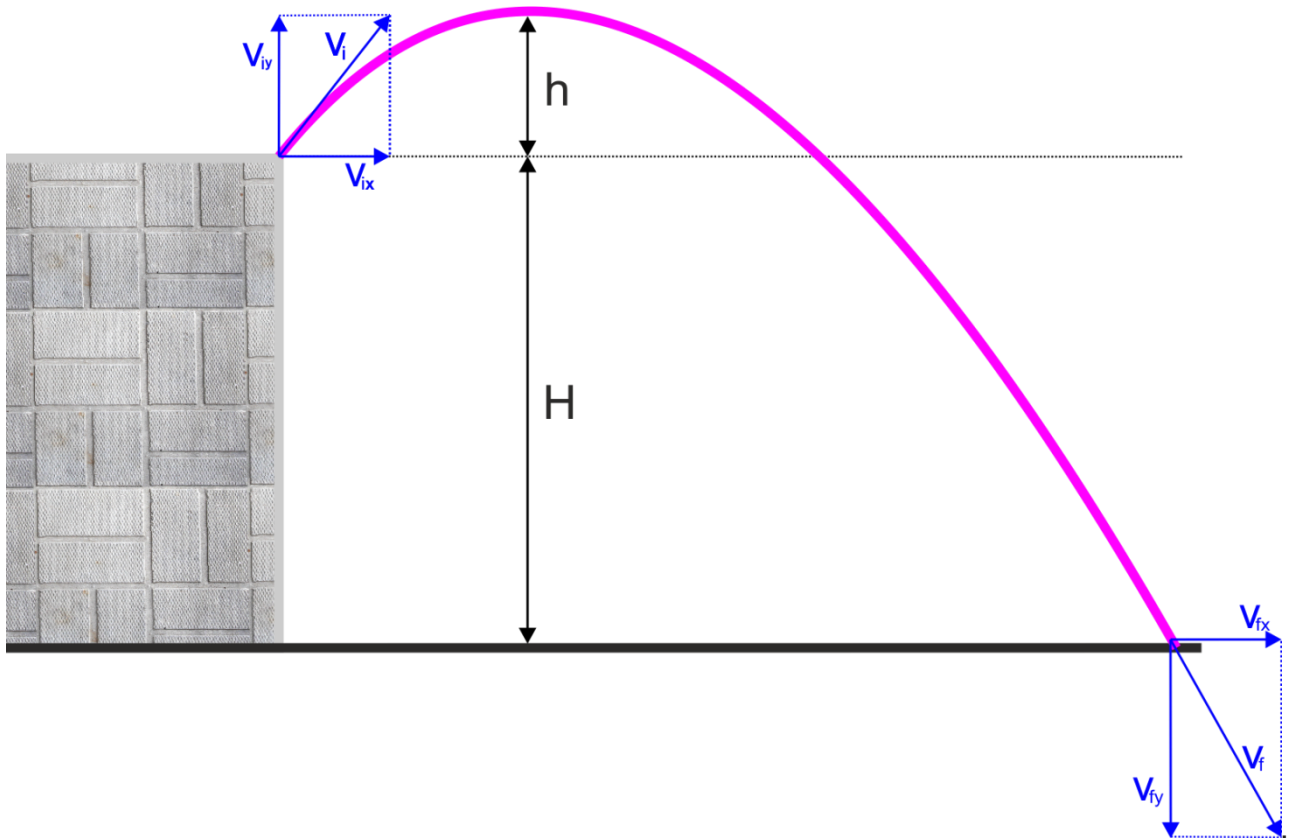


Answer on Question #83620 Physics / Other

A 0.04 kg ball is thrown from the top of the $H = 30$ m tall building at an unknown angle above the horizontal. The ball attains a maximum height of $h = 10$ m above the top of the building before striking the ground. If air resistance is neglected, sketch the trajectory of the motion of the ball. Hence, calculate the vertical component of the velocity at the point of projection and the final velocity of the ball at the ground level.

Solution:



The vertical component of the initial velocity

$$v_{iy} = \sqrt{2gh} = \sqrt{2 \times 9.8 \times 10} = 14 \text{ m/s}$$

The vertical component of the final velocity

$$v_{fy} = -\sqrt{2g(h + H)} = -\sqrt{2 \times 9.8 \times 40} = -24 \text{ m/s}$$

Answer: $14 \frac{\text{m}}{\text{s}}, -24 \frac{\text{m}}{\text{s}}$

Answer provided by <https://www.AssignmentExpert.com>