

Variation Homework 1

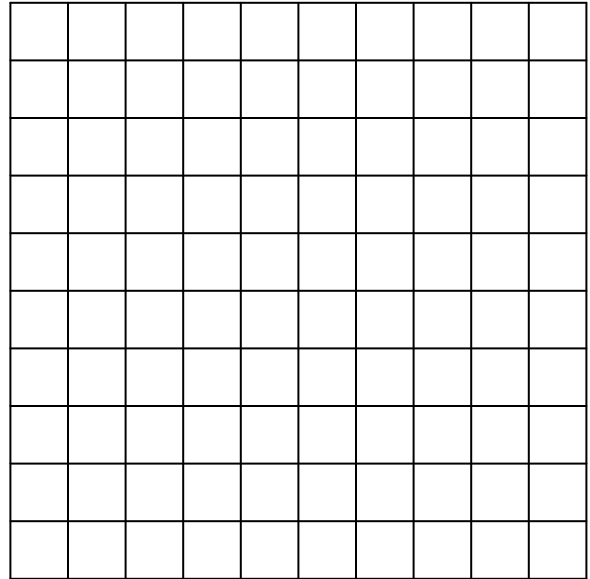
Name: _____

Hour: _____ Date: _____

Given the following data, construct a variation graph and answer the questions that follow

A spring is hung from a support and a mass of 500 g is placed on the end and allowed to come to rest. The initial displacement is changed by pulling the spring down various distances and letting go. The mass bounces up and down and the time for the mass to complete 1 bounce (the period) is measured. The data is as follows:

| Displacement (cm) | Period (s) |
|-------------------|------------|
| 5 | 1.42 |
| 10 | 1.39 |
| 15 | 1.43 |
| 20 | 1.37 |
| 25 | 1.41 |

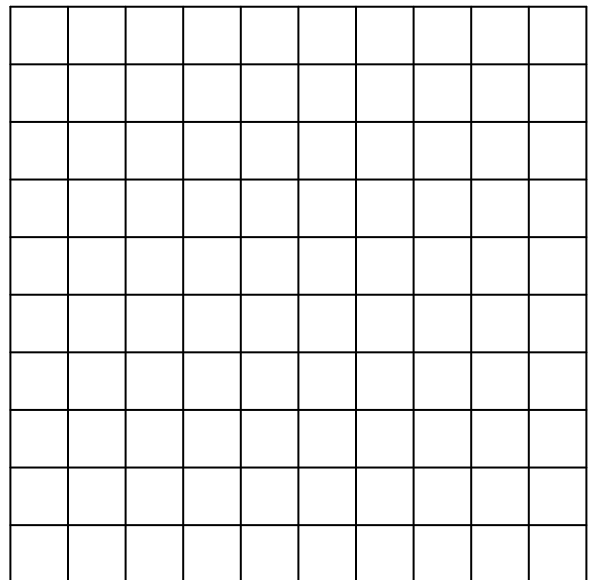


Be sure to:

- Label all axes with units.
- Set up a good range (make sure the origin is 0,0).
- Draw a smooth curve through the points.
- State the type of variation.
- Write a sentence that describes relationship.
- Write a mathematical equation for the graph.

Sitting at rest in my *Subaru Outback*, I stepped on the gas and watched the speedometer rise. I took speed-readings at 5 different times. The data is as follows:

| Time (s) | Speed (mi/hr) |
|----------|---------------|
| 2 | 6 |
| 5 | 15 |
| 6 | 18 |
| 8 | 24 |
| 10 | 30 |

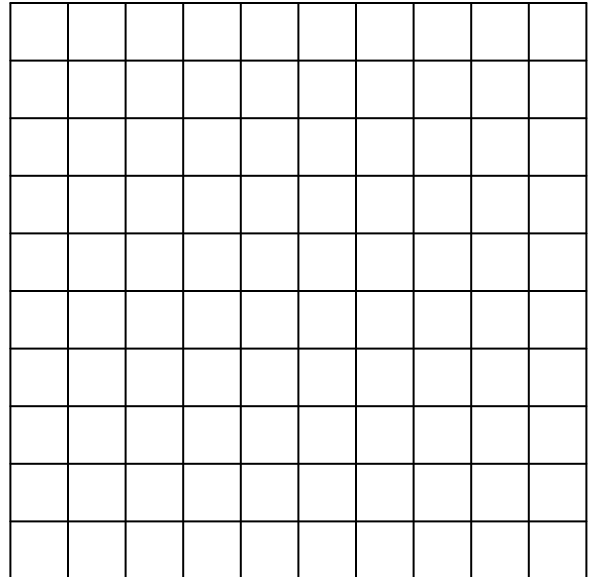


Be sure to:

- Label all axes with units.
- Set up a good range (make sure the origin is 0,0).
- Draw a smooth curve through the points.
- State the type of variation.
- Write a sentence that describes the relationship.
- Find and state the slope with units (do it by hand).
- Write a sentence to describe the slope.
- State the vertical axis intercept.
- Write a sentence that describes the vertical axis intercept.
- Write a mathematical equation for the graph.

A pressure sensor is attached to a piston and the piston is sealed. A student changes the volume by compressing the piston and the measures the pressure. The data is as follows:

| Volume (cm ³) | Pressure (atm) |
|---------------------------|----------------|
| 400 | 1 |
| 200 | 2 |
| 100 | 4 |
| 50 | 8 |
| 25 | 16 |

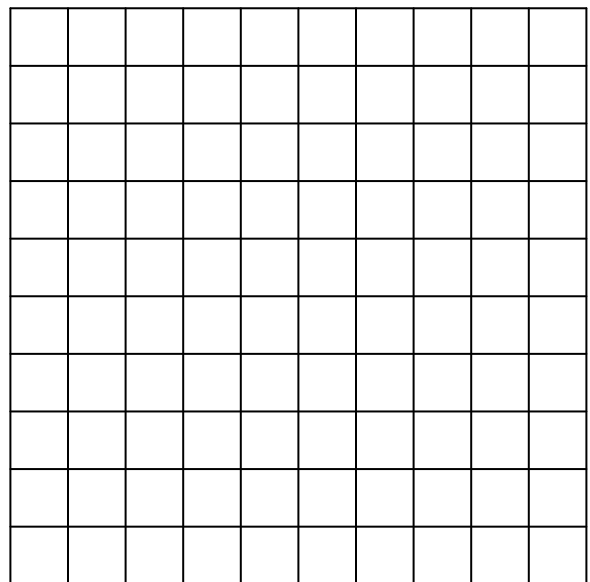


Be sure to:

- Label all axes with units.
- Set up a good range (make sure the origin is 0,0).
- Draw a smooth curve through the points.
- State the type of variation.
- Write a sentence that describes the relationship.
- What would happen to the pressure if the volume were made really really really small?
- Write a mathematical equation for the graph.

In order to measure the power dissipated by various light bulbs, a students uses a device called a multimeter. A multimeter can directly measure the power dissipated by a light bulb. Power (P) is measured in Watts (W). A student changes the Resistance (R) which is measured in Ohms (Ω) by using different bulbs Power is measured. The data is as follows:

| Resistance (Ω) | Power (W) |
|-------------------------|-----------|
| 10.0 | 10 |
| 20.0 | 40 |
| 24.5 | 60 |
| 27.4 | 75 |
| 31.7 | 100 |



Be sure to:

- Label all axes with units.
- Set up a good range (make sure the origin is 0,0).
- Draw a smooth curve through the points.
- State the type of variation.
- Write a sentence that describes the relationship.
- State the vertical axis intercept.
- Write a sentence that describes the vertical axis intercept.
- Write a mathematical equation for the graph.