Physics Problem Set 4.3

Useful Equations

$\Delta x = v_o t + \frac{1}{2} at^2$

$V_f = V_o + at$, which is this equation re-arranged: $a = (v_f - v_o)/t$

$V_f^2 = V_o^2 + 2a\Delta x$

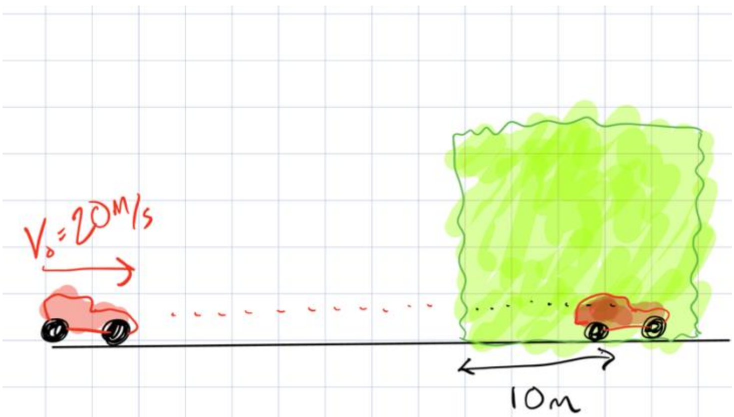
$V_{ave} = \frac{1}{2} (V_f + V_o)$

You can use 10m/s/s for the value of g. Use this for the acceleration of anything dropped or thrown up in the air.

1. A car 🚗 traveling with an initial velocity of 20 m/s slows down at a uniform rate for 5 seconds and comes to rest.
    a. What was the car's final velocity?
    b. What was the car's acceleration?
    c. What was the car's average speed?
    d. How far did the car travel while it was slowing down?

2. A car 🚙 staring from rest, accelerates at a constant rate of 3 m/s/s for 5 seconds.
    a. What is the final velocity of the car?
    b. What was the average velocity of the car?
    c. How far did the car travel while speeding up?
    d. What color was the car?
    e. Who was driving the car?

3. A car moving with a velocity of 15 m/s starts to gain speed at a rate of 2 m/s every second.
    a. What is the car's acceleration?
    b. What is the speed of the car after 5 seconds?
    c. What distance has the car traveled in 5 seconds?



4. A car moving with a velocity of 20 m/s crashes into a giant cube of green Jell-o. The car slows at a uniform rate and stops after penetrating 10 meters into the Jell-o.
    a. What was the final velocity of the car?
    b. What was the acceleration of the car?
    c. What was the average speed of the car?
    d. How long does it take the car to stop ✋?