**Using a Graph to Calculate Acceleration**

1. Make a graph using these data points

|  |  |  |
| --- | --- | --- |
| **Interval** | **Time in seconds** **(s)** | **Distance in meters (m)** |
|  | 0 | 0 |
| 1 |
| 0.8 | 0.1 |
| 2 |
| 1.1 | 0.2 |
| 3 |
| 1.5 | 0.5 |
| 4 |
| 1.9 | 0.8 |
| 5 |
| 2.0 | 1.0 |
| 6 |
| 2.4 | 1.3 |
| 7 |
| 2.6 | 1.5 |
| 8 |
| 2.9 | 1.6 |
| 9 |
| 3.0 | 1.7 |
| 10 |
| 3.3 | 1.8 |
| 11 |
| 3.8 | 1.9 |
|  |

1. Connect the dots on the graph with a ruler.
2. Choose 2 intervals where the car was speeding up at the beginning of the trial
	1. For example interval 1 ( 0,0-0.8, 0.1)and interval 3 (1.1,0.2-1.5-0.5)
	2. Calculate the 2 velocities for those 2 intervals
	3. Use this equation:

$velocity(^{m}/\_{s})=\frac{(y\_{2}-y\_{1})m}{\left(x\_{2}-x\_{1}\right)s}$

1. Calculate the acceleration of the interval
	1. Interval 1 will be the beginning velocity ($v\_{0}$)
	2. Interval 3 will be the ending velocity ($v\_{1}$)
	3. Time will be the end time minus the beginning time
	4. Use this Equation:

$acceleration(^{m}/\_{s^{2}})= \frac{(v\_{1}-v\_{0})^{m}/\_{s}}{t(s)}$

1. Repeat finding the velocity on 2 more intervals
	1. Use interval 7 and interval 11
	2. Calculate velocity for both intervals

$velocity=\frac{(y\_{2}-y\_{1})m}{\left(x\_{2}-x\_{1}\right)s}$

1. Calculate the velocity for the interval
	1. Interval 7 will be the beginning velocity ($v\_{0}$)
	2. Interval 11 will be the ending velocity ($v\_{1}$)
	3. Time will be the end time minus the beginning time

$acceleration= \frac{(v\_{1}-v\_{0})^{m}/\_{s}}{t(s)}$

1. Look at the acceleration when the car was speeding up and compare it to when the car was slowing down.
	1. A positive (+) number in acceleration means speeding up
	2. A negative (-) number in acceleration means slowing down
2. Velocity is slightly different
	1. A positive (+) number in velocity means going forward
	2. A negative (-) number in velocity means going backward
3. Use color-coding on your graph
4. Write a Summary paragraph and a Response paragraph