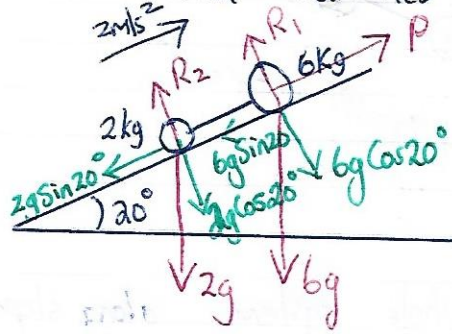


Connected Particles Inclined Planes : Answers

i)



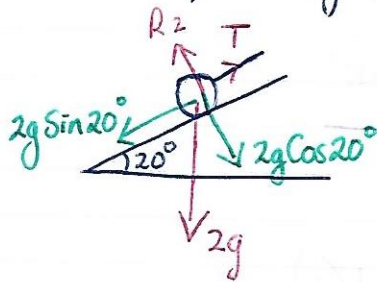
a) $RF = ma$ whole system along slope

$$P - 6g \sin 20^\circ - 2g \sin 20^\circ = 8(2)$$

$$P = 16 + 8g \sin 20^\circ$$

$$P = 26.8 \text{ N}$$

b) $RF = ma$ for 2kg mass

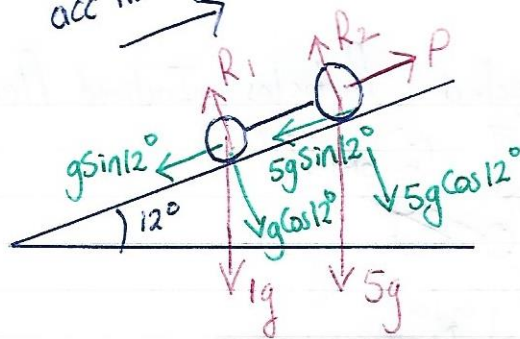


$$T - 2g \sin 20^\circ = 2(2)$$

$$T = 4 + 2g \sin 20^\circ$$

$$T = 10.7 \text{ N}$$

2)



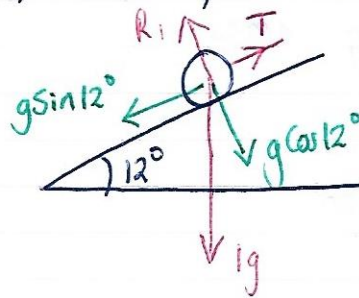
a) $Rf = ma$ whole system along slope

$$P - g \sin 12^\circ - 5g \sin 12^\circ = 6(1)$$

$$P = 6 + 6g \sin 12^\circ$$

$$P = 18.23 \text{ N}$$

b) $Rf = ma$ for 1 kg mass

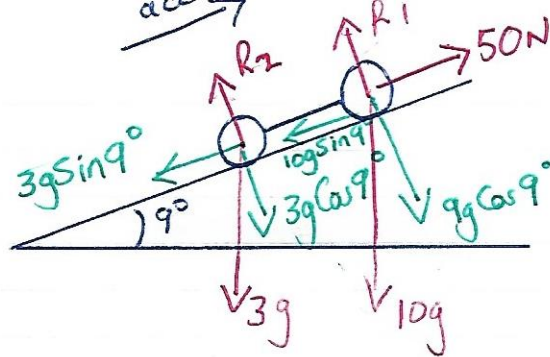


$$T - g \sin 12^\circ = 1(1)$$

$$T = 1 + g \sin 12^\circ$$

$$T = 3.04 \text{ N}$$

3)



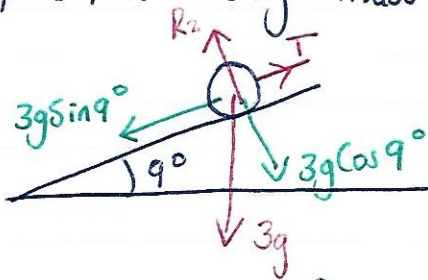
a) $RF = ma$ whole system along slope

$$50 - 3g \sin 9^\circ - 10g \sin 9^\circ = 13a$$

$$\frac{50 - 13g \sin 9^\circ}{13} = a$$

$$2.31 \text{ m/s}^2 = a$$

b) $RF = ma$ 3 kg mass



$$T - 3g \sin 9^\circ = 3(2.31)$$

$$T = 6.93 + 3g \sin 9^\circ$$

$$T = 11.53 \text{ N}$$