Problem 6.3

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a.) What's the baseball's velocity?

b.) Which has the greater kinetic energy?

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a.) What's the baseball's velocity?

$$m_b v_b = m_{bb} v_{bb}$$

$$\Rightarrow \quad v_{bb} = \frac{m_b}{m_{bb}} v_b$$

$$\Rightarrow \quad v_{bb} = \frac{(.003 \text{ kg})}{(.145 \text{ kg})} \left(1.5 \times 10^3 \text{ m/s}\right)$$

$$\Rightarrow \quad v_{bb} = 32 \text{ m/s}$$

b.) Which has the greater kinetic energy?

What governs energy is the velocity (that's what' squared). The bullet's velocity is much larger, so the bullet's kinetic energy will be greater (put a little differently, which would you prefer, being hit by the baseball or the bullet? Think about it!).

2.)