Answer on Question #54045-Physics-Other

If a kitten falls off a bridge at 100 feet. How fast in miles per hour, did the kitten hit on impact?

Solution

We use kinematic equation

$$2hg = v_f^2 - v_i^2,$$

where h is the height, g is the acceleration due to the gravity, v_i and v_f are initial and final velocities.

Because $v_i = 0$, then

$$v_f = \sqrt{2hg} = \sqrt{2 \cdot 100 \text{ feet} \cdot 0.000189 \frac{mile}{feet} \cdot 21.9 \frac{\text{mile}}{hour^2}} = 0.91 \frac{mile}{hour}.$$

Answer: $0.91 \frac{mile}{hour}.$