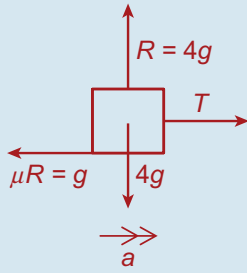
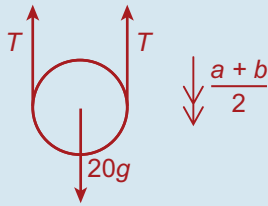


Q. 7. 4 kg Mass



$$T - g = 4a \quad \text{Equation 1}$$

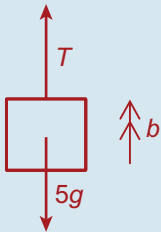
20 kg Pulley



$$20g - 2T = 20\left(\frac{a+b}{2}\right)$$

$$\Rightarrow 10g - T = 5(a+b) \quad \text{Equation 2}$$

5 kg Mass



$$T - 5g = 5b \quad \text{Equation 3}$$

$$T - g = 4a \quad \text{Equation 1}$$

$$\Rightarrow a = \frac{T - g}{4}$$

$$T - 5g = 5b \quad \text{Equation 3}$$

$$\Rightarrow b = \frac{T - 5g}{5}$$

$$10g - T = 5(a+b) \quad \text{Equation 2}$$

$$\Rightarrow 10g - T = 5a + 5b$$

$$\Rightarrow 10g - T = 5\left(\frac{T - g}{4}\right) + 5\left(\frac{T - 5g}{5}\right)$$

$$\Rightarrow 10g - T = \frac{5}{4}T - \frac{5}{4}g + T - 5g$$

... multiply by 4

$$\Rightarrow 40g - 4T = 5T - 5g + 4T - 20g$$

$$\Rightarrow 13T = 65g$$

$$\Rightarrow T = 5g$$

Acceleration of 20 kg

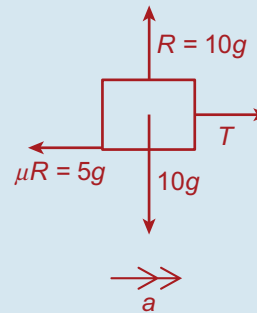
$$\text{pulley} = \frac{1}{2}(a+b)$$

$$= \frac{1}{2}\left(\frac{T - g}{4} + \frac{T - 5g}{5}\right) \quad \dots T = 5g$$

$$= \frac{1}{2}(g + 0)$$

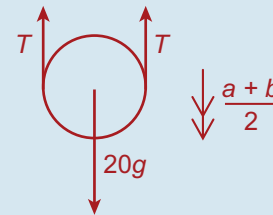
$$= \frac{g}{2}$$

Q. 8. 10 kg Mass



$$T - 5g = 10a \quad \text{Equation 1}$$

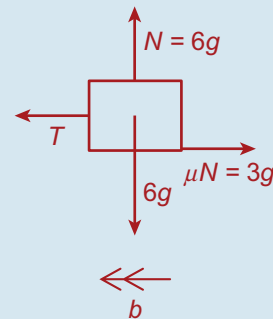
20 kg Pulley



$$20g - 2T = 20\left(\frac{a+b}{2}\right)$$

$$\Rightarrow 10g - T = 5a + 5b \quad \text{Equation 2}$$

6 kg Mass



$$T - 3g = 6b \quad \text{Equation 3}$$

$$T - 5g = 10a \quad \text{Equation 1}$$

$$\Rightarrow a = \frac{T - 5g}{10}$$