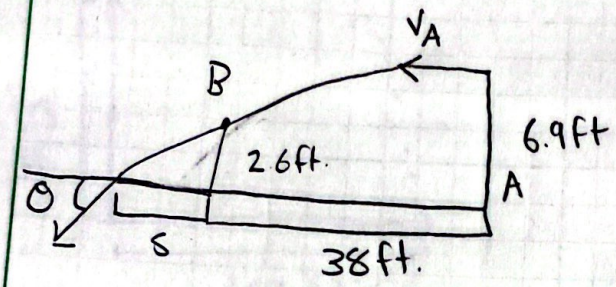
2-11-1	10/19/22	Isaac Abella.

A. P: Determine ball speed at A
Determine distance S where ball hits the ground
Determine speed of the ball the instant before it hits the ground.
Determine angle θ



given: y_0 and distance and acceleration.

A) Solution: use initial conditions to solve for time; then you can solve for velocity.

$6.9 - 2.6 = 4.3\text{ft}$

$y_f = 4.3 + V_y t + \frac{1}{2}(-32.2)(t)^2 = 4.3 = \frac{1}{2}(-32.2)(t)^2$

$\frac{4.3}{16.1} = .267 \rightarrow \sqrt{.267} = .52 = t$

$38 \cdot .52 = \boxed{73.1\text{ ft.}}$

B) use initial conditions to solve for V_{y_1} and t

$2.6 = 6.9 + V_{y_0}(t) + \frac{1}{2}(-32.2)(t)^2 = t = .523$

$V_{y_0} = 0 + (-32.2)(.523) = -16.84.$

$0 = 2.6 + (-16.84)t + \frac{1}{2}(-32.2)t^2 = t = .188$

$X_F = 38 + 73.1(.188) = 51.74$

$S = 51.74 - 38 = \boxed{10.05\text{ ft}}$

C) $\sqrt{73.53^2 + 21.03^2} = \boxed{76.48\text{ ft/s}}$

D) $\tan^{-1}\left(21.03/73.53\right) = \boxed{15.94^\circ}$