

A watermelon cannon fires a watermelon vertically up into the air at a velocity of +11.5 m/s, starting from an initial position 1.20 meters above the ground. When the watermelon reaches the peak of its flight, what is (a) its velocity, (b) its acceleration, (c) the elapsed time, and (d) its height above the ground?

**Solution:**

$$H = H_0 + \frac{v^2}{2g}, \text{ where } v - \text{initial velocity, } g = 9.8 \frac{m}{c^2}$$

$$H = 1.2 + \frac{11.5^2}{2 \cdot 9.8} = 7.95 \text{ m}$$

$$t = \frac{v}{g} = \frac{11.5}{9.8} = 1.17 \text{ s}$$

**Answer:**

When the watermelon reaches the peak of its flight, its velocity is 0, acceleration is  $9.8 \frac{m}{c^2}$ , the elapsed time is: 1.17 s, its height above the ground is: 7.95m.