Excel | Graphing

Name: _____ Period: ___

4 | Growth Rate of a Pine Tree

The data provided tracks the height of a specific pine tree over time after it was purchased at a nursery. Plot the data and add a best fit line to answer the following questions:

1. What is the slope of the best fit line (with units)?

   0.57 m/yr

2. How tall was the tree on the day it was purchased from the nursery?

   2.89 m (y-intercept)

3. Write the equation of the line. (use **t** for time and **h** for height)

   h = (0.57 m/yr)(t) + (2.89 m)

4. Use your equation to predict the height of the tree when it reaches an age of 47.

   h = (0.57 m/yr)(47 yr) + (2.89 m) = **29.68 m**

5 | Jump Height vs Bike Weight

In BMX dirt-bike racing, jumping high or "getting air" depends on many factors: the rider's skill, the angle of the jump, and the weight of the bike. Here are data about the maximum jumping heights for various bike weights. Plot the data and add a best fit line to answer the following questions:

Weight (pounds)	19.0	19.5	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0
Height (inches)	10.35	10.30	10.25	10.20	10.10	9.97	9.85	9.80	9.79	9.70	9.60

1. What is the slope of the best fit line (with units)?

   -0.156 in/lb

2. Write the equation of the line. (use **w** for weight and **h** for height)

   h = (-0.156 in/lb)(w) + (13.346 in)

3. Determine the maximum height that an 18.4 lb bike could jump.

   h = (-0.156 in/lb)(18.4 lb) + (13.346 in) = **10.48 in**

6 | Rolling Tire

A tire is rolled down a flat road. Data for the tires distance from the starting point was collected and placed into the following data table. Plot the data and add a best fit line to answer the following questions:

Time (s)	0	2	5	7	8	9	12	15
Distance (m)	0	12	24	37	42	46	62	76

1. What is the slope of the best fit line (with units)?

   5.07 m/s

2. Write the equation of the line. (use **t** for time and **d** for distance)

   d = (5.07 m/s)(t) + (0.63 m)

3. After 25.4 seconds, how far is the tire from the starting point?

   d = (5.07 m/s)(25.4 s) + (0.63 m) = **129.41 m**

7 | Lab Data

Your lab group collects the time it takes a battery powered car to move in 0.5 meter increments. For each distance, you collect 3 trials worth of time information. Average these times and plot the distance vs average time and add a best fit line to answer the following questions. You will need to rearrange the columns on your table in order to create a graph with time on the x-axis and distance on the y-axis.

1. What is the slope of the best fit line (with units)?

   3.0 m/s

2. Write the equation of the line. (use **t** for time and **d** for distance)

   d = (3.0 m/s)(t)

3. How long would it take for this battery powered car to go 12.4 meters?

   12.4 m = (3.0 m/s)(t)

   t = 4.13 s