Answer on Question #62282-Physics-Mechanics

The top of the pool table is 2.75 ft from the floor. The placement of the tape is such that 0 feet aligns to the edge of the table (as shown). The winner of the competition wants to know if he has broken the world record for the break shot of 32 mph. His ball landed a distance 15.75 ft from the table edge. Calculate his break shot speed.

Solution

$$h = \frac{gt^2}{2} \rightarrow t = \sqrt{\frac{2h}{g}}$$

$$x = vt \rightarrow v = \frac{x}{t}$$

$$v = x\sqrt{\frac{g}{2h}} = 15.75(0,3048)\sqrt{\frac{9.81}{2(2.75)(0,3048)}} = 11.61\frac{m}{s}.$$

$$v = \frac{11.61}{0.44704}mph = 25.97\ mph$$

It is less than the world record for the break shot of 32 mph.