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Momentum and impulse review worksheet answers

and a speed of 4m/s. What is the weight of the dart in grams? (hint: figure kg, and then convert the response to grams) $M = p/v = .140/4 = \text{conversion}.035\text{kg} \cdot .035 \times 1000 = 35\text{grams}$ 5. A bowling ball weighing 35.2 kg generates 218 kg.m/s of momentum units. What is the speed of the bowling ball? $V = p/m = 218/35.2 = 6.2 \text{ m/s}$ 6. The school bus travelling at 40 km/h (11.1 m/s) has a speed of 152625 kg.m/s. What is the weight of the bus? $M = p/v = 152625/11.1 = 13,750 \text{ kg}$ Protection of momentum problems (collision problems) 7. A 12,000kg. The train carriage travels at a speed of 2m/s when it hits another 10,000kg railroad car which is at rest. If the cars close together, what is the final speed of the two train carriages? $p_1 = p_2 \quad m_1 v_1 = m_2 v_2 \quad (12\ 000) (2) = (22\ 000) v_2 \quad m_2 = \text{weight of both cars } 12\ 000 + 10\ 24,000 = 22,000 \quad v_2 = 24,000/22,000 = v_2 \quad v_2 = 1.1 \text{ m/s}$ 8. A 9300 kg, a railway wagon travelling at a speed of 15 m/s shall hit the second boxcar at rest. If the two cars stick together and go away at 6m/s, what is the weight of the other car? $p_1 = p_2 \quad m_1 v_1 = m_2 v_2 \quad (9300) (15) = (m_2) (6) \quad m_2 = \text{mass of both cars} = 9300 + X \quad 139\ 500 = (9300 + X) (6) \quad X = \text{mass of the second field car } 139\ 500 = 55\ 800 + 6X \quad 139\ 500 - 55\ 800 = 6X \quad 83\ 700 = 6X \quad 83\ 700/6 = X \quad X = 13\ 950 \text{ kg}$ 9. The 25-gram projectile is fired from the gun at a speed of 230 m/s. If the gun has a weight of 0.9 kg, what is the speed of the gun recoil? $p_1 = p_2 \quad m_1 v_1 = m_2 v_2$ Uses Newton's third right (action = reaction) $(.025) (230) = (.9) v_2$ Conversion 25grams per kg = $2\ 5/1000 = .025\text{kg}$ $5.75 = (.9) v_2 \quad 5.75/.9 = v_2 \quad 6.4 \text{ m/s} = v_2$ 10. A 20-gram projectile travelling at 250 m/s hits a block of wood that weighs 2 kg. At what speed will the block and ball move after the collision? $p_1 = p_2 \quad m_1 v_1 = m_2 v_2 \quad (.020) (250) = (2.02) v_2 \quad 5 = (2.02) v_2 \quad 5/2.02 = v_2 \quad 2.5 \text{ m/s} = v_2$ If you see this message, it means that we are having trouble loading external resources on our website. If you are behind an internet filter, make sure that the *.kastatic.org and *.kasandbox.org are unlocked. Unlocked. Unlocked.

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