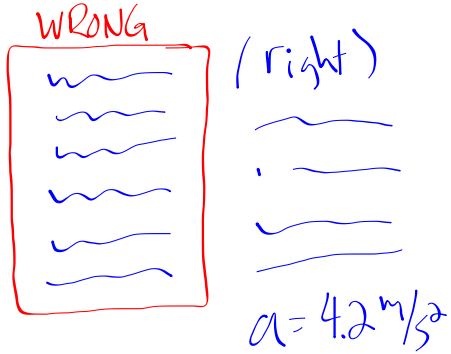
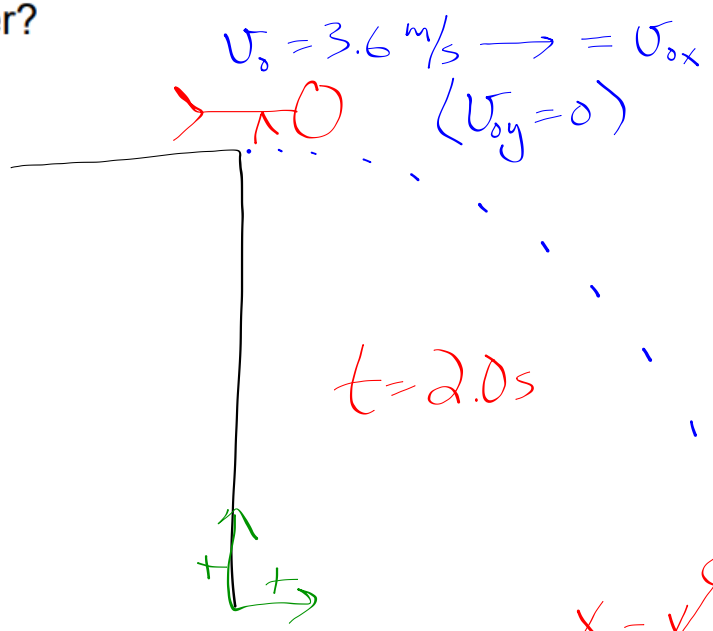
Quiz Stuff:

- SHOW WORK → system
  → variable inventory
  → show equation (variables)
- Units
- Direction
- Don't erase/scribble out
- Algebra/arithmetic errors: -20% (at most)



36. A diver running 3.6 m/s dives out horizontally from the edge of a vertical cliff and reaches the water below 2.0 s later. How high was the cliff and how far from its base did the diver hit the water?



$x_0 = 0$

$x =$

$v_{0x} = 3.6\ m/s$

$v_x = 3.6\ m/s$

$a_x = 0$

$t = 2.0s$

$x = x_0 + v_{0x}t + \frac{1}{2}a_x t^2$

$x = (3.6)(2) = \boxed{7.2\ m}$

$y_0 =$

$y = 0$

$v_{0y} = 0$

$v_y =$

$a_y = -9.8\ m/s^2$

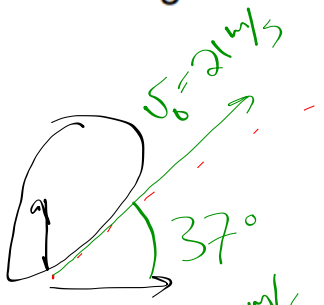
$t = 2.0s$

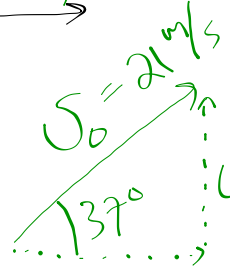
$y = y_0 + v_{0y}t + \frac{1}{2}a_y t^2$

$0 = y_0 + \frac{1}{2}(-9.8)(2^2)$

$y_0 = \boxed{19.6\ m}$

41. A football is kicked with a speed of 21.0 m/s at an angle of 37° to the horizontal. How much later does it hit the ground? Ignore air resistance.





$v_{0y} = 21 \sin 37$
$= 12.64$ m/s

$v_{0x} = 21 \cos 37$
$= 16.77$ m/s

$x_0 = 0$ $y_0 = 0$
$x =$ $y = 0$
$v_{0x} = 16.77$ m/s $v_{0y} = 12.64$ m/s
$v_x = 16.77$ m/s $v_y =$
$a_x = 0$ $a_y = -9.8$ m/s²
$t =$ $t =$

$$y = y_0 + v_{0y}t + \frac{1}{2}a_y t^2$$

$$0 = (12.64)t + \frac{1}{2}(-9.8)t^2$$

$$t(12.64 + -4.9t) = 0$$

$t = 0$

$$12.64 + -4.9t = 0$$

$$t = 2.58 \text{ s}$$