**High School Physics Day 3**

Distance vs Displacement Speed vs Velocity

Acceleration:

**Marble Roll**: Mark the distance the marble rolls each second. We pick positive direction down the noodle.

|  |  |  |  |
| --- | --- | --- | --- |
| Time | Displacement traveled | Velocity | acceleration |
| t1 = 1second |  |  | (**v**2 – **v**1)/ (t2 – t1) |
| t2 = 2 seconds |  |  |  |

A car is driving East at 25m/s. The driver sees a deer in the road and slams on the breaks. The car stops in 2.1 seconds. What is the acceleration?

Freefall is a special case of acceleration toward earth.  **a** = 9.8m/s toward the earth

An iPad typically records video at 32 frames every second. We are going to use a program called Perfect Pic to shoot a video of a ball falling and record it’s displacement.

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| --- | --- | --- | --- |
| **Time** | **Displacement**  (we will call down positive) | **Velocity**  (x2-x1)/(t2-t1) | **Acceleration** |
|  |  |  | The final velocity |
|  |  |  | divided by the |
|  |  |  | total time |
|  |  |  | (because initial |
|  |  |  | velocity was zero) |
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Remember our Position Time Graphs from last week? Now we can graph the velocity vs time. Guess what?? The slope of this graph is acceleration! Cool!!!! Try it with these numbers.

Extra Challenge: Graph this Excel. Excel will do the calculations for you. I can show you if you would like to learn. It actually makes graphing easier.