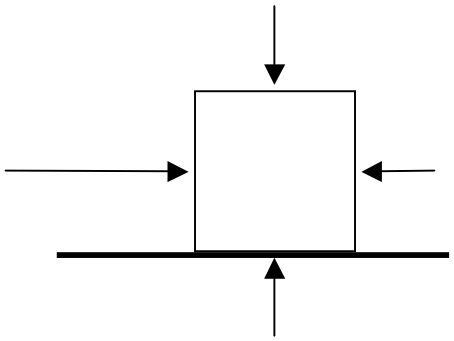
Physics20

UNIT 2- DYMANICS

ASSIGNMENT 1 due: Monday October 6th Period 2

1. Use the free body diagram below to answer the following questions:



   a. label the free body diagram with all appropriate forces

   b. If the box is moving in what direction will it move?

2. The Newton is a derived unit. What does this mean and from what SI units is it derived?

3. Describe the "Normal" force.

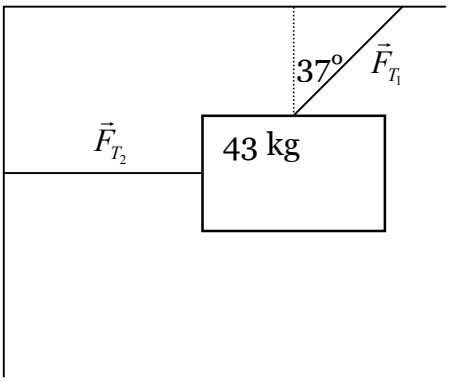
4. A group of slaves are hauling a massive sandstone block across the sand. The group of 200 slaves tug with a force of 125 N each. The friction force for the block is 2.1 kN. What is the net force of the system?

5. Two work horses are hauling a log at an angle of 25° N and S of E repectively.

   a. Draw a free body diagram of the situation if the friction force is 3.5 kN and each horse is hauling with a force of 2 kN.

   b. What is the net force of the system?

6. What are the two tension forces in the diagram shown below?



7. "*A stationary object tends to remain at rest and a moving object tends to remain in motion*" describes what concept?

8. What does Newton's first law state?

9. A cowboy starts pulling his cart (with well greased frictionless wheels) to town. The cart has a mass of 83 kg. If there is a head wind exerting a force of 75 N and the horse's hooves generate a constant force on the rope of 130 N at 18° to the horizontal.

   a. draw a free body diagram to represent this

   b. what will the cart's acceleration be?

10. Explain why a skateboarder can skate towards a tube, jump off their board and fly over the tube while the board continues through the tube and the two are reunited on the other side at the same time?