$\bar{V} = \frac{\Delta x}{\Delta t}$ $\quad$ $\bar{V} = \frac{V + V_0}{2}$

zero

$$\frac{\Delta x}{\Delta t} = \frac{V + V_0}{2}$$

$$\frac{2\Delta x}{\Delta t} = V_0$$

zero

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

1. Video @ 240 fps
2. Count tiles to get Δx
3. Easy way to get time → run video and time with stopwatch. Playback is @ 30 fps, so divide playback time by 8 $\left(\leftrightarrow \frac{240\text{fps}}{30\text{fps}}\right)$ to get actual time.
4. Use kinematics formulas to find a from Δt, Δx, and $V \leftarrow$ zero.

$$a = -\frac{\left(\frac{2\Delta x}{\Delta t}\right)}{\Delta t} = \frac{-2\Delta x}{t^2}$$

$$\boxed{a = \frac{-2\Delta x}{t^2}}$$

$$a = \frac{-2(5.734\text{m})}{(1.88\text{s})^2}$$

$$a = -3.24\text{m/s}^2$$

Video Run Time = 15.1 sec

Actual time $= \frac{15.1\text{sec}}{8}$

$\Delta t = 1.88\text{s}$

$\Delta x = 18.8$ tiles $= 18.8\text{ tile}\left(\frac{0.305\text{m}}{1\text{ tile}}\right)$

$\Delta x = 5.734\text{m}$

$$\mu = \frac{3.24\text{m/s}^2}{9.8\text{m/s}^2} = 0.33$$