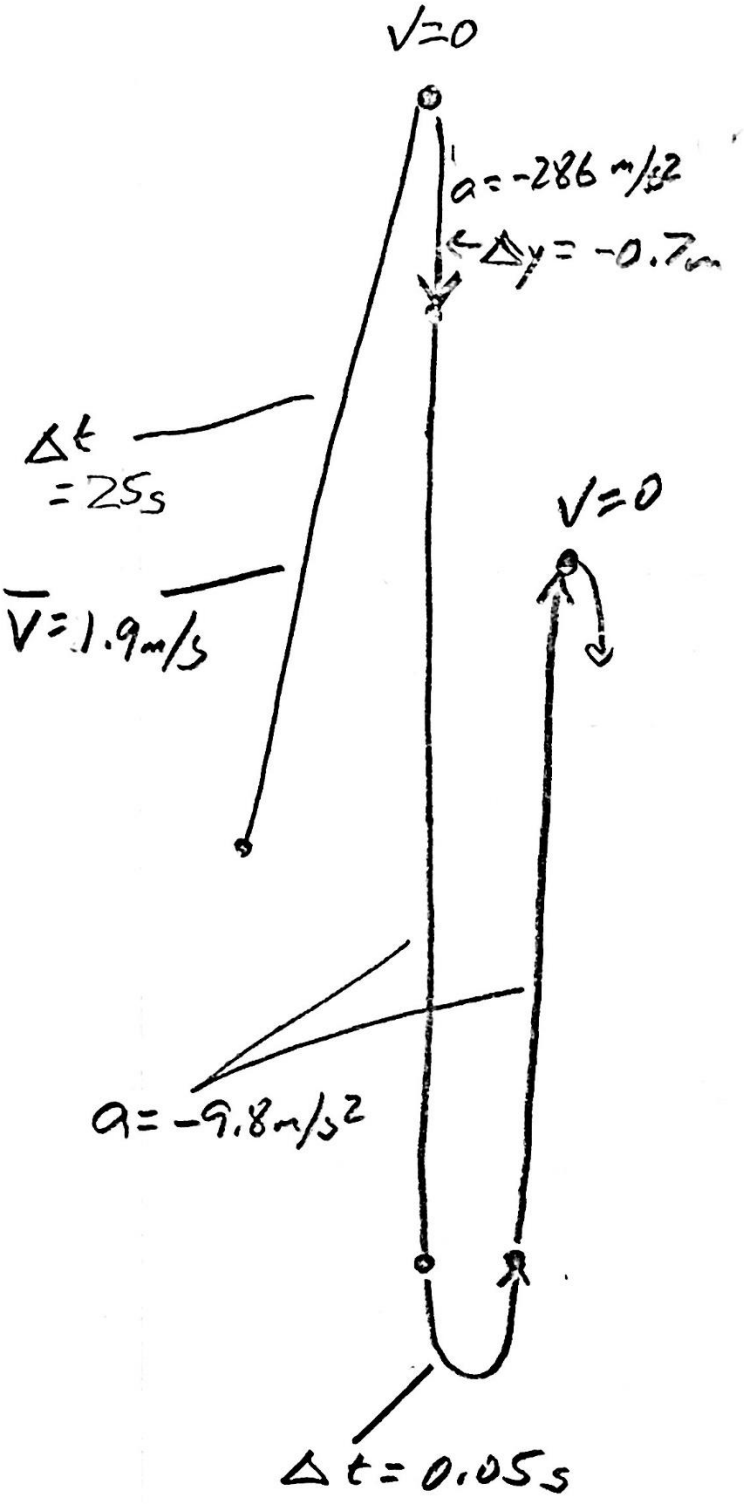
My initial sketch…



1. Lever acceleration Interval:

$V_0 = 0 m/s$

$a = -28.6 m/s^2$

$\Delta y = -0.7 m$

$V = ?$

$V^2 = V_0^2 + 2a\Delta y$

$V^2 = 0 m/s + 2(-28.6 m/s^2)(-0.7 m)$

$V = \boxed{-20 m/s}$

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2. Free-fall (after leaving lever, before hitting ground)

$V_0 = -20 m/s$

$a = -9.8 m/s^2$

$\Delta t = 3 s$

$V = V_0 + at$

$V = -20 m/s + (-9.8 m/s^2)(3 s)$

$V = \boxed{-49.4 m/s}$

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3. Freefall (lever to ground)

$V_0 = -20 m/s$

$a = -9.8 m/s$

$\Delta t = 3 s$

$V = -49.4 m/s$

use $\Delta y = V_0 t + \frac{1}{2} a t^2$ or $V^2 = V_0^2 + 2a\Delta y$

$(-49.4 m/s)^2 = (-20 m/s)^2 + 2(-9.8 m/s^2)\Delta y$

$\Delta y = -104.1 m$

distance $\boxed{104.1 m}$

4. Free fall (lever to ground)

$V_0 = -20\ m/s$

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

$\Delta t = 3s$

$V = -49.4\ m/s$

$\Delta y = -104.1\ m$

$$\bar{V} = \frac{V + V_0}{2}$$

$$\bar{V} = \frac{-49.4\ m/s + (-20\ m/s)}{2}$$

$$\bar{V} = \boxed{-34.5\ m/s}$$

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5. To find the velocity when the ball leaves the ground, find the V_0 for its flight 50m upward.

$V_0 = ?$

$V = 0\ m/s$ @ top of flight

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

$\Delta y = 50\ m$

$$V^2 = V_0^2 + 2a\Delta y$$

$$0 = V_0^2 + 2(-9.8\ m/s^2)(50\ m)$$

$$V_0 = \boxed{31.3\ m/s}$$

6. Interval of the bounce

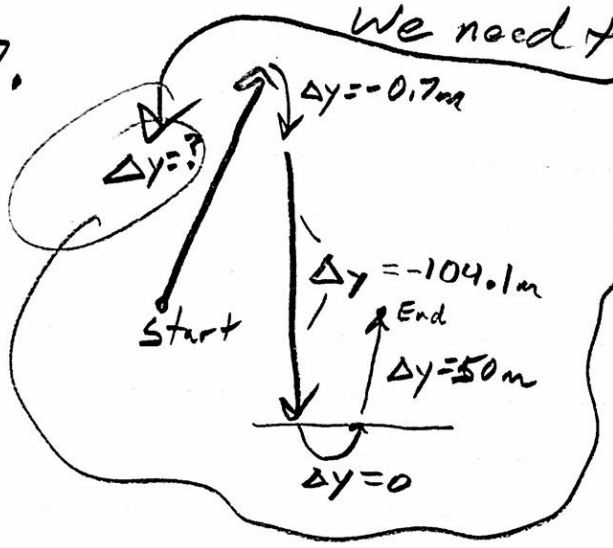
$V_0 = -49.4\ m/s$
$V = 31.3\ m/s$
$\Delta t = 0.05\ s$
$a = ?$

$$a = \frac{\Delta V}{\Delta t} = \frac{V - V_0}{\Delta t}$$

$$a = \frac{31.3\ m/s - (-49.4\ m/s)}{0.05\ s}$$

$$a = \boxed{1,614\ m/s^2}$$

7.



Interval on conveyor

$\bar{V} = 1.9\ m/s$
$\Delta t = 25\ s$
$\Delta y =$

$$\bar{V} = \frac{\Delta y}{\Delta t}$$

$$1.9\ m/s = \frac{\Delta y}{25\ s}$$

$\Delta y = 47.5\ m$

Total displacement = sum of individual displacements

$\Delta y_{total} = 47.5m - 0.7m - 104.1m + 0m + 50m = \boxed{-7.3m}$