Answer on Question 38125, Physics, Mechanics The momentum of the ball right before the hit is

$$p_1 = -mv = -m\sqrt{2gh_1}$$

The momentum just after the hit is

$$p_2 = mv = m\sqrt{2gh_2}$$

Change of momentum is

$$\Delta p = p_2 - p_1 = m\sqrt{2g}(\sqrt{h_2} + \sqrt{h_1})$$

Hence needed time is

$$t = \frac{\Delta p}{F} = \frac{m\sqrt{2g}(\sqrt{h_2} + \sqrt{h_1})}{F} = \frac{0.05\sqrt{2 \cdot 10}(\sqrt{45} + \sqrt{20})}{200} = 0.0125\, s$$