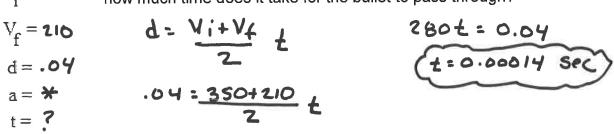
More Kinematics + Freefall problems

A bullet from a rifle with a velocity of 330 m/s is fired into a dense material that 1: stops the bullet in a distance of 30 cm. What is the bullet's acceleration?

V_i = 330 $V_{\mathbf{f}} = \mathbf{O}$ d=.3

- V12=V1+2al 0 = 3302 +2(.3) & D = 108900 + .63
- A bullet traveling horizontally with a velocity of 350 m/s hits a board and passes 2. through emerging with a speed of 210 m/s. If the thickness of the board is 4.0 cm, V;=350 how much time does it take for the bullet to pass through?



- A student drops a ball from the top of a tall building; it takes 2.8 seconds for the ball to reach the ground.
 - a) What was the ball's speed just before hitting the ground? Vi= Vi+at V4=0-9.8(2.8) = - 27.4 m/s
- $V_f = ?$ d = 1a = -9.8 t = 7.8

V, = 15

 $\Lambda^{t} = Q$

d= 7

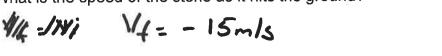
 $t = \mathbf{A}$

 $V_i = 0$

b) What was the height of the building?
$$d = \frac{V.114}{2} \cdot t = \frac{O + 27.4}{2} (7.8) = \frac{38.4}{2}$$

- A Boy throws a stone straight up with an initial speed of 15 m/s. 4.
 - a) What is the maximum height the stone reached before it begins to fall back down?

b) What is the speed of the stone as it hits the ground?



c) How long was the stone in the air?

