This video was very popular on the internet for a while, and there is much speculation about whether the young lady actually goes through the basketball hoop or not. Regardless of the video's authenticity, there are some great energy questions to ask your students:

1) What is the woman's total energy at the top of her trajectory?

   Assuming a mass of the woman of is about 50 kg (110 pounds) and she goes up to a height of about 6 m (20 ft), you can then calculate her gravitational potential energy:

$$PE = mgh = (50\ kg)\left(9.8\frac{m}{s^2}\right)(6\ m) = 3000\ J$$

2) What is the woman's velocity at the bottom of her trajectory, right after she leaves the guy's hands?
   Her gravitational potential energy at this point is 0 J, so the total of 3000 J is all in the form of kinetic energy:

$$KE = \frac{1}{2}mv^2 = \frac{1}{2}(50\ kg)v^2 = 3000\ J$$

$$v = 10\frac{m}{s}$$

3) Finally, what is the woman's speed when she travels through the basketball hoop?

   At this point, her 300 J of energy is in the form of kinetic and gravitational potential energy. Assume the height of the hoop is 3 m (10 feet), and velocity is calculated:

$$KE + PE = \frac{1}{2}mv^2 + mgh = 3000\ J$$

$$KE + PE = \frac{1}{2}(50\ kg)v^2 + (50\ kg)\left(9.8\frac{m}{s^2}\right)(3\ m) = 3000\ J$$

$$v = 8\frac{m}{s}$$