Science 8

Name: _____

Graphing Acceleration

Date: _____

Graphing Acceleration

We have learned that:

$$Acceleration = \frac{\text{Change in Speed}}{\text{Time}}$$

Look at the Change in Speed Over Time table to the right.

By how much does the speed increase each second? _____ m/s

Use the formula $a = \frac{v_f - v_i}{t}$ and calculate the acceleration from time 0 seconds to time 1 second. Show your work in the space below. Remember to write the equation, show the substitutions, and then solve.

Acceleration for *t* = 0 to 1 seconds:

Change in Speed Over Time	
Time (s)	Speed (m/s)
0	0
1	8
2	16
3	24
4	32
5	40

Now do the same calculations for each specified time interval.

Acceleration for *t* = 2 to 3 seconds:

Acceleration for *t* = 4 to 5 seconds:

Acceleration for *t* = 2 to 5 seconds:

Describe how the acceleration changes in the different time intervals.

_____

_____

Is this an example of constant acceleration or changing acceleration?

_____

Here is another acceleration chart that also includes distance.

Does this chart show changing or constant acceleration?

_____

Explain how you were able to determine your answer.

_____

_____

_____

_____

Change in Speed and Distance Over Time		
Time (s)	Speed (m/s)	Distance (m)
0	0	0
1	10	5
2	20	20
3	30	45
4	40	80
5	50	125

Calculate the acceleration for this chart. Show your work in the space below. Remember to write the equation, show the substitutions, and then solve.

Now graph the data from the Change in Speed and Distance Over Time chart. On the graph below, make a plot of speed vs. time. Remember that the value written first goes on the y-axis. Add the following to your graph:

1. Write a title for the graph.
2. Write a label for the y-axis.
3. Write a scale for the y-axis.
4. Write a label for the x-axis.
5. Write a scale for the x-axis.

What is the shape of this graph (is it a straight line or a curve)?

_____

When the shape of a speed vs. time graph is a straight line, then acceleration is

_____

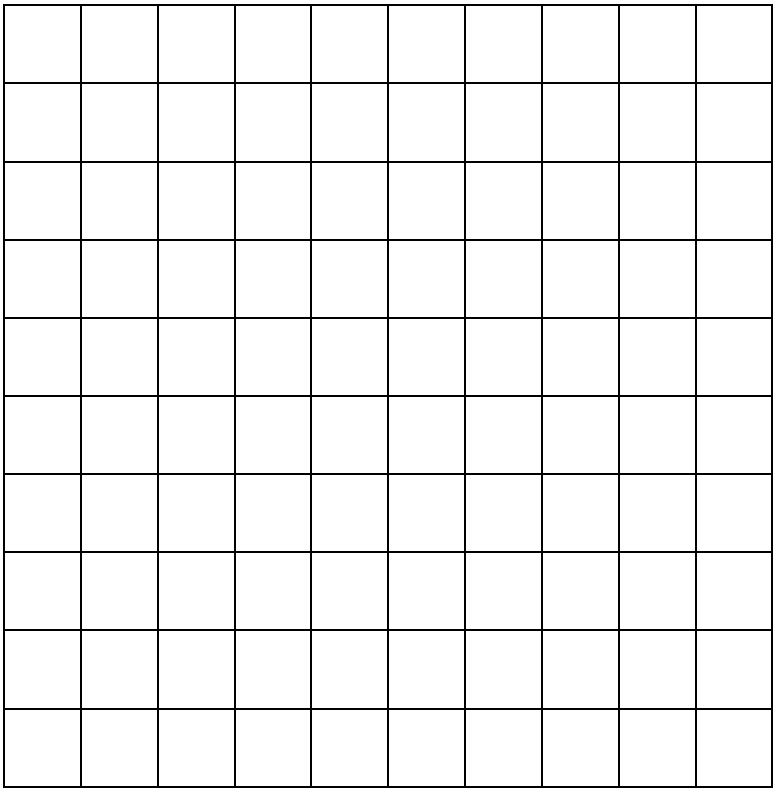
What do you think the graph would look like if the object was slowing down instead of speeding up?

_____

_____

_____

_____



Now make a graph from the Change in Speed and Distance Over Time chart that shows distance vs. time. Remember that the value written first goes on the y-axis. Add the following to your graph:

1. Write a title for the graph.
2. Write a label for the y-axis.
3. Write a scale for the y-axis.
4. Write a label for the x-axis.
5. Write a scale for the x-axis.

What is the shape of this graph (is it a straight line or a curve)?

_____

What do you think the graph would look like if the object was slowing down instead of speeding up?

_____

_____

_____

_____