

HW 5.1 Forces at Angles

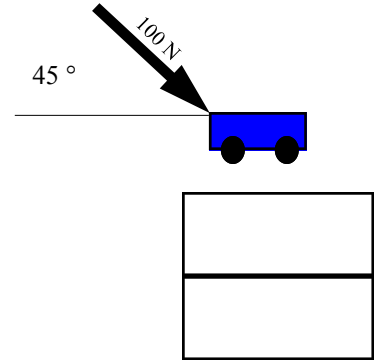
**YOU MUST DRAW FREE BODY DIAGRAMS!!!!**

1. A woman pushes a 60 kg lawnmower with a force of 100 N. If the handle of the mower is 45 degrees above the horizontal, how much downward force is being exerted on the ground by the mower? What is the normal force?

FBD:



$\Sigma F_x:$	
$\Sigma F_y:$	

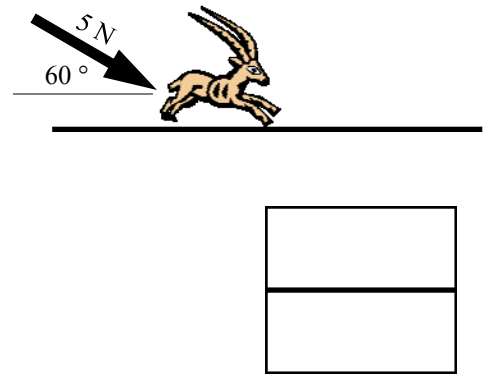


2. A 60 kg wood carving of a gazelle slides under the action of the force shown. What is the normal force? Assuming the gazelle starts from rest how long will it take to move 3 meters?

FBD:



$\Sigma F_x:$	
$\Sigma F_y:$	

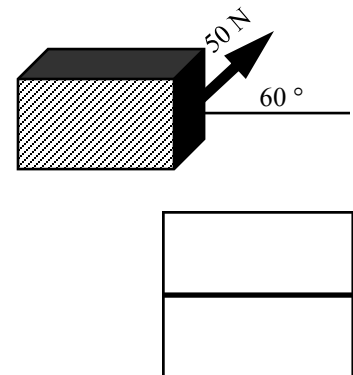


3. A 200 N crate of gazelle toys is resting on the floor. If you pull on the crate as shown, what is the normal force? How fast will the crate be moving after 4 seconds?

FBD:

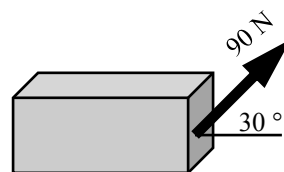
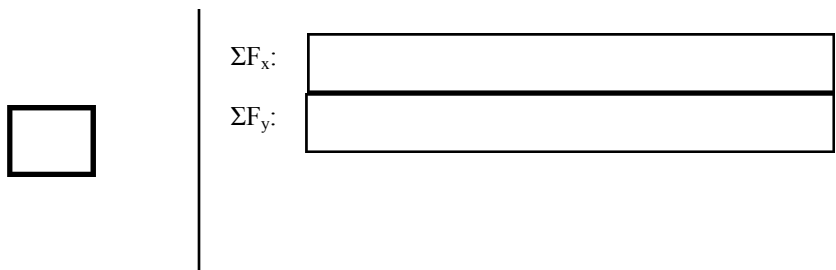


$\Sigma F_x:$	
$\Sigma F_y:$	



4. When you go to college you will need to move a box of books (about gazelles) into your dorm room. To do so, you attach a rope to the box and pull on it with a force of 90 N at an angle of 30 degrees. The box of books has a mass of 20 kg. What is the normal force? What is the acceleration of the box? How far will you have moved it in 10 seconds?

FBD:




5. A 60 kg gazelle slides under the action of the force as shown. What is the normal force? What is the force in the X direction? What is the acceleration of the gazelle?



FBD:

