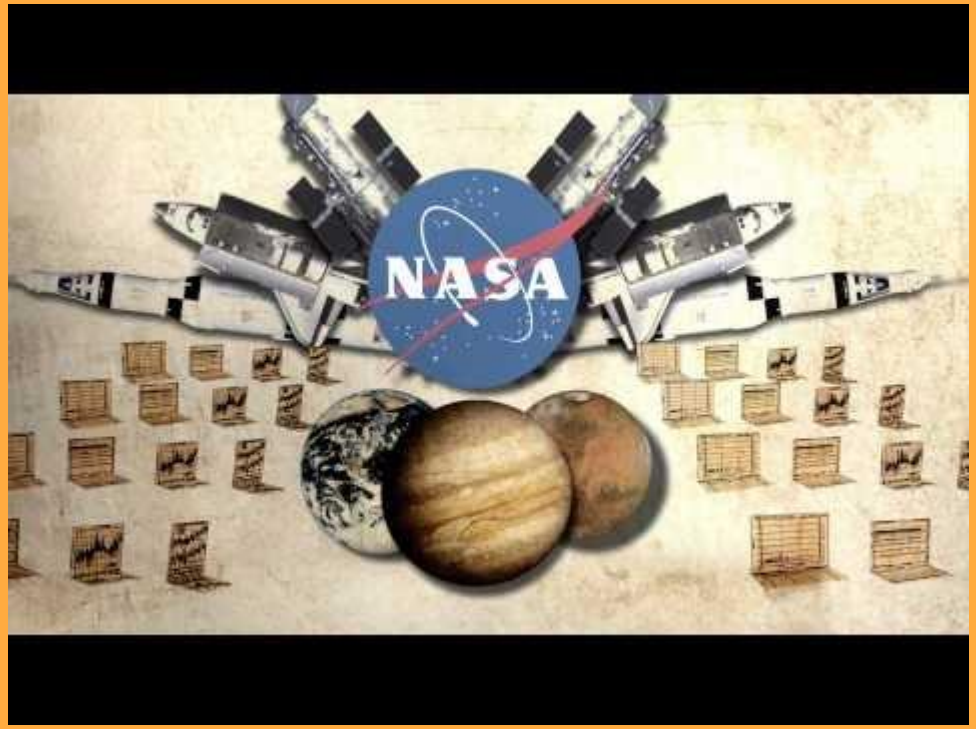

Human Population Growth
Graphing
Population / Billions
0
1
2
3
4
5
6
7
8
1750
1800
1850
1900
1950
2000
2050
Year


NASA

Data

- Individual facts, statistics, or items of information.
- Generated from experiment, observation or research.
- How do we convey (**Experimental Data**) to others?

1)**Results Section of lab reports (Written).**

2)**Data Table (Visual/Organizer).**

3)**Graphs (Visual).**

Time in minutes	Temperature (in °C)
0	5
10	26
20	45
30	61
40	74
50	80
60	85

What is the dependent variable?

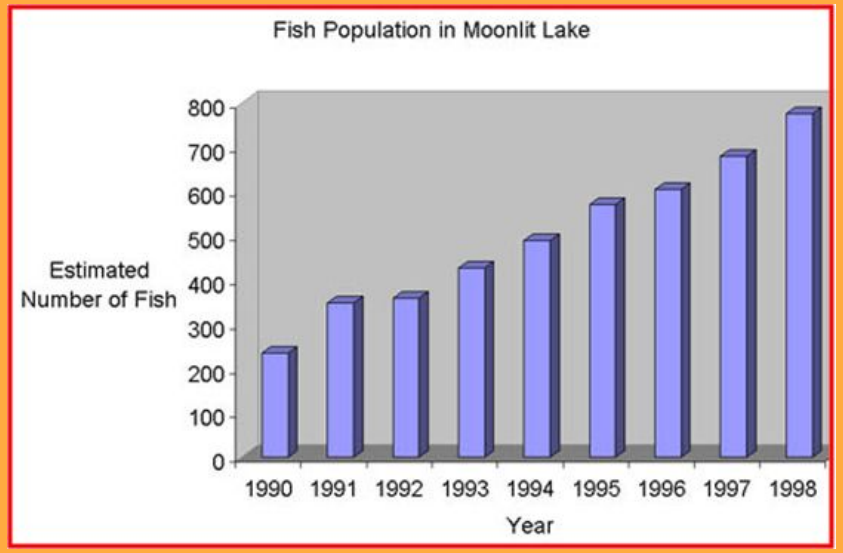
What is the independent variable?

Graphs

- A diagram (visual) showing the relationship between sets of numbers, or topics, that represents how one set depends or changes with another.
- Different graphs can show different things.

Examples...

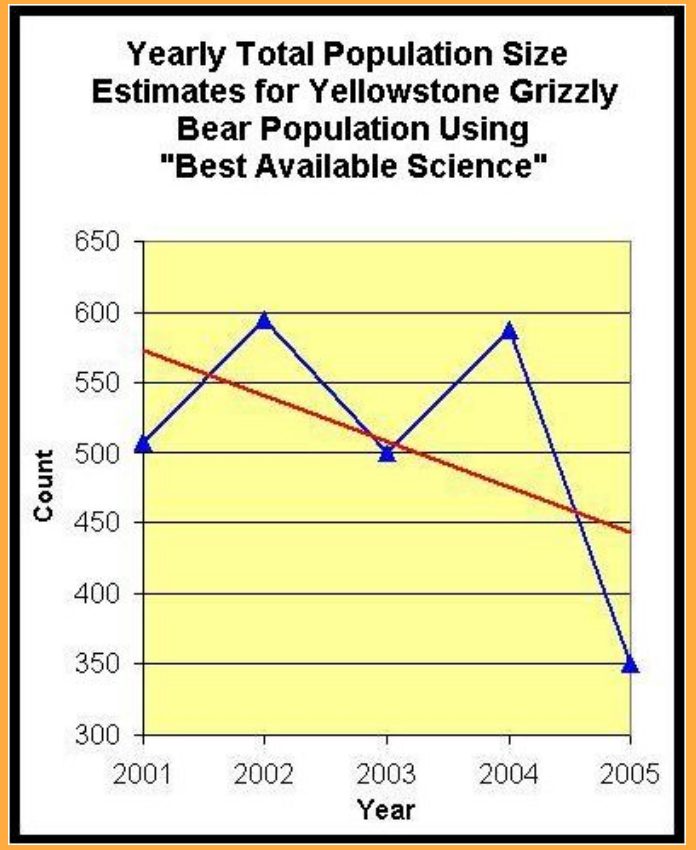
Bar Graph



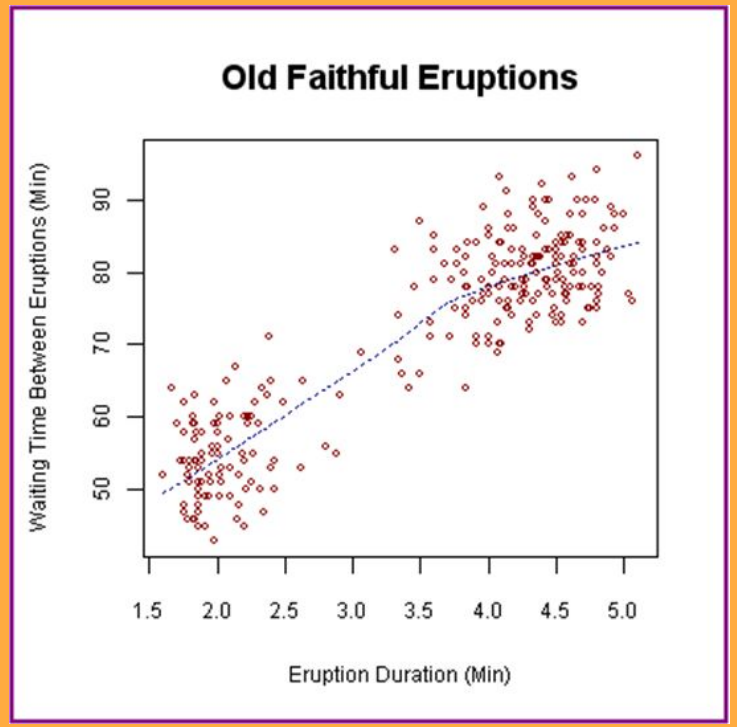
- Used to show relationships between variables that may be “fixed” in time or space.
- A “snap shot”.
- Bars can help to give a sense of quantity.

Line Graph

- Used to show relationships, such as rates.
- Changes over time or given variable.



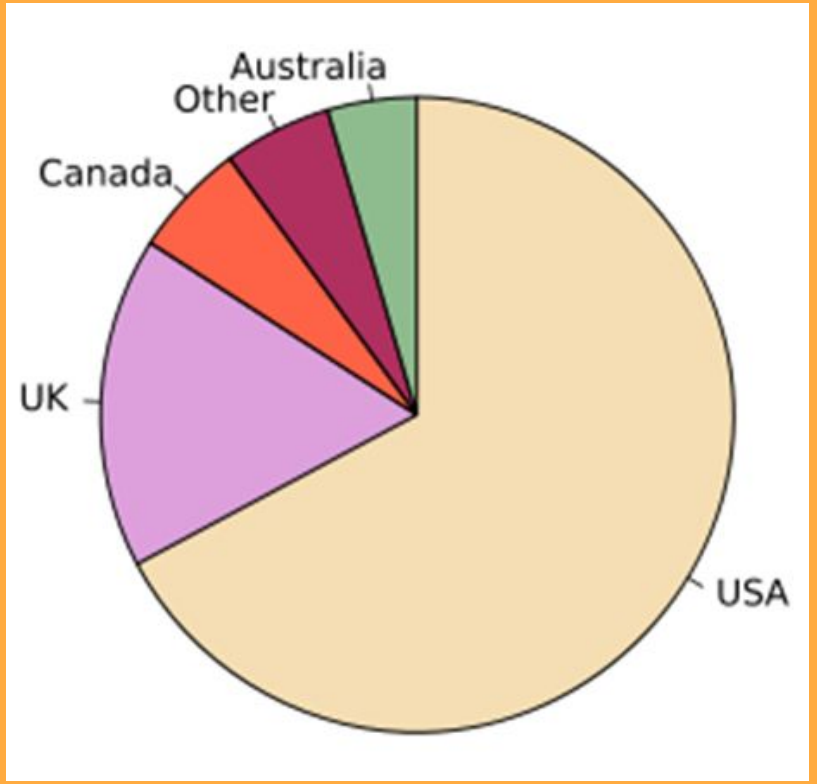
Scatter Plot



- Points “plotted” between to axis (the variables).
- Add t**rendlines** to see correlations in the data.

Pie Chart

- A circular chart that illustrates relative magnitudes or frequencies (Example Percentages)

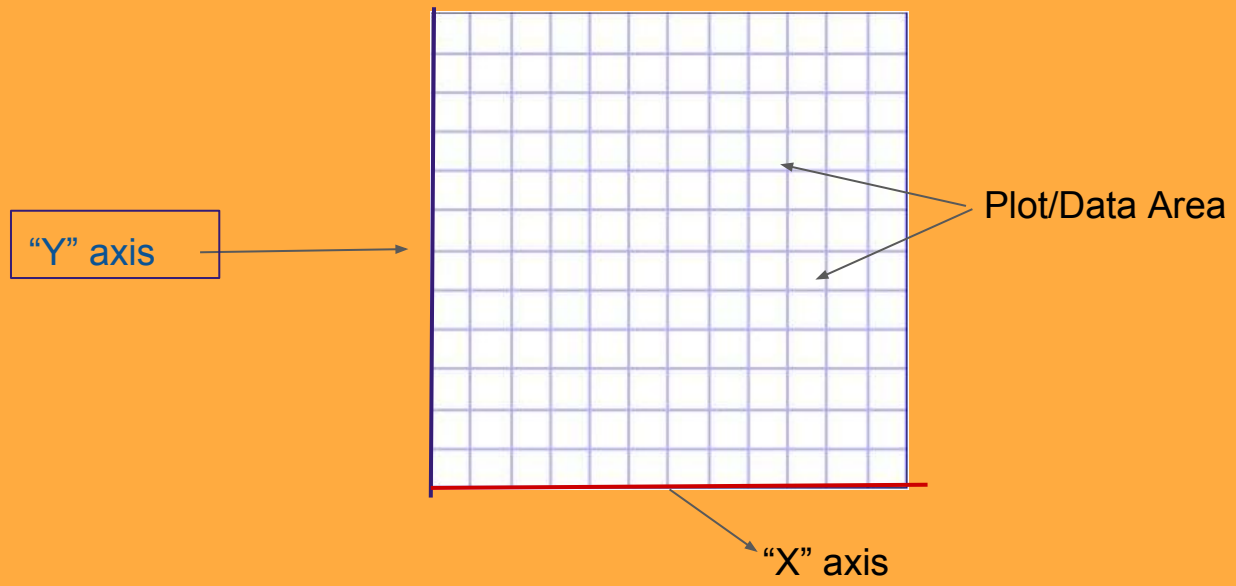


Pie chart of populations of English native speakers

How do you draw a graph?

- Important skill, to draw it means you can read a graph.
- Remember, it’s a visual expression, or picture, of data.

Basic Terms



How to Make a Graph

1)Determine your variables.

-Rule of thumb: Independent Variable is “X” axis, and Dependent Variable is “Y” axis.

Isle Royale Populations

Year	Wolf	Moose	Year	Wolf	Moose	Year	Wolf	Moose
1982	14	700	1988	12	1,653	1994	15	1,800
1983	23	900	1989	11	1,397	1995	16	2,400
1984	24	811	1990	15	1,216	1996	22	1,200
1985	22	1,062	1991	12	1,313	1997	24	500
1986	20	1,025	1992	12	1,600	1998	14	700
1987	16	1,380	1993	13	1,880	1999	25	750

SOURCE: Isle Royale National Park Service

Independent Variable = X Axis

Dependent Variable A = Y Axis

Dependent Variable B = Y Axis

How to Make a Graph

- Calculate your number line (**Range**).

Independent Variable

Largest X Value = 1999 (End Date)

Smallest X Value = 1982 (Begin Date)
Number of Units = 17

Dependent Variable A

Largest Y Value = 25 (Highest Pop.)

Smallest Y Value = 11 (Lowest Pop.)

Number of Units = 14

Dependent Variable B

Largest Y Value = 2400 (Highest Pop.)

Smallest Y Value = 500 (Lowest Pop.)

Number of Units = 1900

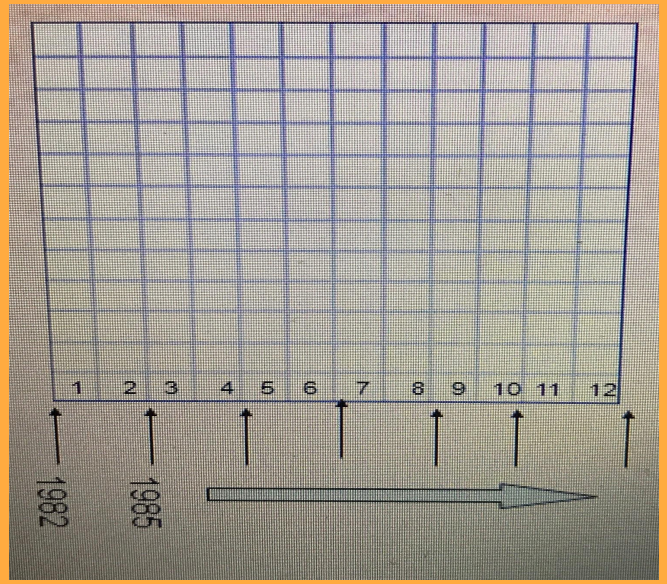
Isle Royale Populations

Year	Wolf	Moose	Year	Wolf	Moose	Year	Wolf	Moose
1982	14	700	1988	12	1,653	1994	15	1,800
1983	23	900	1989	11	1,397	1995	16	2,400
1984	24	811	1990	15	1,216	1996	22	1,200
1985	22	1,062	1991	12	1,313	1997	24	500
1986	20	1,025	1992	12	1,600	1998	14	700
1987	16	1,380	1993	13	1,880	1999	25	750

SOURCE: Isle Royale National Park Service

How to Make a Graph

- Plot your number line(s). [Independent V.]



-Determine the space for your number line.

=12

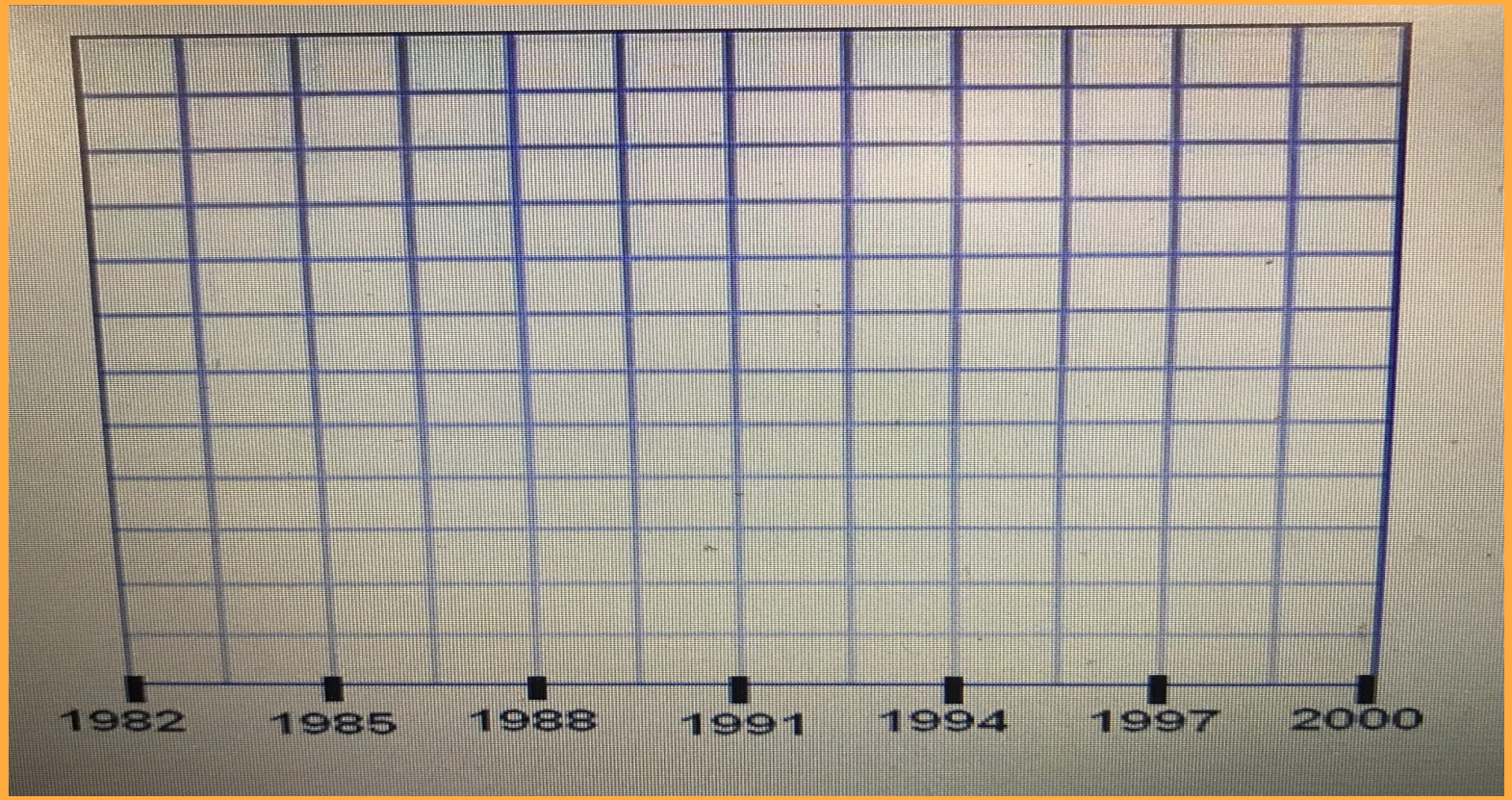
-Divide the number line increment, by the space.

=17/12=1.41888

- Just round up….

So...Each box is 1.5 years

-Plot data.


1982
1985
1988
1991
1994
1997
2000

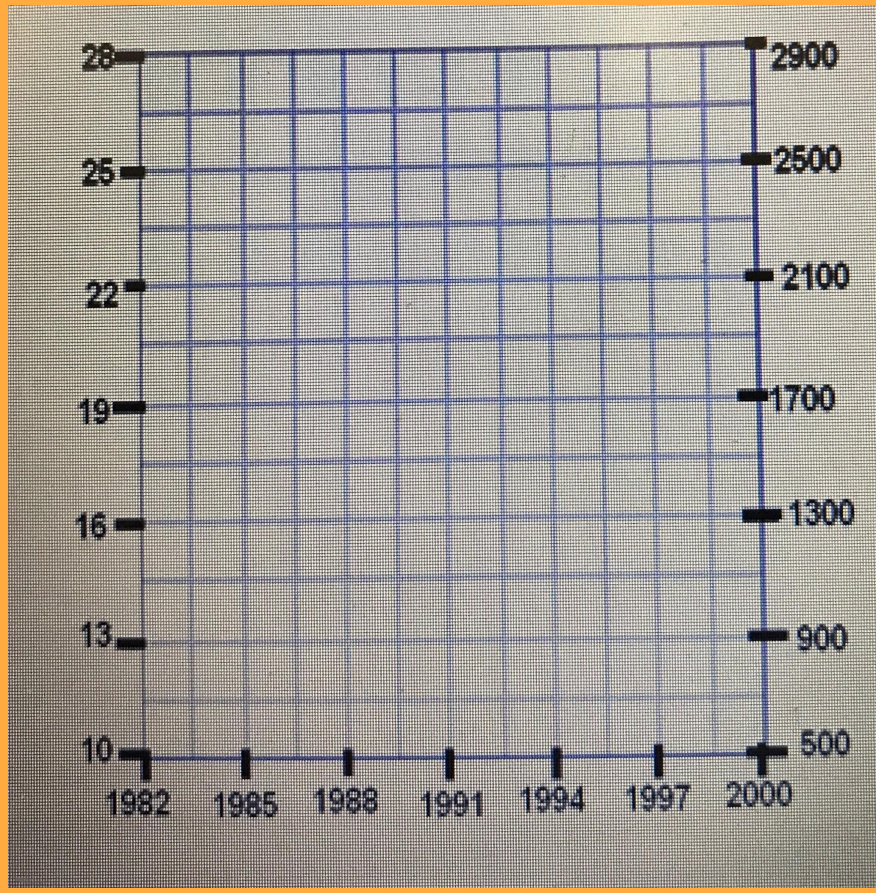
How to make a Graph

- Plot your number line(s). [Dependent V.s]

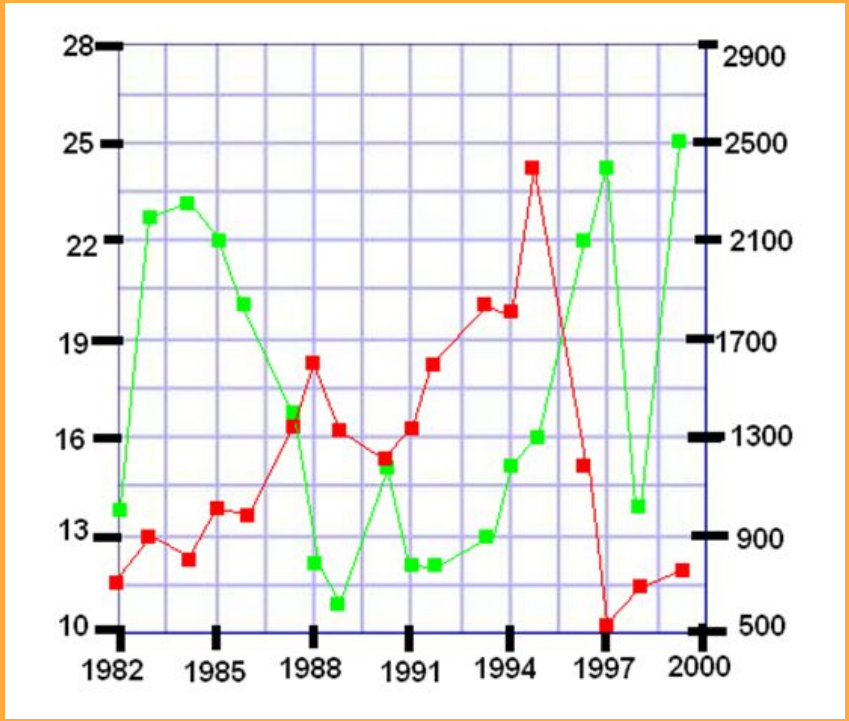
-Do the same thing for the Y variables…..

-“A” = 14/12 = 1.1666 = **1.5 / box**

--“B” = 1900/12 = 158.333 = **200/box**



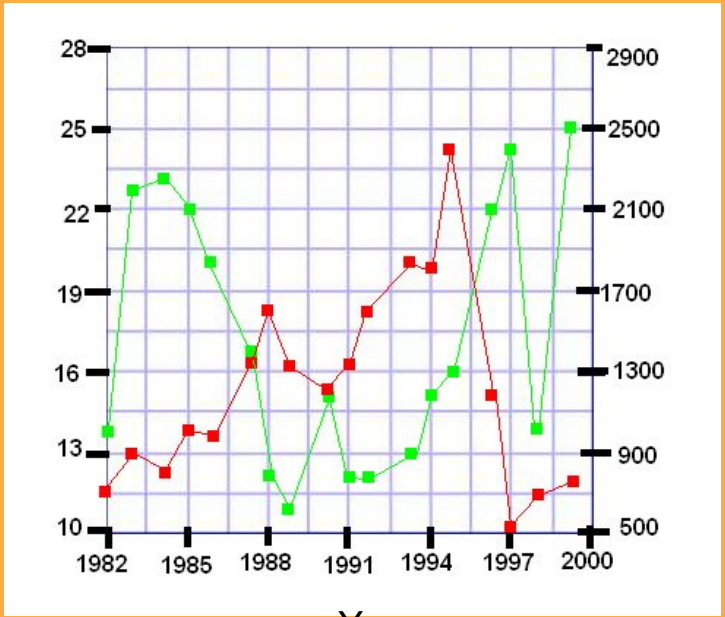
How to Make a Graph



- Plot Your Data.
- Connect Lines

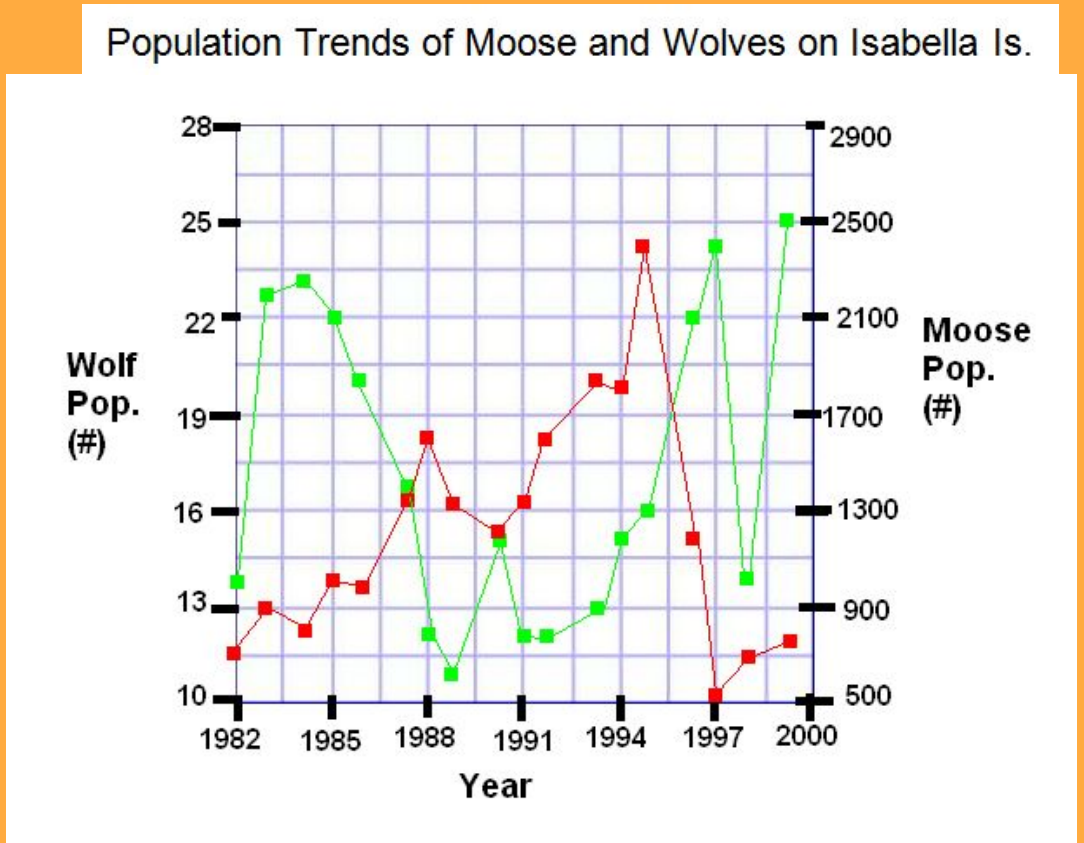
How to Make a Graph

- Label your axis (Labels **AND** Units!)



How to Make a Graph

- Add Title.



How to Make a Graph

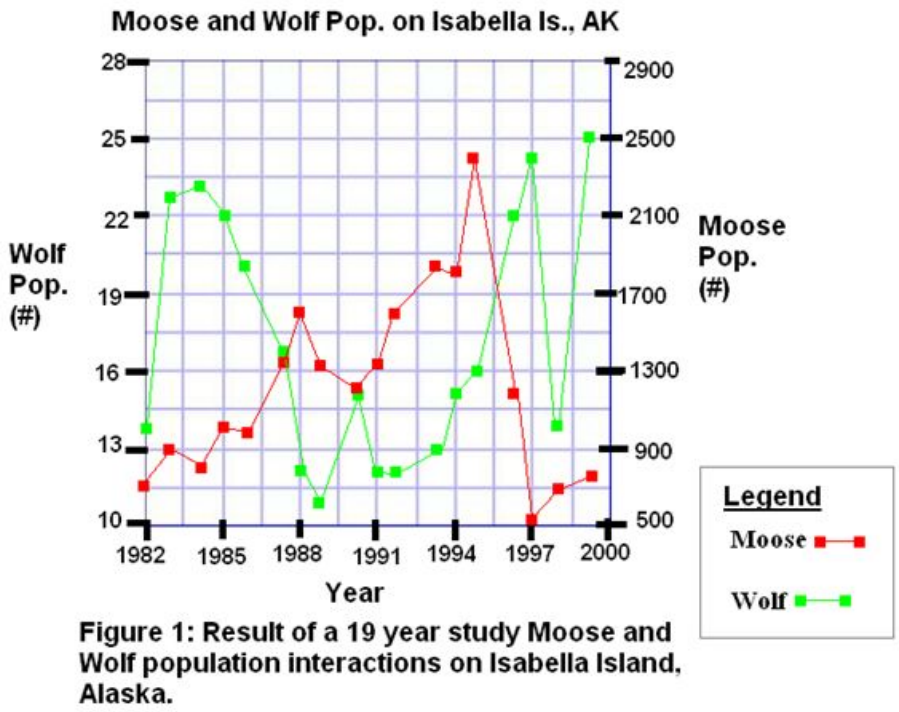


Figure 1: Result of a 19 year study Moose and Wolf population interactions on Isabella Island, Alaska.

- Add Legend (and other features <u>as needed</u>).