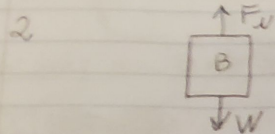


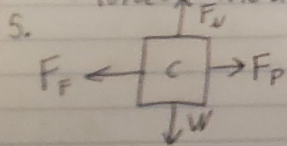
PHYS 407

1. W and F_v

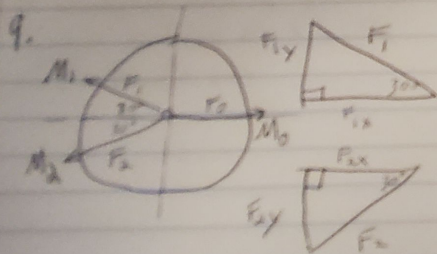


3. all forces sum to zero thus net force = 0 N

- 4.
1. weight of crate
 2. normal force
 3. force of push
 4. force of friction between crate and floor



6. all forces sum to 0



$$F_o = F_{ox} = 1.47 \text{ N}$$

$$F_{1x} + F_{2x} = F_{ox}$$

$$F_1 = F_2$$

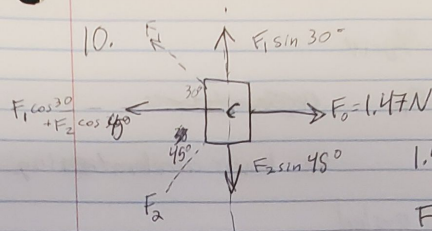
$$F_o \cos 30^\circ + F \cos 30^\circ = 1.47$$

$$\frac{2F \cos 30^\circ}{2} = 1.47$$

$$\frac{F \cos 30^\circ}{\cos 30^\circ} = \frac{0.735 \text{ N}}{\cos 30^\circ}$$

$M_1, M_2 = 86.9 \text{ kg}$
 $F_{max} = 0.899 \text{ N}$

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$$1.47 = F_1 \cos 30^\circ + F_2 \cos 45^\circ$$

$$F_1 \sin 30^\circ = F_2 \sin 45^\circ$$

$$F_1 = \frac{F_2 \sin 45^\circ}{\sin 30^\circ} = 2 F_2 \sin 45^\circ$$

$$(2 F_2 \sin 45^\circ) \cos 30^\circ + F_2 \cos 45^\circ = 1.47$$

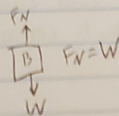
calculator $(2 \times \sin 45^\circ) \cos 30^\circ + F_2 \cos 45^\circ - 1.47 = 0$

$$F_2 = 0.76 \text{ N} = 77.5 \text{ g}$$

$$F_1 = 2(0.76) \sin 45^\circ = 1.07 \text{ N} = 109.11 \text{ g}$$

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1.



no external forces are acting on the box. It is not accelerating.

2.

constant velocity = no acceleration

nobody is pushing the box