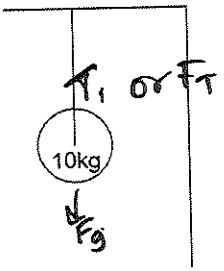
2Dimensional (F = ma) Class work

Ball being held with 1 rope

1. Label all forces present on the ball.
2. Calculate each force.

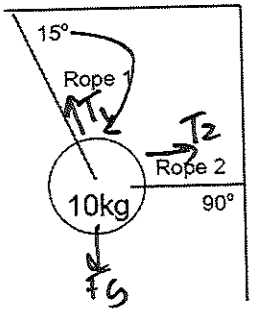
$F_g = 10 \cdot 10 = 100\,N$

$F_g = F_T = 100\,N$



Ball being held with 2 ropes

3. Label all forces present on the ball.
4. Calculate each force.



T_{1x}, T_{1y}, 15°, T_1, ?, 100

$y: T_{1y} = F_g$

$T_1 \cos\theta = 100$

$T_1 = 100/\cos(15) = 103\,N$

$F_g = 100\,N$

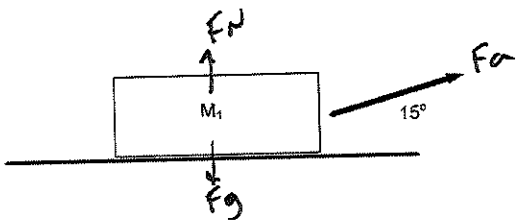
$x: T_{1x} = T_2$

$T_1 \sin\theta = T_2$

$100 \cdot \sin 15 = 25.8\,N$

Box being pulled on a frictionless surface at an angle.

5. Label all forces
6. Generate a formula with, M_1, g , Fa and trig functions to calculate the acceleration of the box.

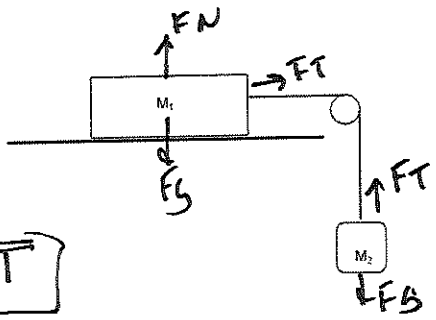


$a = \frac{\Sigma F}{m} = \frac{F_{ax}}{m} = \frac{Fa\cos\theta}{m} = a$

F_{ax} ← Fa, x → use Trig funct

Atwood machine pulling a box on a frictionless pully.

7. Label all forces
8. Generate a formula with, M_1, g , Fa and trig functions to calculate the acceleration of the box.



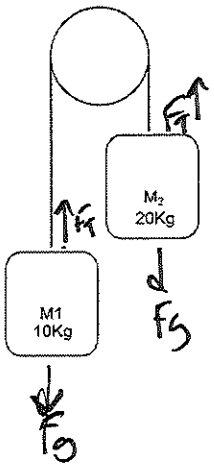
$a = \frac{\Sigma F}{m} = \frac{F_g}{m_{total}} = \frac{M_2 g}{m_1 + M_2} = a$

Tension on Rope = F_g

$M_2 g = T$

Two masses are hooked to pully and hanging vertically

9. Label all forces
10. Calculate the
    a. Net force on the two-block system
    b. Net force on each block
    c. Acceleration of the system



a) $\Sigma F = F_{g1} - F_{g2} = (10 \cdot 10) - (20 \cdot 10) = -100\,N$

b) $+100\,N \quad -200\,N$

c) $a = \frac{-100}{30} = 3.3\,m/s^2$

$F_{net} = F_1 + F_2 =$