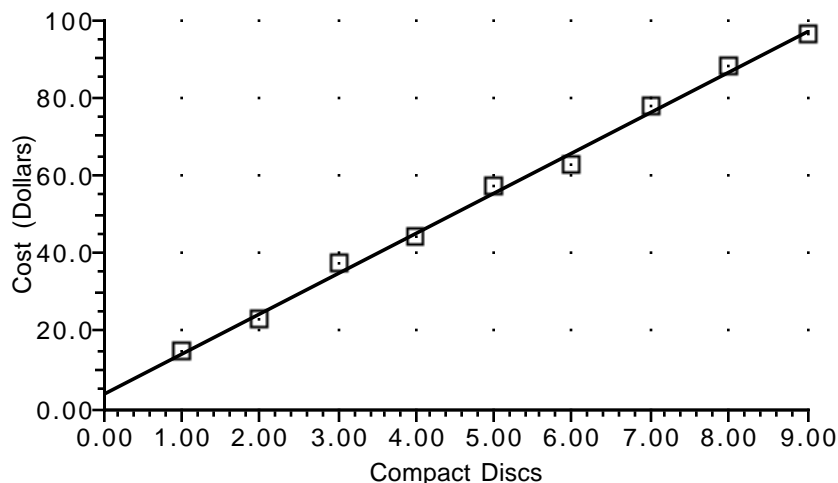


# Unit 1 Review: Scientific Methods

1. The following data are based on charges for membership in a CD purchasing club.



Statistics:      Slope      Y Intercept   C.O.R.  
 Data Set 1    10.3±0.246    4.00±1.38    0.998

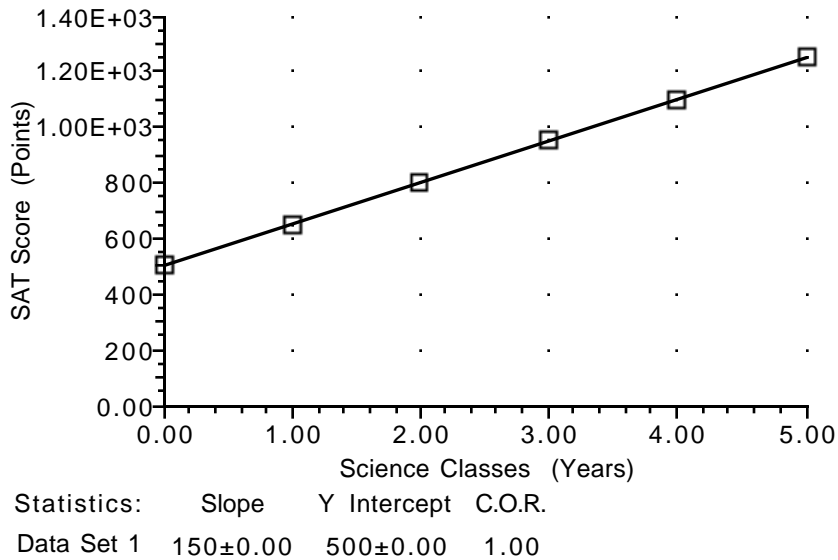
- What are the units of slope for this graph?
- What is the average price of a compact disc?
- What is the mathematical equation that states the relationship described by the graph?

2. The following data were collected during an experiment:

Mass (kg)	Time (s)			
	Trial 1	Trial 2	Trial 3	Trial 4
5	10.2	9.5	10.5	10.3
10	15.3	15.6	15.2	15.4
15	23.4	24.5	23.8	23.1
20	35.0	35.8	35.2	35.4

- Express the average time for each mass, using the correct number of significant figures.
- Write a clear, English sentence that describes a general relationship between mass and time.

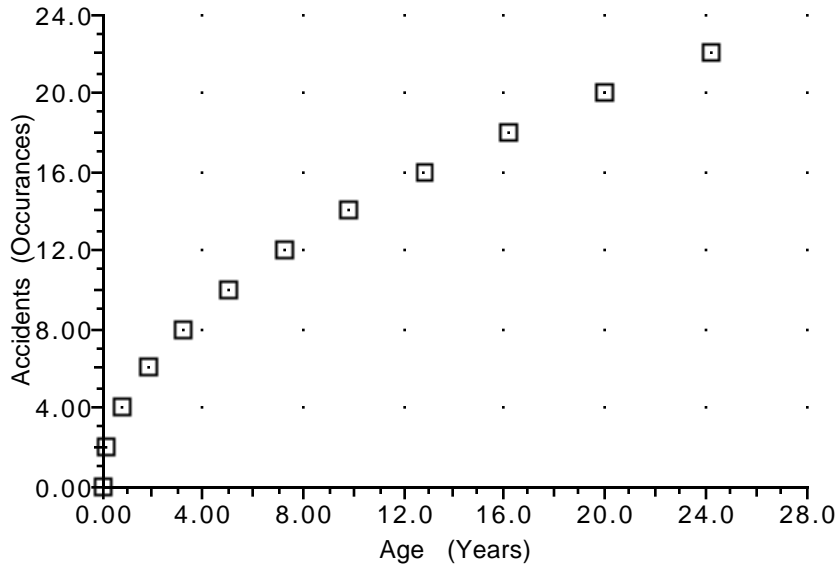
3. The graph below shows the relationship between scores on the SAT exam and the number of years students study science.



- What is the mathematical equation that states the relationship described by the graph?
  - Write a clear, English sentence that describes the meaning of the slope.
  - What would be the SAT score of a student who took seven science classes?
4. A student performed an experiment with a metal sphere. The student shot the sphere from a slingshot and measured its maximum height. Six different trials were performed with the sphere being shot at a different angle from the horizontal for each trial.
- What is the relationship being studied?
  - What is the independent variable in this experiment?
  - What is the dependent variable in this experiment?
  - What variable must be held constant throughout this experiment?

5. Describe the relationships that we proved in our pendulum lab. The variables included were period, mass, amplitude, and length. **Use complete, English sentences to describe the relationships!!**

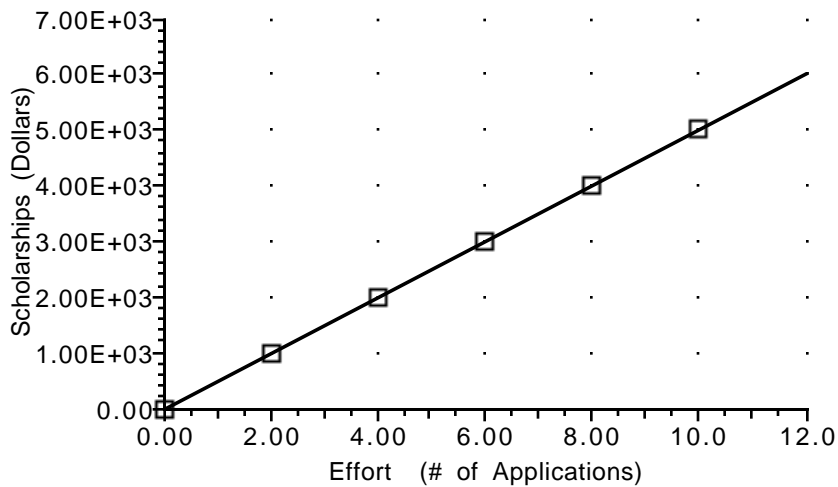
6.



a. What type of relationship does this graph suggest?

b. What variables would you plot to linearize the data?

7. Below is a graph of the relationship between scholarship awards and the effort students exerted trying to win scholarships.



Statistics: Slope Y Intercept C.O.R.  
 Data Set 1 500±0.00 0.00±0.00 1.00

a. Write the mathematical equation that states the relationship described by the graph.

- b. What does the y-intercept illustrate?
- c. Using the mathematical model, how many applications would be needed to earn \$8000?
8. For each of the following relationships:
- Write what method should be used to linearize the data.
  - Write the mathematical equation that would describe the straight line produced.
  - Draw a graph which visually represents the relationship.
- a. Hyperbolic (Inverse)

b. Top Opening Parabola

c. Side Opening Parabola