

1. F , T , F_N , F_f , or F_w ?

- | | |
|----------------------------------|---|
| F_N Normal force | F_N A surface pushing up from below. |
| F_f Force of friction | F Any push or pull. |
| F_w Weight | F_f Resists change of motion. |
| F Applied force | F_f Increases with rough surfaces. |
| T Tension | F_w Always pulls downward. |
| T Exerted by a string or rope. | F_N Is always perpendicular to a surface. |
| F_w Caused by gravity. | |
| T Is equal throughout. | |

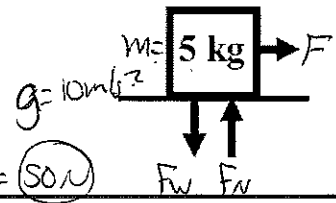
2. A mass is pulled to the right while on a table.

A. Label the forces.

B. Calculate the object's weight.

$F_w = mg$

$F_w = 5 \text{ kg} \cdot 10 \text{ m/s}^2 = 50 \text{ N}$



3. Calculate the weight of a 7 kg object.

$F_w = mg$

$= 7 \text{ kg} \cdot 10 \text{ m/s}^2 = 70 \text{ N}$

$m = 7 \text{ kg}$
 $g = 10 \text{ m/s}^2$

$F_w = m \cdot g$
 \downarrow

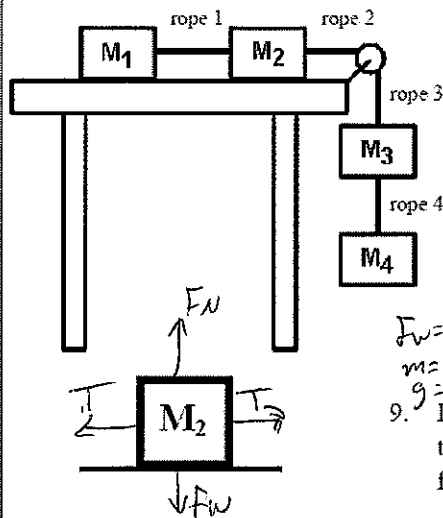
4. Calculate the mass of a 65 N object.

$F_w = mg$

$= 65 \text{ N} \cdot 10 \text{ m/s}^2 = 650 \text{ kg}$

$m = 65 \text{ kg}$
 $g = 10 \text{ m/s}^2$

10 m/s^2



6. What force is acting on all four of the masses? F_w

7. What force is NOT acting on the hanging masses? F_N

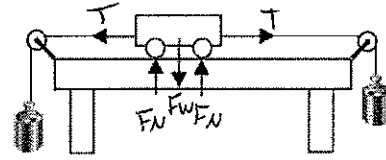
8. If $M_1 = 2 \text{ kg}$, what is F_{w1} ?
 $F_w = mg$
 $m = 2 \text{ kg}$
 $g = 10 \text{ m/s}^2$
 $2 \text{ kg} \cdot 10 \text{ m/s}^2 = 20 \text{ N}$

9. If there IS friction on the table, draw the forces acting on M_2 .

5. A. Label the forces on the above object.

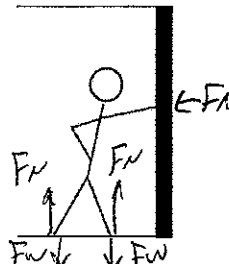
B. Which ones are y-direction forces? $F_N + F_w$

C. Which ones are x-direction forces? T



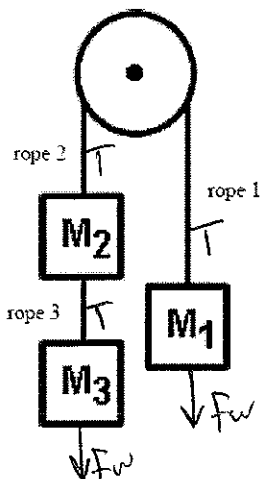
10. Static friction, Kinetic friction, or Air friction?

- A. all Depends on the roughness of the surface.
- B. X Between tires and the road, normally.
- C. S When an object is at rest.
- D. X When an object slides.
- E. S Gripping friction.
- F. Air Increases with speed.
- G. T When you slip on ice.
- H. all Resists the motion of an object.
- I. X Keeps a falling object from speeding up forever.



11. What kind of force is keeping the person from falling thru the wall? F_{norm}

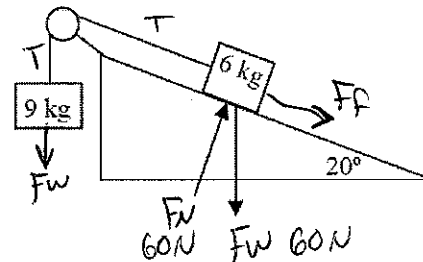
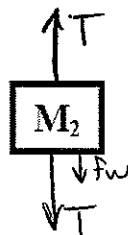
12. Draw all of the forces acting on the person.



13. What force cannot be acting on the objects? F_{norm}

14. On the diagram at the left draw all of the forces acting on M_1 .

15. Draw the force diagram for M_2 , below.



16. Label the two shown forces acting on the 6 kg mass, giving actual numbers if you know them.

17. If the 9 kg object moves down and there IS friction on the ramp, label all of the other forces acting on the objects.