

March 29

- 1) Answer to yesterdays questions
- 2) Practice Problems/Quiz Review

Reminder of Quiz on Acceleration Wednesday!!

Answers

3. A person stands near the edge of a 75 m high building and throws a quarter upwards with an initial velocity of 30 m/s. Calculate the velocity when it is 15 m above the ground.

$$v_o = 30\text{m/s (up)}$$

$$a = -9.81\text{m/s}^2$$

$$d_o = 75\text{m}$$

$$d_f = 15\text{m}$$

$$v_f^2 = v_o^2 + 2a(d_f - d_o)$$

$$v_f^2 = (30)^2 + 2(-9.81)(15 - 75)$$

$$v_f^2 = 900 + -19.62 (-60)$$

$$v_f^2 = 2077.2$$

$$v_f = \sqrt{2077.2}$$

$$v_f = -45.6\text{m/s (up)}$$

Extra Practice

4. a) Calculate how much time is necessary for an object, undergoing an acceleration of 6.0m/s^2 [W], to go from 10 m/s [E] to 34 m/s [W] .
- b) Calculate the displacement.
- c) Calculate the total distance travelled.

a) $a = 6.0\text{m/s}^2$ (W)(-6) $a = \frac{v_f - v_o}{t}$
 $v_o = 10\text{m/s}$ (E) $-6.0 = \frac{-34 - 10}{t}$
 $v_f = 34\text{m/s}$ (W) (-34) $t = ?$
 $t = ?$ $\frac{-6.0t = -44}{-6.0 \quad -6.0}$
 $t = 7.3\text{s}$

b) $d_f = ?$ $d_f = d_o + v_o t + 1/2at^2$
 $a = -6$ $d_f = 0 + (10)(7.3) + 1/2(-6)(7.3)^2$
 $v_i = 10$ $d_f = 0 + 73 + -159.87$
 $v_f = -34$ $d_f = -86.87\text{m}$
 $t = 7.3$

- c) total distance
 need to calculate east 1st then west

distance west

$$a = -6 \quad -34^2 = 0^2 + 2(-6)(d_f - 0)$$

$$v_o = 0 \quad 1156 = 0 + -12d_f$$

$$v_f = -34 \quad \frac{1156 = -12df}{-12 \quad -12}$$

$$d_o = 0 \quad d_f = -96.3\text{m}$$

distance east

$$a = -6 \quad 10^2 = 0^2 + 2(-6)(d_f - 0)$$

$$v_o = 0 \quad 100 = 0 + -12d_f$$

$$v_f = 10 \quad \frac{100 = -12df}{-12 \quad -12}$$

$$d_o = 0 \quad d_f = -8.3\text{m}$$

$$\text{Total Distance} = 96.3 + 8.3$$

$$= 104.6\text{m}$$

Acceleration Quiz Review WS #1-4