

# Newton's Laws of Motion– Free Body Diagrams ( fdb )

Draw the appropriate free body diagram , Label all forces according to the legend.

## LEGEND

Normal force =  $\eta$

W = mg

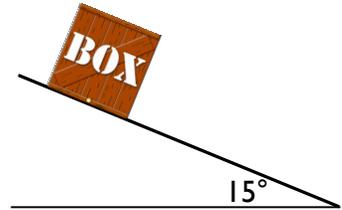
Tension = T

Net force =  $ma_{\text{net}}$

Friction =  $\mathfrak{F}$  (cursive "F")

All other forces use and "F" followed by a subscript identifying the force.

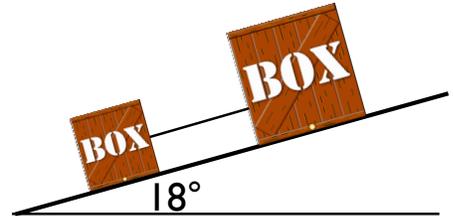
- (1) Draw a free body diagram of the box. There is friction between the box and the surface. The box is accelerating down the incline.



- (2) A box is sliding across the floor from your left to your right. The box is slowing down as it moves. Draw a free body diagram of the forces acting on the box.



- (3) A pair of boxes are connected to each other by a strong massless rope. These boxes are moving up an incline but are slowing down. Draw the free body diagram of the larger box. There is no friction acting on the larger box.



- (4) Draw a free body diagram of the box. It is not moving and there is no friction.



- (5) A car is moving up an incline at a constant velocity. The car's engine exerts a force along the incline. There is friction on the incline. Draw a Free body diagram of the forces acting on the car.

