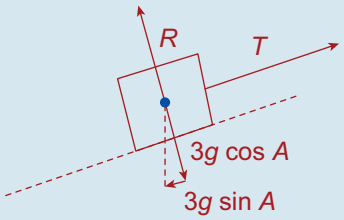
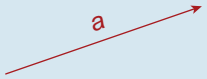
Resolved



Acceleration



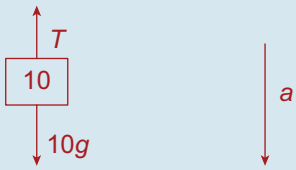
$F = ma$

$\Rightarrow T - 3g \sin A = 3a$

$\Rightarrow T - g = 3a$ **Equation 1**

10 kg

Forces **Accelerations**



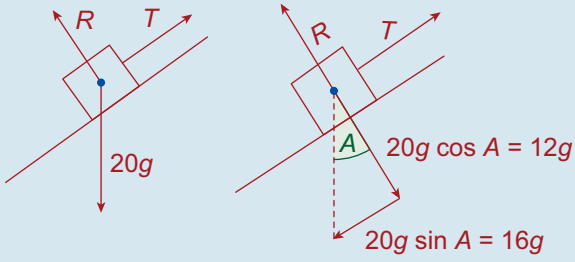
$10g - T = 10a$ **Equation 2**

Solving these gives $a = \frac{9}{13}g$, $T = \frac{40g}{13}$

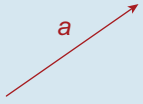
Q. 3. (i) $\tan A = \frac{4}{3} \Rightarrow \sin A = \frac{4}{5}$, $\cos A = \frac{3}{5}$.

20 kg's

Forces **Resolved**



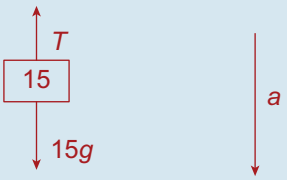
Acceleration



$T - 16g = 20a$ **Equation 1**

15 kg's

Forces **Acceleration**



$15g - T = 15a$ **Equation 2**

Solving these gives

$a = -\frac{1}{35}g$

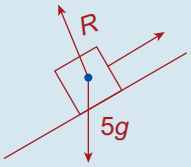
$\Rightarrow$ acceleration $= \frac{9.8}{35}$

$= 0.28$ m/s^2

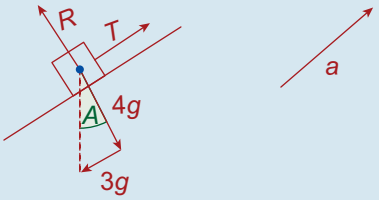
(ii) The 15 kg rises (since the downward "a" was negative – i.e. it should be upward).

Q. 4. (i) **5 kg's**

Forces



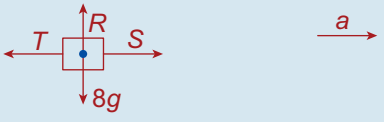
Resolved **Acceleration**



$T - 3g = 5a$ **Equation 1**

8 kg's

Forces **Acceleration**



$S - T = 8a$ **Equation 2**