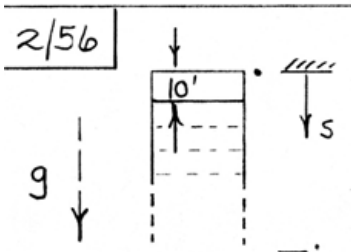
2/56



$s = s_0' + v_0' t + \frac{1}{2} g t^2$ ($s_0' = 0$, $v_0' = 0$)

When $s = 10$ ft,

$10 = \frac{1}{2}(32.2) t_{10'}^2$, $t_{10'} = 0.788$ sec

Time to pass first story from the top is $t_1 = t_{10'} - t_{0'} = 0.788 - 0 = \underline{0.788 \text{ sec}}$

10th story: $90 = \frac{1}{2}(32.2) t_{90'}^2$, $t_{90'} = 2.36$ sec

$100 = \frac{1}{2}(32.2) t_{100'}^2$, $t_{100'} = 2.49$ sec

$t_{10} = t_{100'} - t_{90'} = 2.49 - 2.36 = \underline{0.1279 \text{ sec}}$

100th story: $990 = \frac{1}{2}(32.2) t_{990'}^2$

$1000 = \frac{1}{2}(32.2) t_{1000'}^2$

$t_{100} = t_{1000'} - t_{990'} = 7.88 - 7.84 = \underline{0.0395 \text{ sec}}$