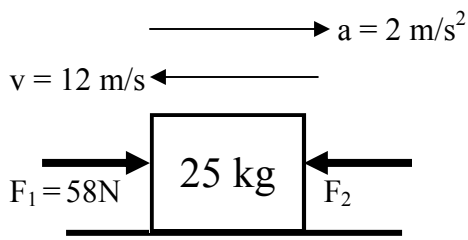


# 2012 PreAP Forces 5

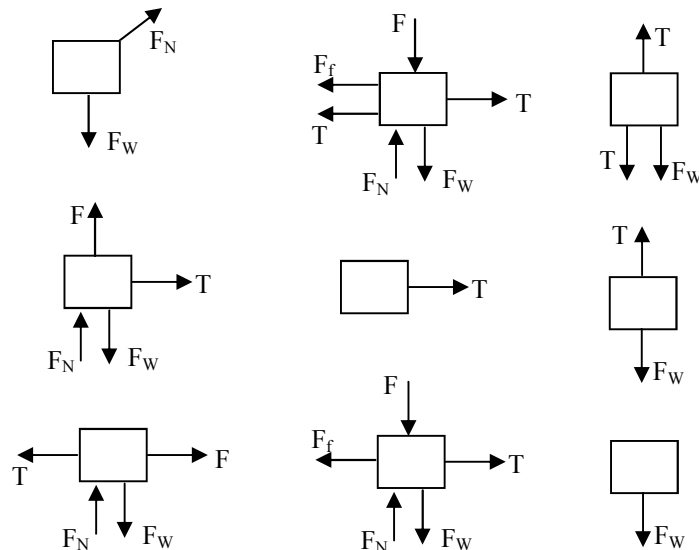
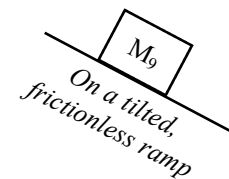
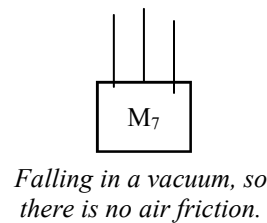
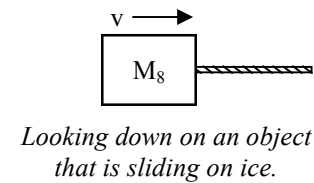
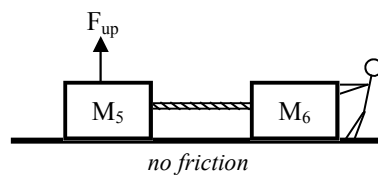
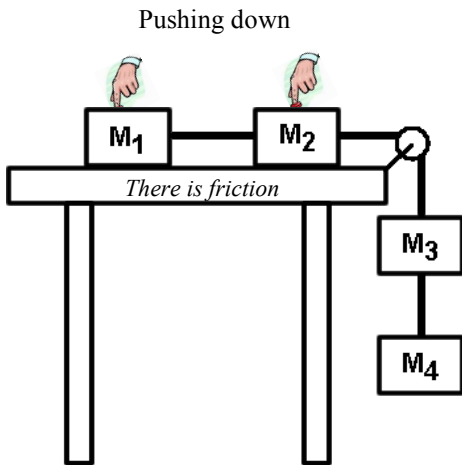
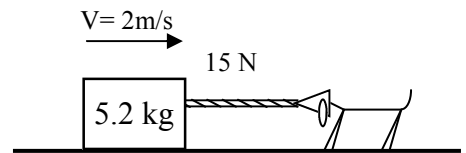


- A 25 kg object is moving 12 m/s to the left. It has an acceleration of  $2 \text{ m/s}^2$  to the right. Notice the directions of  $v$  and  $a$ .
  - Is the object speeding up or slowing down?
  - Is the acceleration positive or negative?
  - Which force must be bigger?
  - \* Use  $\Sigma F = ma$  to calculate  $F_2$ .

- Slim Bim is pulling on a mass at constant speed. There is friction on the floor.
  - Draw all of the forces acting on the object.
  - Since it is at constant speed, what is the acceleration of the object?
  - Since it is moving across the floor is there static or kinetic friction?
  - Use  $\Sigma F = ma$  to calculate the force of friction.

E. In the y-direction, calculate the normal force.

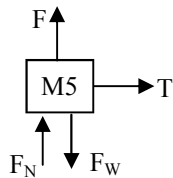
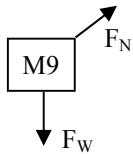
F. \* Calculate the coefficient of friction for the floor.



- \* Identify the force diagrams for the nine masses above, putting the correct masses in the boxes (1, 2, etc). There are no repeats. Might help to draw the force diagrams for each one first.
- \* For the left-most mass in the second row, write the x and y second law equations.
- Write the x and y second law equations for the left most mass in the third row.

1D) 0.29

2E)  $F_2 = -8\text{N}$



Q4: x-dir:  $T = ma$  (only the horizontal forces)  
y-dir:  $F_N + F - F_W = ma$  (only the vertical forces)