

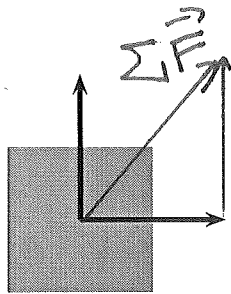
# CHAPTER 4, SECTIONS 4.1-4.4

## 4.2 - Force

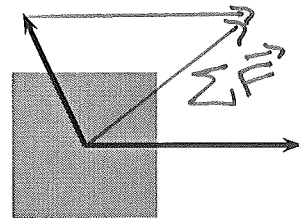
(1.) Two or more forces are shown on the objects below. Draw and label the net force  $\Sigma \vec{F}$ .

$\Sigma \vec{F}_{\text{given}}$   
by Vector Sum

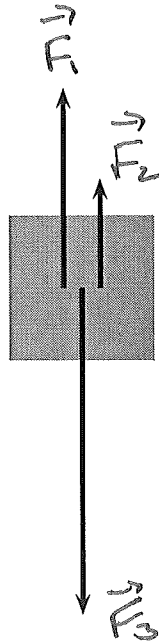
(a)



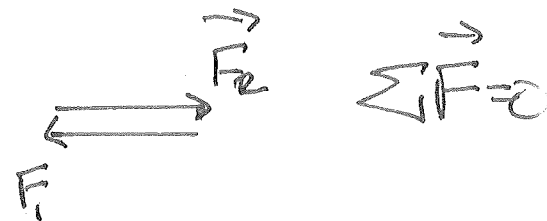
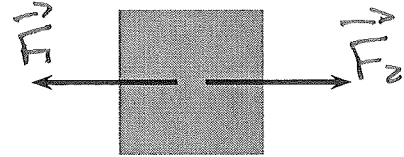
(b)



(c)



(d)

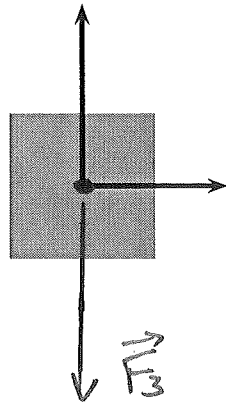


Start of  $F_3$   
Start of  $F_2$   
 $\Sigma \vec{F}$

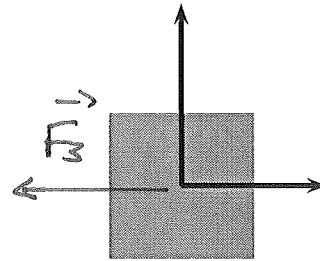
(2.) On each of the objects below, two out of three forces are shown. The direction of the net force is given, draw and label the smallest possible third force.

(a)  $\sum \vec{F}$  to the right

HAVE to  
CANCEL upwards  
FORCE

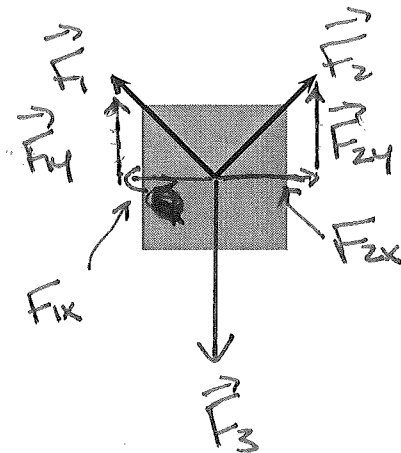


(b)  $\sum \vec{F}$  up



HAVE to  
CANCEL  
FORCE to  
the RIGHT

(c)  $\sum \vec{F}$  is zero

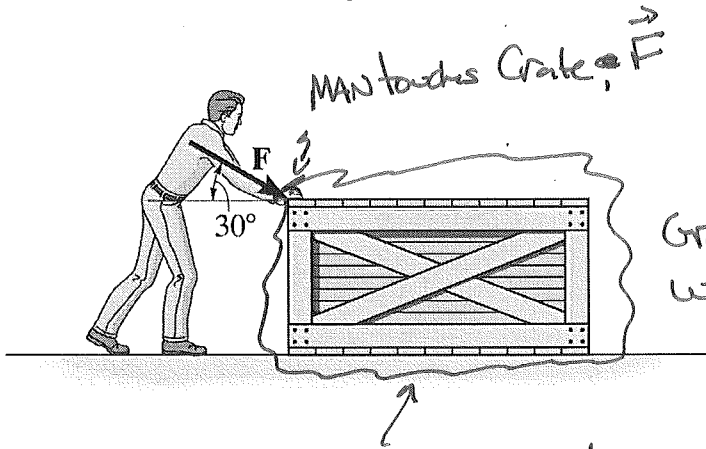


$\vec{F}_1$  AND  $\vec{F}_2$  ALREADY CANCEL  
EACH OTHER IN X-DIRECTION  
SO JUST NEED A DOWNWARD  
FORCE WITH LENGTH  $(F_{1y} + F_{2y})$

## 4.4 - Identifying Forces

For each of the following pictures and situations identify and name all forces acting on the object of interest. *Note:* These pictures may contain additional information that may not be necessary to include yet. You may want to refer to Tactics Box 4.2 of the textbook for examples.

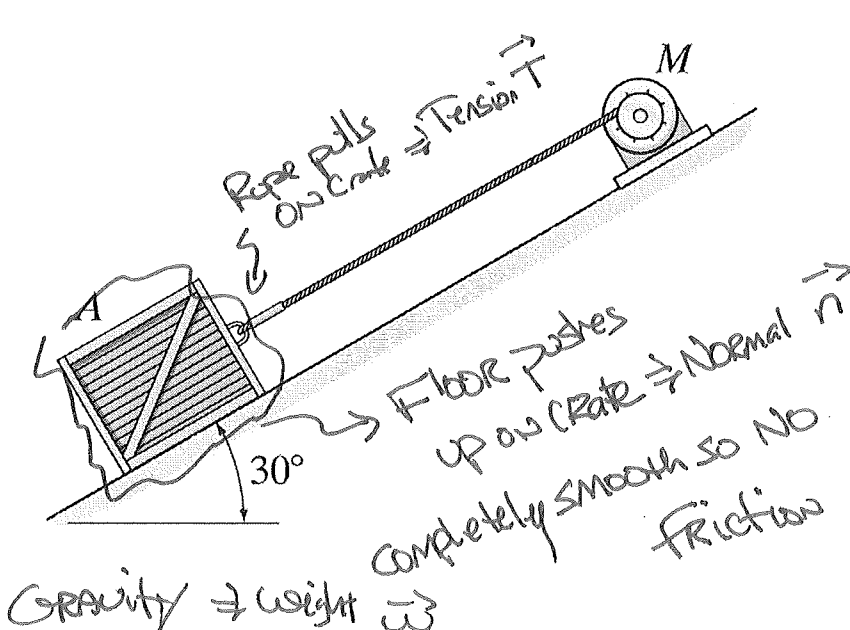
- (1.) A man pushes a crate across a rough, horizontal floor. What forces are being exerted on the crate?



Forces:  $\vec{F}$ , Normal  $\vec{n}$ , Friction  $\vec{f}$ , weight  $\vec{w}$

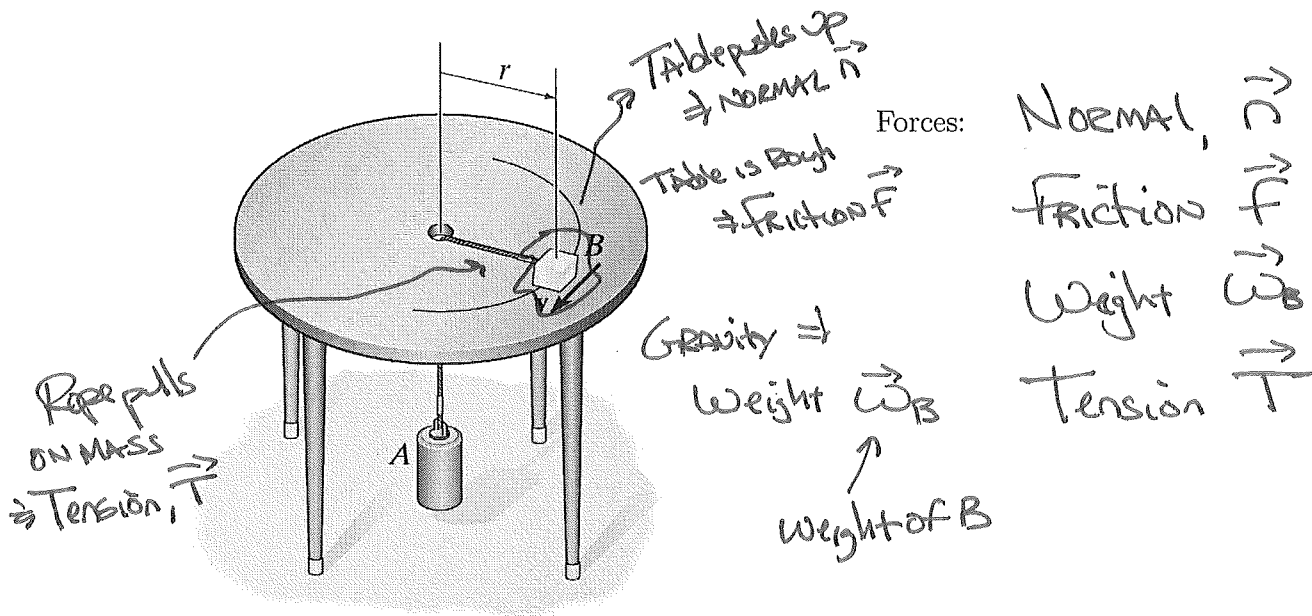
Floor touches Crate  $\Rightarrow$  Normal  $\vec{n}$ , Floor Rough  $\Rightarrow$  Friction,  $\vec{f}$

- (2.) A motor winds in a rope that pulls the crate up the completely smooth incline. What forces are being exerted on the crate?



Forces: Tension  $\vec{T}$ , Normal  $\vec{n}$ , weight  $\vec{w}$

- (3.) Block  $B$  is circling around a rough table while connected to a rope that passes through a hole in the center of the table down to cylinder  $A$ . What are the forces being exerted on block  $B$ ?



- (4.) A man stands at the edge of a diving board which is supported by two springs at  $A$  and  $B$ . What forces are being exerted on the diving board?

