**Noteguide for Acceleration - Videos 2C Name**

**2C - Acceleration** (first video - Acceleration Intro)

Write down what these quantities are:

Quantity Formula Units What it is called

|  |  |  |  |
| --- | --- | --- | --- |
| v |  |  |  |
| a |  |  |  |

Example: A car goes from 0 to 27 m/s in 9.0 seconds, what is its acceleration?

Super Confusing Example: A rocket accelerates at 4.5 “g” s. What time will it take to reach the speed of sound (Mach I = 343 m/s) from rest?

Try these example problems. Don't freak out if you can't immediately get the answer. They are solved in the linked videos that follow the main one, so if you get stuck, watch the video.

|  |  |
| --- | --- |
| 1. A car speeds up from 0 to 21 m/s in 5.3 seconds. What is their acceleration? (4.0 m/s/s) | 2. A train can accelerate at 0.15 m/s/s. What time will it take to reach its top speed of 24 m/s from rest? (160 s) |
| 3. What is the final speed if a person accelerates from rest at 32 f/s/s for 2.7 seconds? (86 f/s) | 4. What is your acceleration if your velocity goes from 35 m/s to 20. m/s in 4.7 seconds? (-3.2 m/s/s - hint - what is the change in velocity?) |
| 5. What is your final velocity if you are going 12 m/s and you accelerate at 0.48 m/s/s for the next 16 seconds? (19.68 m/s ≈ 20. m/s - hint - you are already going 12 m/s - figure out the change in velocity with the formula, and add it to 12 m/s) |

**2C - Velocity and acceleration**  (the second video - Velocity and Acceleration)

Consider the last example problem:

What is your final velocity if you are going 12 m/s and you accelerate at 0.48 m/s/s for the next 16 seconds?

New Formula:

 **v = u + at**

Write down what these are:

**v =**

**u =**

**a =**

**t =**

Try these examples:

|  |  |
| --- | --- |
| 1. A car going 24.8 m/s decelerates at -2.451 m/s/s for 1.67 s. What is its final velocity? (20.7 m/s) | 2. What is the acceleration of a ball that goes from 12.5 m/s to 17.8 m/s in 2.5 seconds? (2.1 m/s/s) |
| 3. A cop clocks a car going 22.4 m/s after having accelerated at -7.45 m/s/s for the last 3.4 seconds. What was the initial velocity of the car? (48 m/s) | 4. What time will it take a train to slow from 23.2 m/s to 14.8 m/s if the acceleration is -1.2 m/s/s? (7.0 s) |

In the unused space below, draw a cartoon of Principal Dellerba chasing Spaceman Spiff through an asteroid belt: