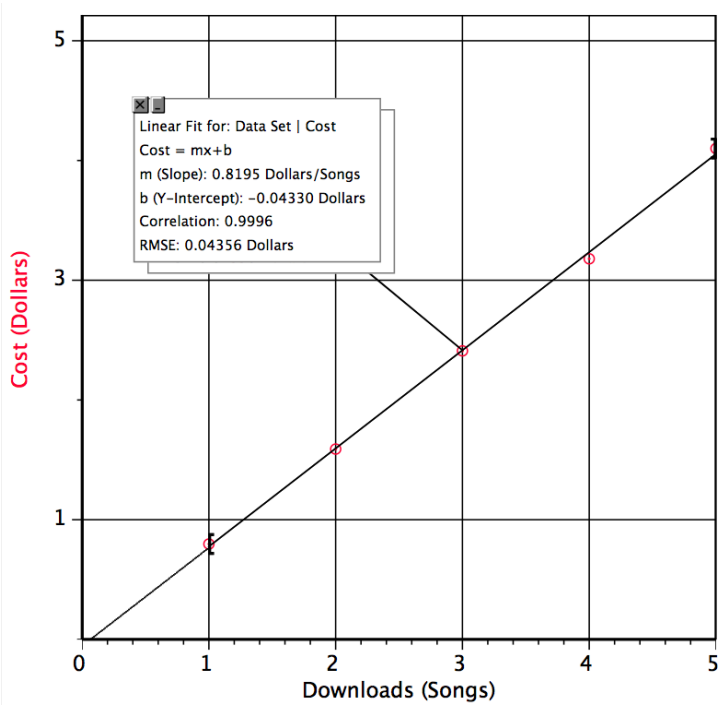
Unit I: Making Mathematical Models

Name_____
Date_____
Period____

1. The following data are based on charges for membership in a music downloading club.
a. Create a **mathematical model** from this graph. Do it as is shown on the handout, " How to Create a Mathematical Model from a Straight Line Graph." Be sure to include all three steps and show all your work.



Step One: Make the Model

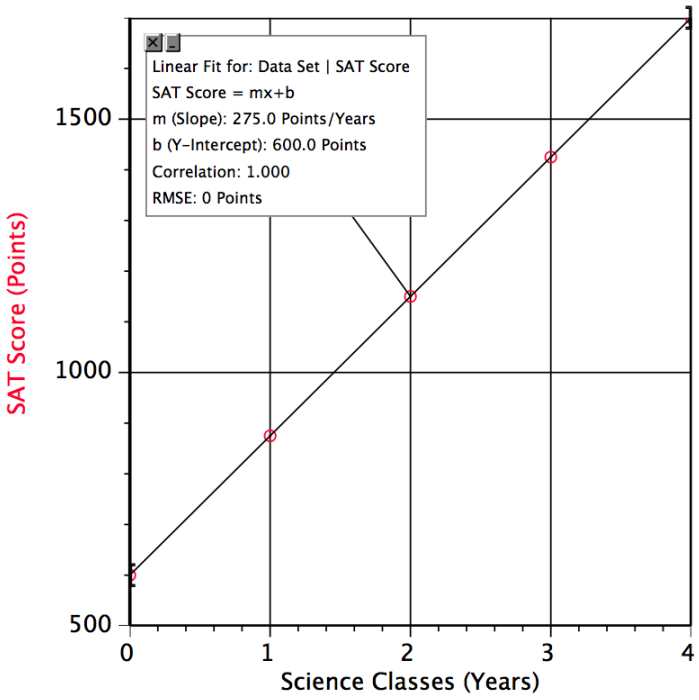
Step Two: 5% Rule

Step Three: Box Final Model

b. What are the units of slope for this graph?_____
c. What is the average price to download a song?_____

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

a. Create a **mathematical model** from this graph. Do it as is shown on the handout, " How to Create a Mathematical Model from a Straight Line Graph." Be sure to include all three steps and show all your work.



Step One: Make the Model

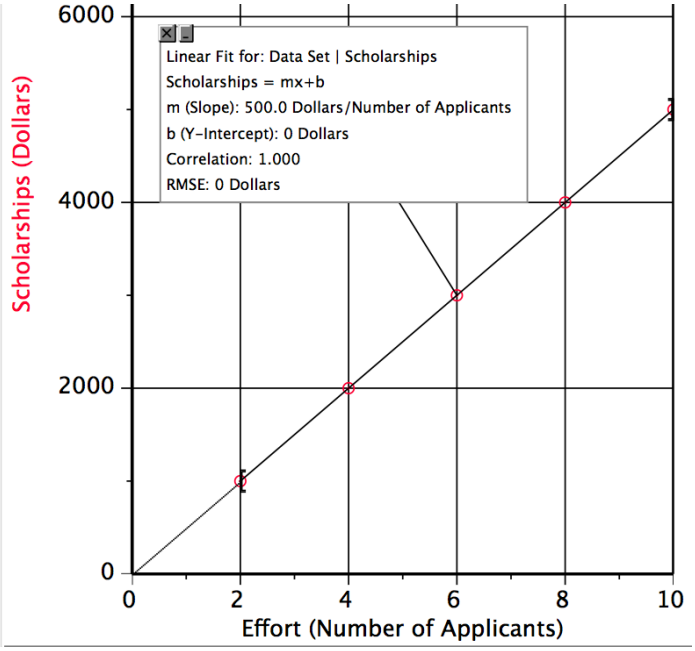
Step Two: 5% Rule

Step Three: Box Final Model

b. Write a clear, English sentence that describes the meaning of the slope.

c. What would be the SAT score of a student who took seven science classes (show work)?

3. Below is a graph of the relationship between scholarship awards and the effort students exerted trying to win scholarship.
a. Create a **mathematical model** from this graph. Do it as is shown on the handout, " How to Create a Mathematical Model from a Straight Line Graph." Be sure to include all three steps and show all your work.



Step One: Make the Model

Step Two: 5% Rule

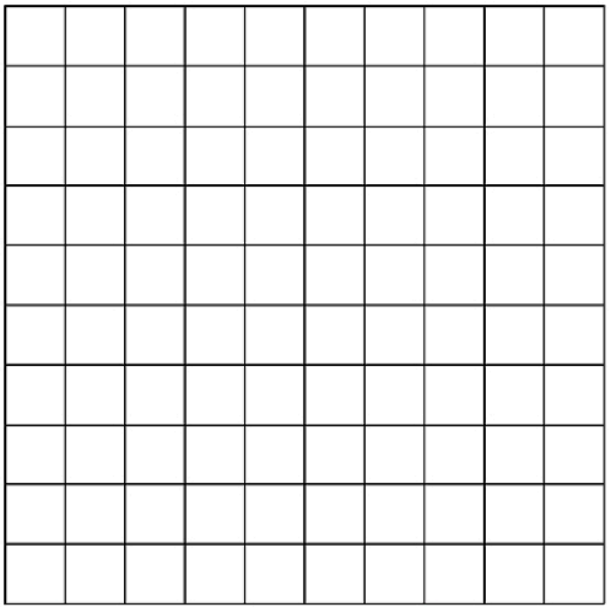
Step Three: Box Final Model

b. What does the y-intercept illustrate?

c. Using the mathematical model, how many applications would be needed to earn $8000 (show work).

4. A student collected the following data:

Time Jumped (minutes) X-axis	**Heart Rate (Beats per minute)** Y-Axis
1	80
2	100
3	120
4	140
5	160



a. Graph the data. Be sure to include: x and y axis labels and units, and "line of best fit"
b. **Calculate the slope of the line**. Use handout, "How to Find the Slope of a Line" and show work.

c. Create a **mathematical model** from this graph. Do it as is shown on the handout, " How to Create a Mathematical Model from a Straight Line Graph." Be sure to include all three steps and show all your work.
Step One: Make the Model **Step Two**: 5% Rule

Step Three: Box Final Model

d. Using your mathematical model how many minutes would you have to jump to have a heart rate
of 185 beats per minute (show work)?

5. Can you use y = mx+b to mathematically model the relationship shown in the graph to the right? Why or why not?