

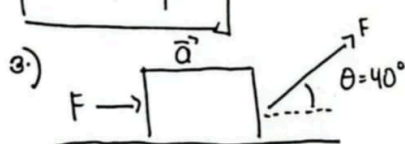
1) $M = 5.00 \text{ kg}$
 $\vec{F}_1 = (3.00\hat{i} + 2.00\hat{j}) \text{ N}$
 $\vec{F}_2 = (4.00\hat{i} - 1.00\hat{j}) \text{ N}$

$a = \frac{F}{M} = \left(\frac{7.00 + 1.00}{5 \text{ kg}} \right)$
 $= (1.4\hat{i} + 0.2\hat{j})$

$F_{\text{net}} = F_1 + F_2$
 $= [(3.00\hat{i} + 2.00\hat{j}) + (4.00\hat{i} - 1.00\hat{j})]$
 $= 7.00\hat{i} + 1.00\hat{j} \text{ N}$

$\sqrt{(1.4)^2 + (0.2)^2}$

$a = 1.41 \text{ m/s}^2$



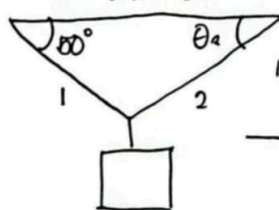
$F = 4 \text{ N}$ $F_{\text{net}} = 4 \text{ N} + 4 \text{ N} \cos(40^\circ) = 7.06 \text{ N}$

$M = 2 \text{ kg}$ $a = \frac{F_{\text{net}}}{m} = \frac{7.06 \text{ N}}{2 \text{ kg}}$

$a = 3.53 \text{ m/s}^2$

$x = 4 \text{ N} \cos 40 = 3.06$
 $y = 4 \text{ N} \sin 40 = 2.57$

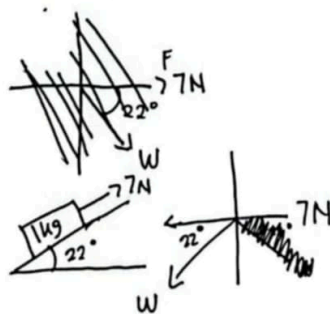
4) $T_1 = 34 \text{ N}$ $\theta_1 = 50^\circ$
 $T_2 = 24 \text{ N}$ $\theta_2 =$



$F_x: T_1 \cos 50 = T_2 \cos \theta$
 $= \theta = \arccos \left(\frac{34 \text{ N} \cos 50}{24 \text{ N}} \right)$

$\theta = 24.41^\circ$

5) $M = 1 \text{ kg}$
 $a = 1.4 \text{ m/s}^2$



$F = F - W \sin \theta - ma = 7 \text{ N} - 9.8 \text{ m/s}^2 \sin(22) - 1 \text{ kg} a$

$f = 1.93 \text{ N}$

2) $M = 5.0 \text{ kg}$ $T = F = mg$

$a = 2.0 \text{ m/s}^2$

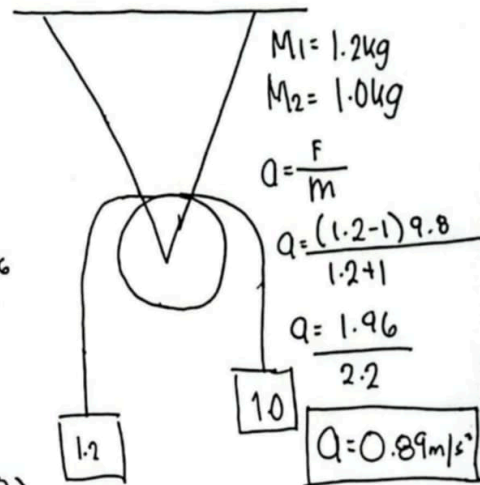
$T = m(g - a)$

$= 5 \text{ kg} (9.8 - 2.0) \text{ m/s}^2$

$= 5 \text{ kg} (7.2 \text{ m/s}^2)$

$T = 36 \text{ N}$

C



$a = \frac{F}{m}$

$a = \frac{(1.2 - 1.0) 9.8}{1.2 + 1}$

$a = \frac{1.96}{2.2}$

$a = 0.89 \text{ m/s}^2$