A 5kg pumpkin is dropped from the roof of the school. If the school is 10 m tall, what is the final velocity of the pumpkin when it hits the ground? (if something is just dropped, what is its initial velocity? Acceleration due to gravity = 9.81 m/s2

The law of conservation of energy:

$$T + U = const$$

$T = \frac{mv^2}{2}$ - kinetic energy, m - mass of the body, v - speed

$U = mgh$ - potential energy, g - gravitational acceleration, h - high

If pumpkin is just dropped, $v_0 = 0$

$$0 + mgh = mv^2/2 + 0$$

$$v = \sqrt{2gh} = \sqrt{2 * 9.81 \frac{m}{s^2} 10\, m} = 14.0 \frac{\text{m}}{\text{s}}$$

Answer: $14.0 \frac{\text{m}}{\text{s}}$