Answer on Question #41219, Physics, Mechanics | Kinematics | Dynamics

Question:

How fast must a ball be rolled along the surface of a 70-cm high table so that when it rolls off the edge it will strike the floor at the same distance (70cm) from the point directly below the edge of the table?

Answer:

Equations for projective motion:

$$l = vt$$

$$h = \frac{gt^2}{2}$$

Therefore, initial speed of the ball equals:

$$v = \frac{l}{t} = \frac{l}{\sqrt{2 * \frac{h}{g}}} = \frac{0.7}{\sqrt{2 \cdot \frac{0.7}{9.81}}} = 1.85 \frac{m}{s}$$

Answer: $1.85 \frac{m}{s}$