Answer on Question #68496, Physics / Mechanics | Relativity |

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(70-cm) from the point directly below the edge of the table?

a)174.5 cm/s
b) 143.7 cm/s
c) 215.3 cm/s
d) 185.2 cm/s

Solution

$$h = 70cm$$
$$S = 70cm$$
$$g = 9.8ms^{-1}$$

Time of falling is

$$t = \sqrt{\frac{2h}{g}} = 0.378c.$$

Horizontal velocity
$$v = \frac{S}{t} = \frac{70cm}{0.378s} = 185.2 \, cm/s.$$

Answer: d) 185.2 cm/s