

$$1: v = 60 \text{ m/s} \quad T = 8 \text{ s} \quad \text{Masa} = 45 \text{ kg} \quad m_0 = v \quad p_0 = m \cdot v$$

$$a = \frac{60}{8} = 7.5 \quad F = 45 \cdot 7.5 = 337.5 \text{ N}$$

$$p = mv = 45 \cdot 60 = 2700 \text{ kg} \cdot \text{m/s} \quad I = 337.5 \cdot 8 = 2700 \text{ kg} \cdot \text{m/s}$$

$$2. \quad m = 50 \text{ kg} \quad v = 2.4 \text{ m/s} \quad P = mv = 50 \cdot 2.4 = 120 \text{ kg} \cdot \text{m/s}$$

$$3. \quad m = 1000 \text{ kg} \quad v = 20 \text{ m/s} \quad d = 160 \text{ m}$$

$$a = \frac{20^2}{2 \cdot 160} = \frac{400}{320} = 1.25 \text{ m/s}^2 \quad p = mv = 1000 \cdot 20 = 20,000 \text{ kg} \cdot \text{m/s}$$

$$T = \frac{20}{1.25} = 16 \text{ s} \quad F = 1000 \cdot 1.25 = 1250 \text{ N}$$

$$4. \quad m = 200 \text{ g} \quad v_i = 3 \text{ m/s} \quad v_f = 8 \text{ m/s} \quad I = 4 \text{ s}$$

$$p_i = 0.2 \cdot 3 = 0.6 \text{ kg} \cdot \text{m/s} \quad p_f = 0.2 \cdot 8 = 1.6 \text{ kg} \cdot \text{m/s}$$

$$I_p = p_f - p_i = 1.6 - 0.6 = 1.0 \text{ kg} \cdot \text{m/s} \quad F_c = \frac{1.0}{4} = 0.25 \text{ N}$$

$$5. \quad W = 150 \text{ N} \quad v = 50 \text{ km/h}$$

$$50 \cdot 1000 / 3600 = 13.888 \text{ m/s} \quad M = W/g = 150 / 9.8 = 15.306122 \text{ kg}$$

$$p = mv = 15.306122 \cdot 13.888888 = 212.3 \text{ kg} \cdot \text{m/s}$$

$$6. m = 60 \text{ kg} \quad v = 10 \text{ m/s} \quad p = 60 \cdot 10 = 600 \text{ kg m/s}$$

¿Que velocidad debe llevar una persona de 50 kg para tener el mismo?

$$v = p/m = 600/50 = 12 \text{ m/s}$$

$$7. m_c = 100 \text{ kg} \quad \leftarrow 0.10 \text{ m/s} \quad m_b = 2 \text{ kg}$$

$$v_b = -100 \cdot (-10)/2 = 5.0 \text{ m/s}$$

$$8. F = 250 \text{ N} \quad d = 36 \text{ m} \quad m = 500 \text{ kg}$$

$$v = \sqrt{\frac{2 \cdot 250 \cdot 36}{500}} = \sqrt{36} = 6 \text{ m/s}$$

9. Techo de 4m, marca a 1m sobre el piso. Masa de la piedra

$$m = 2 \text{ kg} = 9.8 \text{ m/s}^2$$

$$m \cdot g \cdot h = 2 \cdot 9.8 \cdot 4 = 78.4 \text{ J} \quad U_{\text{top}} = U_1 = 78.4 - 19.6 = 58.8 \text{ J}$$

$$U_1 = 2 \cdot 9.8 \cdot 1 = 19.6 \text{ J}$$

$$10. a) m = 200 \text{ kg} \quad v = 30 \text{ m/s} \quad F = 500 \text{ N}$$

$$0.5 \cdot 200 \cdot 30^2 = 0.5 \cdot 200 \cdot 900 = 90,000 \quad d = \frac{90000}{500} = 180 \text{ m}$$

$$11) \text{ Fuerza horizontal } 125 = 12.5 \text{ N}, 600 \text{ cm} = 6 \text{ m} \quad m = 250 \text{ kg}$$

$$v = \sqrt{\frac{2 \cdot 12.5 \cdot 6}{250}} = \sqrt{0.36} = 0.7746 \text{ m/s}$$

12) $P = 3.6 \text{ N}$ y $V = 13 \text{ m/s}$ $m = 0.36735 \text{ kg}$

13) A que altura debe estar una masa de 6 kg para que $U = 80 \text{ J}$

$$h = \frac{U}{mg} = \frac{80}{6 \cdot 9.8} = 1.3605 \text{ m.}$$