

Introduction to Forces and FBDs

Before you begin this assignment, I want you to remember that forces are related to the object's acceleration and not the object's velocity.

1. A free body diagram (FBD) draws all the forces that are being on an object. For each scenario described, draw a FBD. Label each force component.

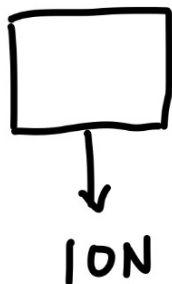
- a) A student standing on ground
- b) A box sliding to the right with constant velocity
- c) You pull a box with some force to the right on a frictionless surface
- d) A ball is dropped from rest off a cliff
- e) A ball is thrown upwards with an initial velocity 10m/s off a cliff.
- f) A skydiver in freefall with her parachute open

2. Every statement below is false. Explain why it is false.

- a) If an object is moving, it must be experiencing some force.
- b) A ball thrown upwards at its maximum height has 0 acceleration.
- c) A ball thrown upwards at its maximum height has no net force.
- d) If an object is not moving, there must be no forces acting on the object.
- e) A pitcher throws a baseball straight up. After the ball has left the pitcher's hand, the net force on the ball is straight up.
- f) If the net force on an object is to the right, the object must be moving to the right.

3. For each FBD, what is the net force?

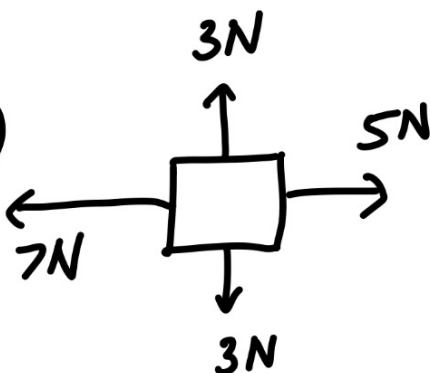
a)



b)



c)



d)

