

QUESTION

- b. If the collision lasts for 0.0625 seconds calculate the force that acted on each mass during the collision.

Answer

$$F_1 = 200 \text{ N, for 2.5kg}$$

$$F_2 = 382.592 \text{ N, for 4.9kg}$$

Explanation

$$m_1 = 2.5\text{kg}$$

$$m_2 = 4.9\text{kg}$$

$$v_{f1} = 5\text{m/s}$$

$$v_{f2} = 4.88\text{m/s}$$

$$t = 0.0625\text{s}$$

For 2.5kg;

$$F_1 = m_1 a$$

$$= m_1 (v_{f1} / t)$$

$$= 2.5(5 / 0.0625)$$

$$= \mathbf{200 \text{ N}}$$

For 4.9kg;

$$F_2 = m_2 (v_{f2} / t)$$

$$= 4.9(4.88 / 0.0625)$$

$$= \mathbf{382.592 \text{ N}}$$