

Review Day

- Please take out your calculator, a pencil and your notebook.
- On your whiteboard: write a problem from the homework that you would like to see solved or any kind of I-D problem (horizontal or vertical) that you would like to have reviewed.
- 3 groups to catch the falling man, have your calculations out.

3-9

Requested Homework

$$3) X_i = 18 \text{ m}, V_i = 0 \text{ m/s}, a = -9.8 \text{ m/s}^2$$

$$X_f = 0 \text{ m} \quad \Delta x = -18 \text{ m}$$

$$\sqrt{V_f^2} = \sqrt{V_i^2 + 2a\Delta x}$$

$$V_f = \sqrt{V_i^2 + 2a\Delta x} = -18.7 \text{ m/s}$$

The length of the barrel of a blowgun is 1.2 meters. Upon leaving the barrel, a dart has a speed of 14 m/s. Assuming that the dart is uniformly accelerated, how long does it take for the dart to leave the length of the barrel?

$$K: \Delta x = 1.2 \text{ m}, V_i = 0 \text{ m/s}, V_f = 14 \text{ m/s}$$

$$V_i, t = ? \quad \text{Solve for } a = 81.66 \text{ m/s}^2$$

$$V_f = V_i + at \Rightarrow t = \frac{V_f - V_i}{a} = 0.17 \text{ s}$$

Sponge Bob rides a starfish. He accelerates at ____m/s² to hold the wheelie. After ____ seconds he finishes accelerating at ____m/s. How fast was he going when he started accelerating?

An old VW Beetle goes ^{from} 0 to 42 m/s with an acceleration of 8 m/s². How long does it take for Beetle to reach this speed? How far did the Beetle travel while accelerating?

$$K: V_i = 0 \text{ m/s}, V_f = 42 \text{ m/s}, a = 8 \text{ m/s}^2$$

$$V: t \approx \Delta x \quad t = 5.25 \text{ s}$$

$$\Delta x = \cancel{V_i t} + \frac{1}{2} a t^2 \quad \Delta x = 110.25 \text{ m}$$

A blue car travels at a constant velocity of 27m/s. As it passes an onramp, a red car accelerates from rest at a constant acceleration. If the red car **catches** the blue car 1800m away, what is the red car's acceleration?

$$V = 27 \text{ m/s} \quad \Delta x = 1800 \text{ m} \quad a = 0 \text{ m/s}^2$$

$$\Delta x = V_i t + \frac{1}{2} a t^2 \rightarrow t = 66.6 \text{ s}$$

$$V_i = 0 \text{ m/s}, t = 66.6 \text{ s} \quad \Delta x = 1800 \text{ m}$$

$$a = 0.81 \text{ m/s}^2 \quad V_f = 54 \text{ m/s}$$

Falling Man

Cooties have been spotted jumping into the air with initial velocities of 60 m/s.

What is the maximum height of the cootie?

$$V_i = 60 \text{ m/s} \quad a = g = -9.8 \text{ m/s}^2$$

$$V_f = 0 \text{ m/s} \quad t = 6.12 \text{ s}$$

$$\Delta y = ? \quad V_f^2 = V_i^2 + 2a\Delta y$$
$$= 183 \text{ m}$$

Cooties have been spotted jumping into the air with initial velocities of 60 m/s.

What is the position of the cootie at 9 seconds?

$$V_i = 60 \frac{\text{m}}{\text{s}} \quad a = g \quad t = 9 \text{ s}$$

$$\Delta y = V_i t + \frac{1}{2} a t^2 = 143 \text{ m}$$

What is the cootie's velocity at the maximum height?

0 m/s

What is the acceleration of the cootie at maximum height?

-9.8 m/s^2

Cooties have been spotted jumping into the air with initial velocities of 60 m/s.

What is the distance traveled after 10 seconds?

B →

$$V_i = 0 \text{ m/s}, a = g, t = 3.88 \text{ s}$$

$$\Delta y = \cancel{V_i t} + \frac{1}{2} a t^2 = -73.8 \text{ m}$$

$$d = |\Delta y_{ab}| + |\Delta y_{bc}| = 257 \text{ m}$$

A new freshman at University looks out his dorm window to perform his own physics test. He heaves water balloons onto unsuspecting passers-by with an initial velocity of ____ m/s down. His window is 14 meters above the ground. What is the velocity of the balloon as it hits the pavement if he misses?

A new freshman at University looks out his dorm window to perform his own physics test. He heaves water balloons onto unsuspecting passers-by with an initial velocity of 10 m/s down. If he hits a student that is 1.8m tall, how fast is the balloon going? How long does it take to get there?

$$y_i = 14\text{ m} \quad \Delta y = -12.2\text{ m}, \quad a = g$$

$$v_i = -10\text{ m/s}$$

$$\text{Uit} \quad v_f = -11\text{ m/s}$$

$$t = 0.18\text{ s}$$