

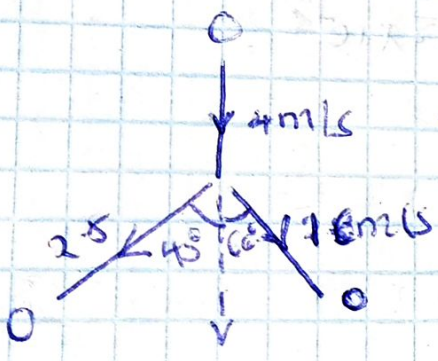
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$m = 1500 \text{ kg}$
 $r = 7.5 \text{ m}$
 $v = 25 \text{ m/s}$
 $\theta = 22^\circ$

Frictional Force, $F_r = \text{Centripetal force}$
 $= Mg \tan \theta$
 $= 1500 \times 10 \times \tan 22^\circ$
 $= \underline{\underline{6,060.39 \text{ N}}}$

b) Co-efficient of static friction, μ
 $= \tan \theta$
 $= \tan 22^\circ$
 $= \underline{\underline{0.4040}}$

7)



a) moment before = moment after
 $4.0 \times 0.5 = v \times 0.5 + 2.8 \times 0.5 + 1.6 \times 0.5$
 $2.0 = 0.5v + 1.4 + 0.8$
 $2.0 - 2.2 = 0.5v$
 $-0.2 = 0.5v$
 $v = \underline{\underline{-0.4 \text{ m/s}}}$

b) K.E before = $\frac{1}{2} m v^2 = 1.96 + 0.064 + 0.24 = 2.64 \text{ J}$
 $= \frac{1}{2} \times 0.5 \times 4 \times 4 = 4 \text{ J}$
 After
 3 Balls $= \frac{1}{2} \times 0.5 \times 2.8^2 + \frac{1}{2} \times 0.5 \times 1.6^2 + \frac{1}{2} \times 0.5 \times 0.4^2$
 $= 4 - 2.64 = \underline{\underline{1.36 \text{ J}}}$
 Energy lost

$$4) a = \frac{1}{2} k e^2$$

$$= \frac{1}{2} \times 2.00 \times 10^2 \times 0.2^2$$

$$= \underline{\underline{4J}}$$

$$b) \underline{5.00 \times 10^{-2}} \times$$

$$E = \frac{1}{2} m v^2$$

$$4 = \frac{1}{2} \times (5.00 \times 10^{-2} + 4.5 \times 10^{-1}) \times v^2$$

$$v^2 = \frac{4}{\frac{1}{2} (5.00 \times 10^{-2} + 4.5 \times 10^{-1})}$$

$$\sqrt{v^2} = \sqrt{16}$$

$$v = \underline{\underline{4 \text{ m/s}}}$$

$$c) \frac{5.00 \times 10^{-2} \times u}{5.00 \times 10^{-2}} = \frac{(5.00 \times 10^{-2} + 4.5 \times 10^{-1}) \times 4}{5.00 \times 10^{-2}}$$

$$u = \underline{\underline{40 \text{ m/s}}}$$