**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Acceleration Lab**

**Objective:**

* **Distinguish between the variables of distance, displacement, speed, velocity, and acceleration.**
* **Calculate the average speed of an object using the change of position and elapsed time.**
* **Describe and analyze the motion that a velocity-time graph represents, given the graph.**
* **Use the change of speed and elapsed time to calculate the average acceleration for linear motion.**

**Hypothesis (if……then):**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Questions:**

1. **Predict the shape of the line in the velocity vs. time graph?**
2. **Predict the shape of the line in the acceleration vs. time graph?**

**Data:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Distance (cm)** | **T1** | **T2** | **T3** | **Taverage** | **Velocity** | **Acceleration** |
| **20** |  |  |  |  |  |  |
| **30** |  |  |  |  |  |  |
| **40** |  |  |  |  |  |  |
| **50** |  |  |  |  |  |  |
| **60** |  |  |  |  |  |  |
| **70** |  |  |  |  |  |  |

**Graph (data from table)**

**V vs. T A vs. T**

**Analyses**

1. **As the time increases the velocity of the car does what?**

1. **Compare the relationship between time and velocity.**
2. **As the time increases the acceleration of the car does what?**
3. **Compare the relationship between time and acceleration.**
4. **Propose a mathematical model that describes this relationship?**

**Conclusion (In a paragraph is your hypotheses accepted or rejected and construct a complete picture of motion):**