

Physics

name _____ blk _____

Inv-2 Expansion 1: The Birth of the Blue Mirror Equations sheet # _____

Opening:

Write the three orange mirror equations
(1 dimensional constant accel. motion)

Change these to the Blue Mirror Equations
(1 dimensional free fall)

_____	→
_____	→
_____	→

What is g ? _____

What is the difference between a_x and g ?

Why do we "hardwire" the negative sign into the free fall equations?

Problems: ~~Remember to follow Akey's 20th problem when working problems!~~

1.) A stone is dropped from rest from the top of a high cliff:

a.) What is the displacement (Δy) after 1.0 sec?

b.) What is the stone's displacement after 3.0 seconds?

c.) How **far** does the stone fall between the 1st and the 3rd second?

d.) What is the stone's velocity after 2.0 second?

e.) What is the stone's speed after 3.0 seconds?

2.) A ball is thrown vertically downward from the top of a building at 14.0 m/s and hits the ground in 5.0 sec:

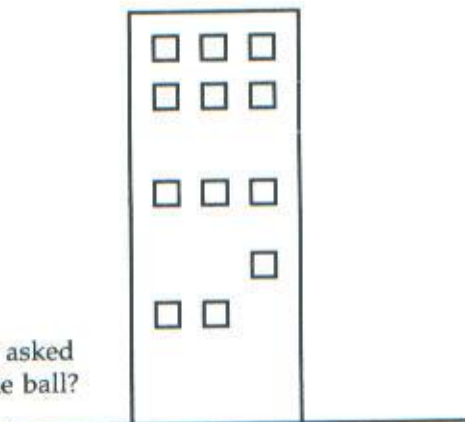
a.) Determine the total displacement.

b.) Draw the displacement vector to the right.

c.) How tall is the building? _____

d.) What is the velocity of the ball halfway down?

e.) (I realize the following question can be misinterpreted, but you will see it asked this way many times in your physics career) What is the final velocity of the ball?
(the answer is NOT zero.)



f.) Draw the following three velocity vectors next to the building in the figure above using the scale 1 cm = 20 m/s. v_{0y} , v_{fy} , v_y halfway down