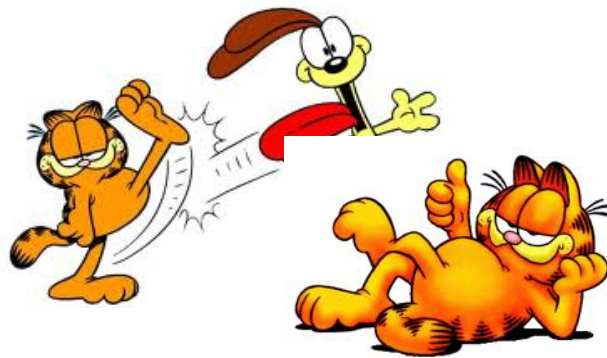
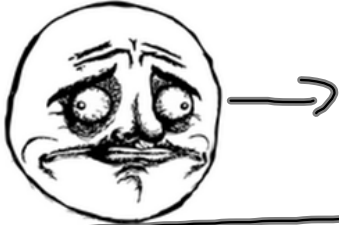


# Solving Kinematic Problems

## Process

- 1) write down what you know assigned to variables.
- 2) write down what you want to find
- 3) Pick your EQ + WRITE it down
- 4) Plug in + solve





accelerates at  $5.6 \text{ m/s}^2$  for  $7.2$  seconds  
Starts at rest. How far did he travel?

$$t = 7.2 \text{ s} \quad a = 5.6 \text{ m/s}^2 \quad v_i = 0 \text{ m/s}$$

$$\Delta x = ?$$

$$\Delta x = v_0 t + \frac{1}{2} a t^2$$

$$\Delta x = 0(7.2) + \frac{1}{2} (5.6) (7.2)^2$$

$$\Delta x = 145.15$$

$$\boxed{\Delta x = 150 \text{ m}}$$



Odie accelerates from  $12 \text{ m/s}$  to  $3.2 \text{ m/s}$  in  $2.5 \text{ s}$ . a) What was his acceleration? b) displacement?

$$V_i = 12 \text{ m/s} \quad V_f = 3.2 \text{ m/s} \quad t = 2.5 \text{ s}$$

a)  $a = ?$

$$V_f = V_0 + at$$

$$3.2 = 12 + a(2.5)$$

$$-12$$

$$\frac{-8.8}{2.5} = a(2.5)$$

$$a = -3.5 \text{ m/s}^2$$

b)  $\Delta x = ?$

$$\Delta x = V_0 t + \frac{1}{2} at^2$$

$$\Delta x = 12(2.5) + \frac{1}{2}(-3.5)(2.5)^2$$

$$\Delta x = 19.1 \text{ m}$$



dropped:  $v_i = 0 \text{ m/s}$

$$a = 8.2 \text{ m/s}^2$$

$t = ?$

$v_f = ?$

$$\Delta x = -50 \text{ m}$$

displacement is negative, because he falls down.

$$\Delta x = v_0 t + \frac{1}{2} a t^2$$

$$-50 = 0 \cdot t + \frac{1}{2} (-8.2) t^2$$

$$\frac{-50}{-4.1} = t^2$$

$$\sqrt{12.195} = \sqrt{t^2}$$

$$t = 3.49 \text{ s}$$

$v_f = ?$

$$v_f = v_0 + at$$

$$v_f = 0 + (-8.2)(3.49)$$

$$v_f = -28.6 \text{ m/s}$$