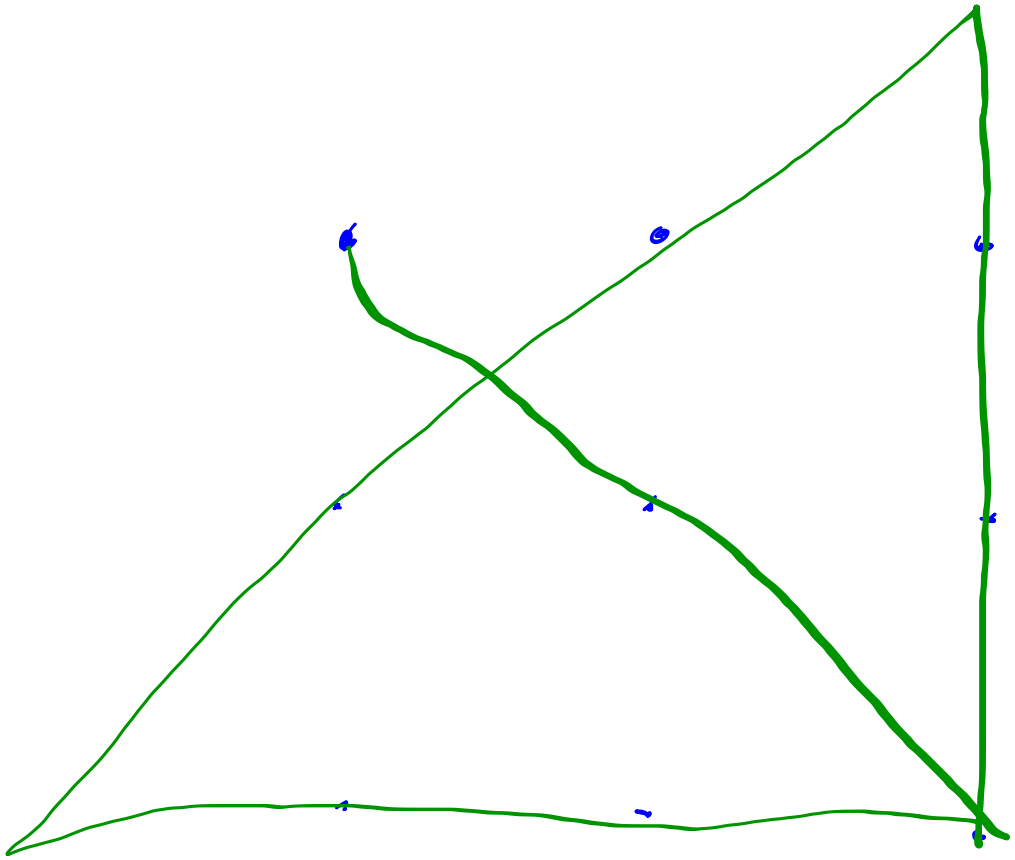
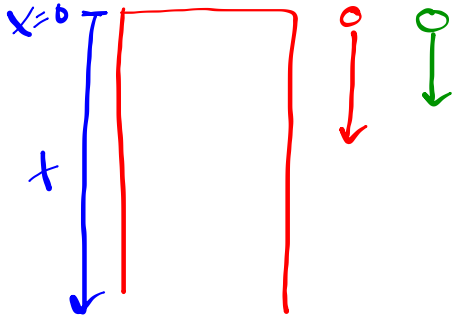


A stone is dropped from the roof of a high building. A second stone is dropped 1.00 s later. How far apart are the stones when the second one has reached a speed of 23.0 m/s?



$x_{or} = 0$
$x_r = 54.99\,m$
$v_{or} = 0$
$v_r =$
$a_r = 9.8\frac{m}{s^2}$
$t_r = t_g + 1$
$3.35\,s$

$x_{og} = 0$
$x = 27.06m$
$v_{og} = 0$
$v_g = 23\frac{m}{s}$
$a_g = 9.8\frac{m}{s^2}$
$t_g = 2.35\,s$

$v = v_0 + a \cdot t$

$t = \frac{v - v_0}{a} = \frac{23\frac{m}{s}}{9.8\frac{m}{s^2}} = 2.35\,s$

$27.93\,m$

28 m

$x = x_0 + v_0 t + \frac{1}{2}at^2$

$= \frac{1}{2}\left(9.8\frac{m}{s^2}\right)(2.35\,s)^2 = 27.06m$

$x = x_0 + v_0 t + \frac{1}{2}at^2$

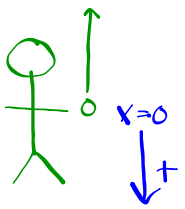
$= \frac{1}{2}\left(9.8\frac{m}{s^2}\right)(3.35\,s)^2 = 54.99\,m$

A baseball is thrown vertically into the air with a speed of 24.7 m/s.

a) How high does it go?

b) How long does it take to return ~~to the ground~~?

$x=0$



$x_0 = 0$
$x = -31.12\ m$
$v_0 = 24.7\ \frac{m}{s}$
$v = 0\ \frac{m}{s}$
$a = 9.8\ \frac{m}{s^2}$
$t = 2.52\ s$

$v = v_0 + at$

$t = \frac{v - v_0}{a}$

$= \frac{24.7\ \frac{m}{s}}{9.8\ \frac{m}{s^2}}$

$= 2.52\ s$

$x = x_0 + v_0 t + \frac{1}{2} a t^2$

$= \left(-24.7\ \frac{m}{s}\right)(2.52\ s) + \frac{1}{2}\left(9.8\ \frac{m}{s^2}\right)(2.52\ s)$

$= -62.24\ m + 31.12\ m$

$= -31.12\ m$

$v^2 = v_0^2 + \cancel{(x - x_0)2a}$

$v^2 = \left(-24.7\ \frac{m}{s}\right)^2$

$v = 24.7\ \frac{m}{s}$

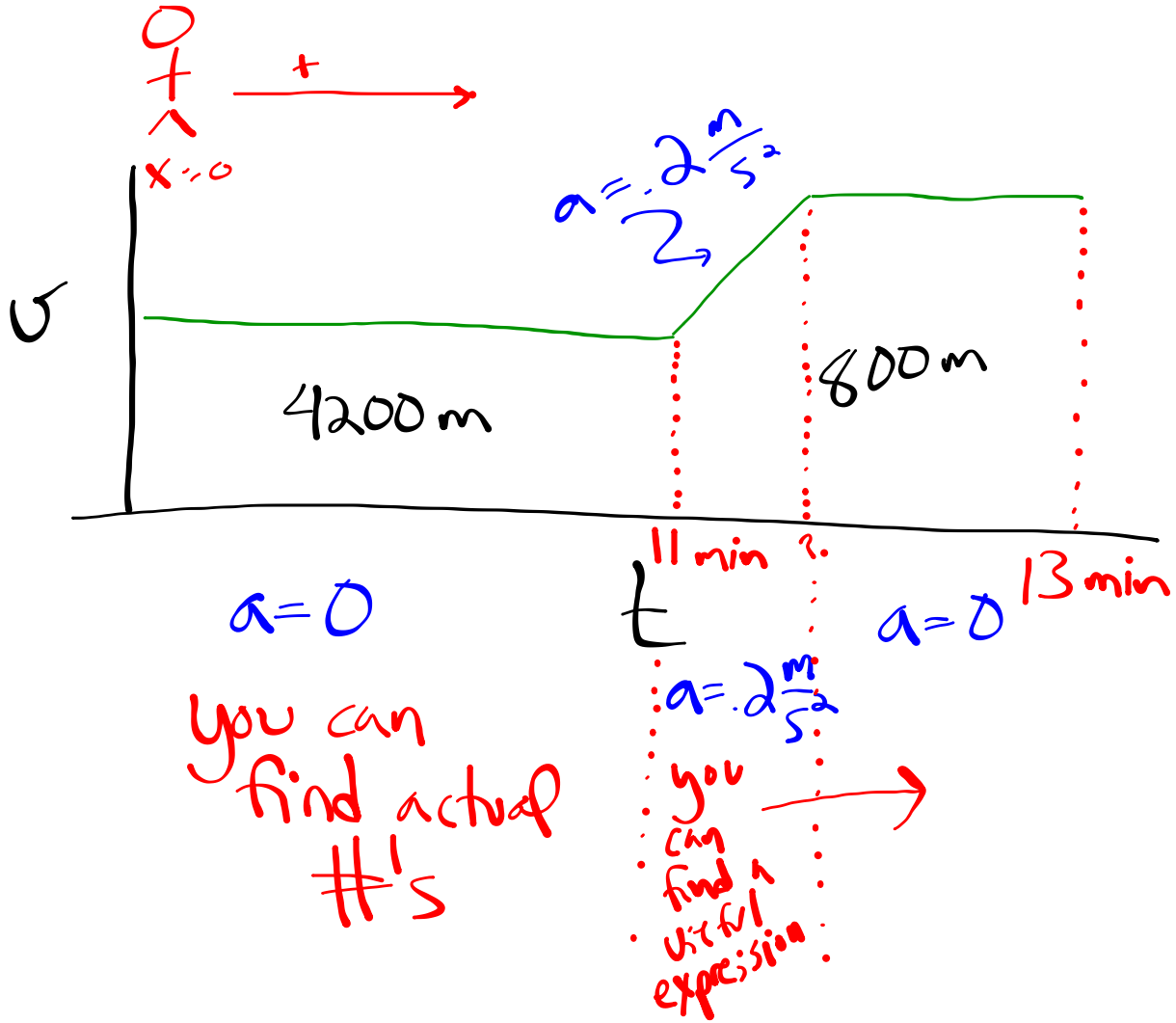
$x_0 = 0$
$x = 0$
$v_0 = -24.7\ \frac{m}{s}$
$v = 24.7\ \frac{m}{s}$
$a = 9.8\ \frac{m}{s^2}$
$t = 5.04\ s$

$v = v_0 + at$

$t = \frac{v - v_0}{a} = \frac{24.7\ \frac{m}{s} - -24.7\ \frac{m}{s}}{9.8\ m/s^2}$

$t = 5.04\ s$

#30 ?


O
+
x=0
v
4200 m
a=.2 m/s²
800 m
11 min
13 min
t
a=0
a=0
a=.2 m/s²
you can find actual #'s
you can find useful expression