47. We work this using the English units (with $g = 32$ ft/s), but for consistency we convert the weight to pounds

$$mg = (9.0\,\text{oz})\left(\frac{1\,\text{lb}}{16\,\text{oz}}\right) = 0.56 \text{ lb}$$

which implies $m = 0.018$ lb·s^2/ft (which can be phrased as 0.018 slug as explained in Appendix D). And we convert the initial speed to feet-per-second

$$v_i = (81.8\,\text{mi/h})\left(\frac{5280\,\text{ft/mi}}{3600\,\text{s/h}}\right) = 120 \text{ ft/s}$$

or a more "direct" conversion from Appendix D can be used. Equation 8-30 provides $\Delta E_{\text{th}} = -\Delta E_{\text{mec}}$ for the energy "lost" in the sense of this problem. Thus,

$$\begin{aligned}
\Delta E_{\text{th}} &= \frac{1}{2}m\left(v_i^2 - v_f^2\right) + mg\left(y_i - y_f\right) \\
&= \frac{1}{2}(0.018)(120^2 - 110^2) + 0 \\
&= 20 \text{ ft} \cdot \text{lb} \ .
\end{aligned}$$