

2. Two cushions of a snooker table W_1 and W_2 meet at right angles. A snooker ball travels across the table and collides with W_1 and then W_2 . The cushions are modelled as smooth. Just before the first impact, the ball is moving with speed $u \text{ ms}^{-1}$ at an angle of 20° to W_1 . The coefficients of restitution between the ball and the cushions W_1 and W_2 are $\frac{1}{2}$ and $\frac{2}{5}$ respectively.

a) Find the percentage of the ball's original kinetic energy that is lost in the collisions

b) In reality the cushions may not be smooth. What effect will the model have had on the calculation of the kinetic energy remaining?

3. Two smooth vertical walls stand on a smooth horizontal surface and intersect at an angle of 60° . A smooth sphere is projected across the surface with speed 1 ms^{-1} at an angle of 20° to one of the walls, and towards the intersection of the walls. The coefficient of restitution between the sphere and the walls is 0.4. Work out the speed and motion of the sphere after:

a) The first collision

b) The second collision