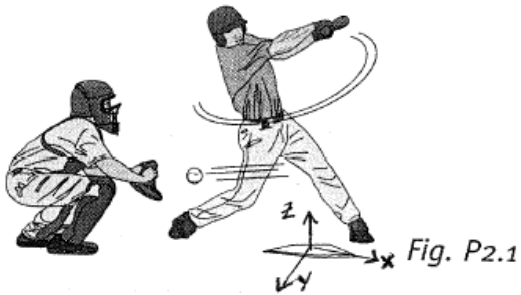


PROBLEM 2.1



$$\begin{aligned}
 KE &= \frac{1}{2} m V^2 \\
 &\quad \uparrow \text{relative to home plate} \\
 &= \frac{1}{2} (0.31b) \left\{ \frac{94 \text{ miles}}{h} \left| \frac{1 h}{3600s} \right| \left| \frac{5280 \text{ ft}}{1 \text{ mile}} \right| \right\}^2 \\
 &= 2851.1 \frac{\text{lb} \cdot \text{ft}}{s^2} \left| \frac{1 \text{ lbf}}{32.2 \text{ lb} \cdot \text{ft}/s^2} \right| \left| \frac{1 \text{ Btu}}{778 \text{ ft} \cdot \text{lbf}} \right| \\
 &\quad \leftarrow \text{rounded} \rightarrow \\
 KE &= 0.114 \text{ Btu} \quad \leftarrow
 \end{aligned}$$