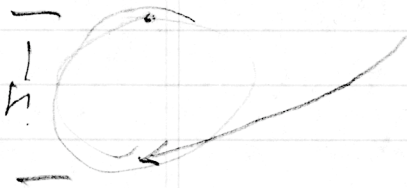


$$mg = \frac{mv_{min}^2}{r}$$

$$v^2 = gr$$

$$v_{min} = \sqrt{gr} = \sqrt{\frac{32 \text{ ft}}{\text{s}^2} \frac{15 \text{ ft}}{2}}$$



$$\frac{480}{\sqrt{2}} \text{ ft}^2/\text{s}^2$$

$$\approx 23 \text{ ft/sec} / 1.4 \approx 16 \text{ ft/sec}$$

$$v = \frac{23 \text{ ft/sec} \times 60}{1.4 \times 88 \text{ sec}}$$

$$\frac{15 \text{ mph}}{1.4} \approx 10 \text{ ft/sec}$$

$$\begin{aligned} mgh &= \\ \frac{1}{2}mv^2 &= mgh + \frac{1}{2}mv_m^2 \\ v^2 &= 2gh + v_m^2 = 2 \times 32 \times 15 + (16 \text{ ft/s})^2 \end{aligned}$$

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$$\begin{aligned} v^{*2} &= 2 \times \frac{32 \text{ ft}}{\text{s}^2} \times 15 \text{ ft} + 16 \frac{\text{ft}^2}{\text{s}^2} \\ &= 960 \text{ ft/sec} + 256 \text{ ft}^2/\text{s}^2 \end{aligned}$$

$$v^{*2} = 1216 \text{ ft}^2/\text{s}^2$$

$$v^* = \sqrt{1216} \text{ ft/sec}$$

$$\approx 35 \text{ ft/sec} \times \frac{60 \text{ mph}}{88 \text{ ft/sec}}$$

$$v_{ball}^* \approx \underline{\underline{23 \text{ mph}}}$$

