

Information

Newton's Third Law

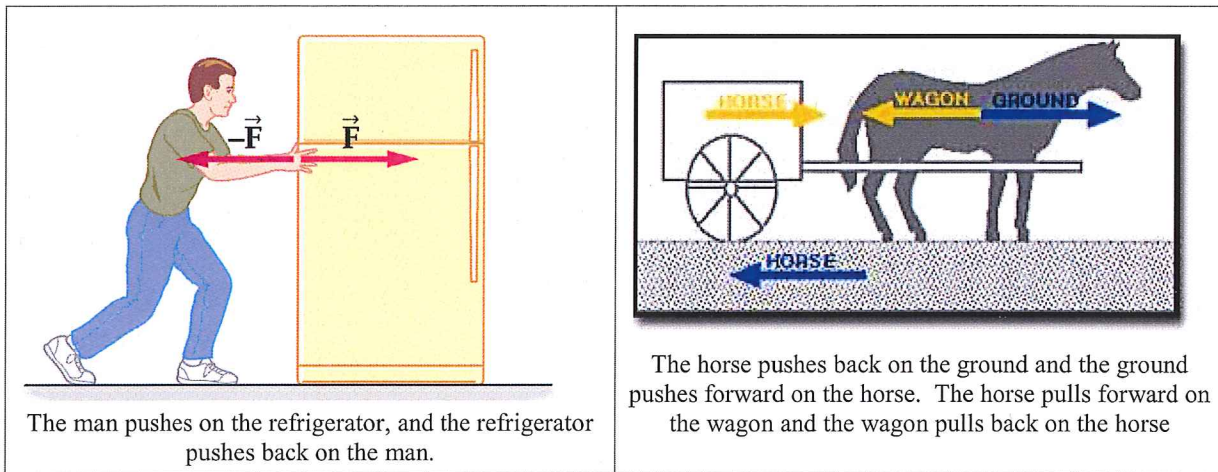
A force is a push or a pull upon an object. This implies there must be two objects; one being pushed and one doing the pushing. Thus, forces result from interactions between objects. According to Newton's Third Law, whenever objects interact with each other they exert forces upon each other. These two forces the objects exert on each other are called *action* and *reaction* forces. Friction is one type of reaction force.

Newton's third law states:

For every action, there is an equal and opposite reaction.

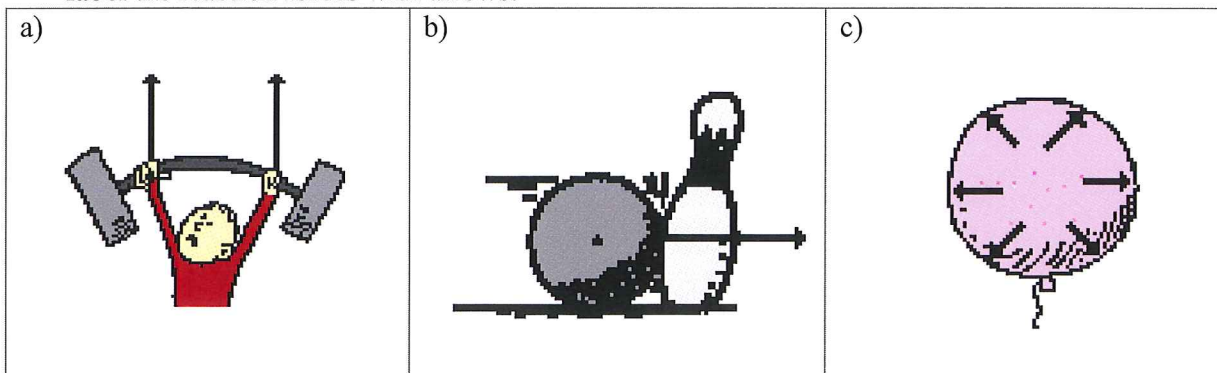
The statement means that in every interaction, there is a pair of forces acting on the two interacting objects. The size of the forces on the first object equals the size of the force on the second object. The direction of the force on the first object is opposite to the direction of the force on the second object. Forces always come in pairs - equal and opposite action-reaction force pairs.

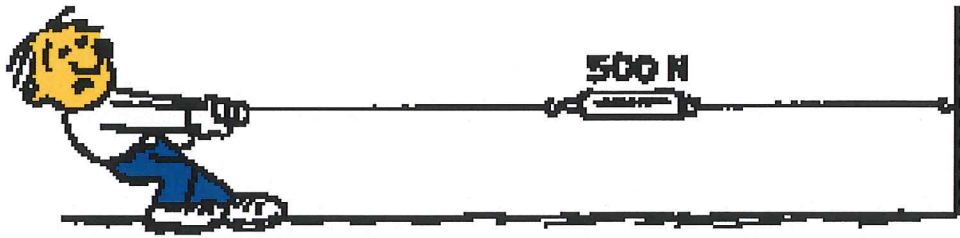
Examples:



Critical Thinking Questions

- 1) All forces result because of _____ between objects.
- 2) Forces come in pairs. What are these pairs called?
- 3) In the diagrams below the action forces have been labeled with arrows. In each diagram label the reaction forces with arrows.





4) In the drawing to above:

- a. How much force is the physics student exerting on the rope? In what direction?
- b. How much force is the wall exerting on the rope? In what direction?
- c. What is the net force on the force gauge?
- d. Would the Physics student be moving? If yes, is he accelerating?
- e. What would happen if the wall stopped exerting any force?
- f. What happens if the Physics student is standing on ice?
- g. What is the force between the student and the ground called?
- h. Draw and label arrows on the diagram to represent three sets of force pairs.

5) On the drawing below draw at least 5 force pairs.

