18. We adopt the positive direction choices used in the textbook so that equations such as Eq. 4-22 are directly applicable.

(a) With the origin at the initial point (edge of table), the y coordinate of the ball is given by $y = -\frac{1}{2}gt^2$. If t is the time of flight and $y = -1.20$ m indicates the level at which the ball hits the floor, then

$$t = \sqrt{\frac{2(1.20)}{9.8}} = 0.495 \text{ s} .$$

(b) The initial (horizontal) velocity of the ball is $\vec{v} = v_0 \, \hat{\imath}$. Since $x = 1.52$ m is the horizontal position of its impact point with the floor, we have $x = v_0 t$. Thus,

$$v_0 = \frac{x}{t} = \frac{1.52}{0.495} = 3.07 \text{ m/s} .$$