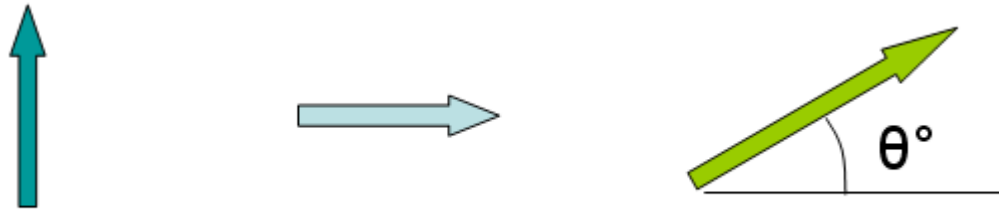


Free Body Diagram Components

Force

A **straight** line **push** or **pull** acting upon an object

Vector quantity has **direction** and **magnitude**



Direction is illustrated by **arrowhead**

Magnitude is illustrated by **length** of line segment and is the amount of push or pull

Free Body Diagram Procedure



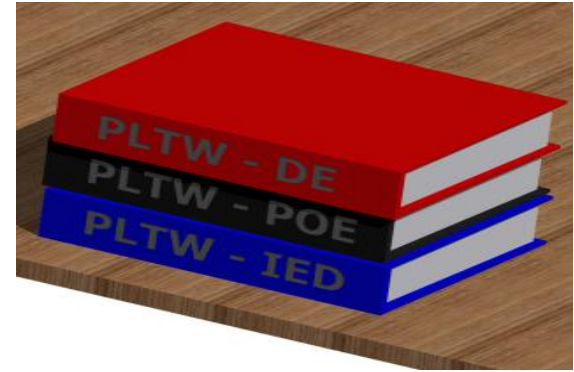
A stack of three books, each weighing 5 lb, is sitting on top of a table. Draw the Free Body Diagram (FBD) of the *top book*.

Free Body Diagram Procedure

1. Sketch the isolated object.

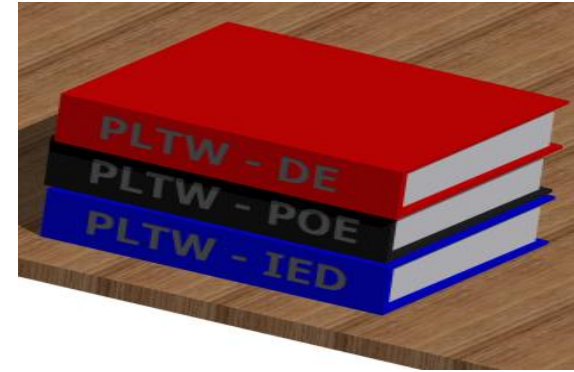
What is the isolated object?

Top Book



Free Body Diagram Procedure

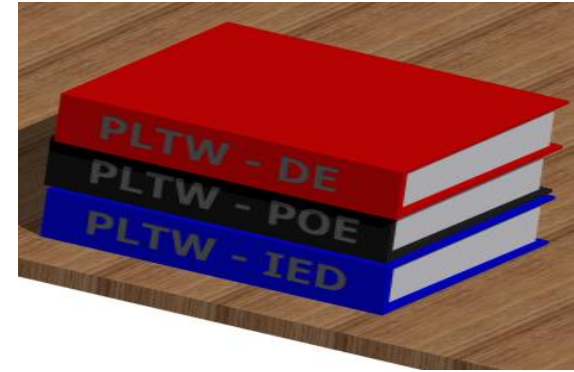
2. Sketch the applied and norm forces.



*When an object is in **contact with** and is **supported** by a second object, the second object can be replaced with a normal force which is perpendicular to the surface of the second object.*

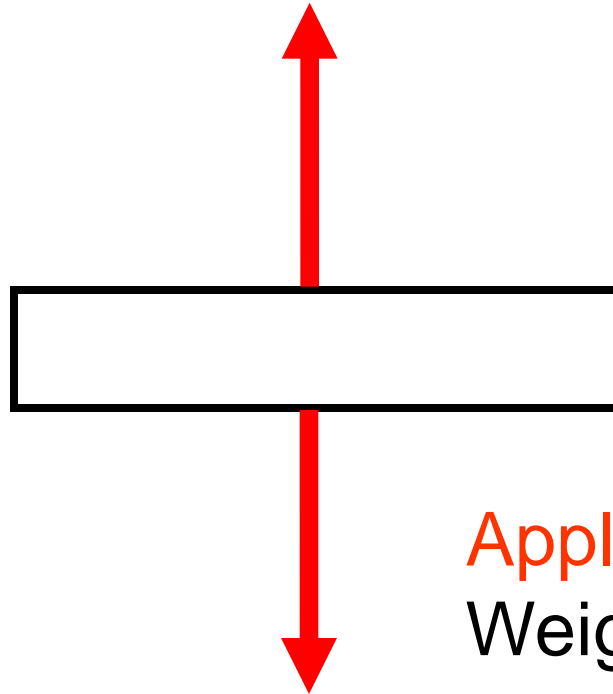
Free Body Diagram Procedure

2. Sketch the applied force and norm forces.



Normal Force

Reaction force pushing up on the book, causing it not to fall

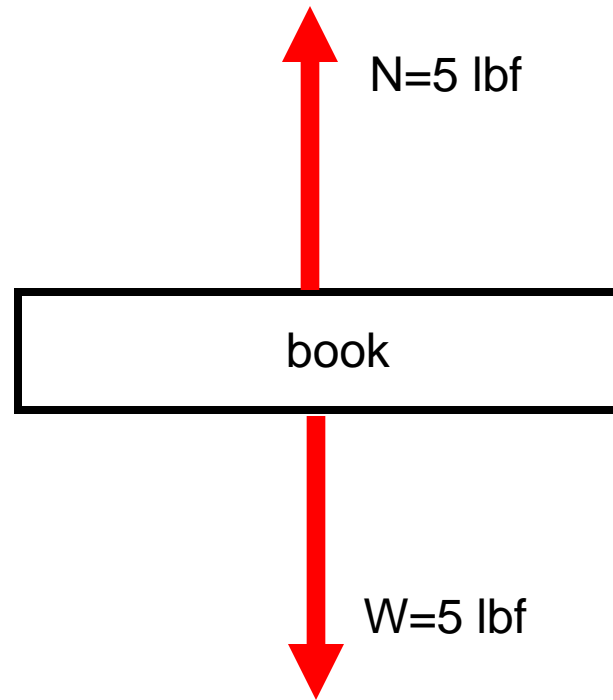
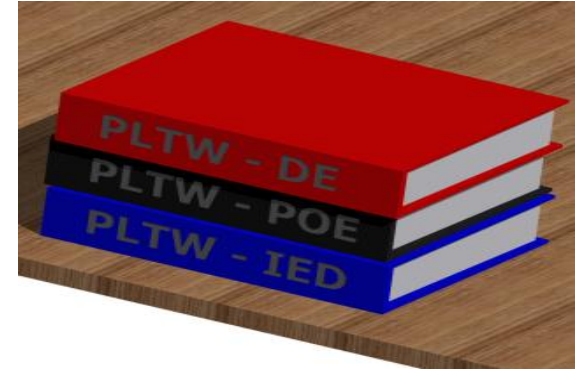


Applied Force

Weight of top book

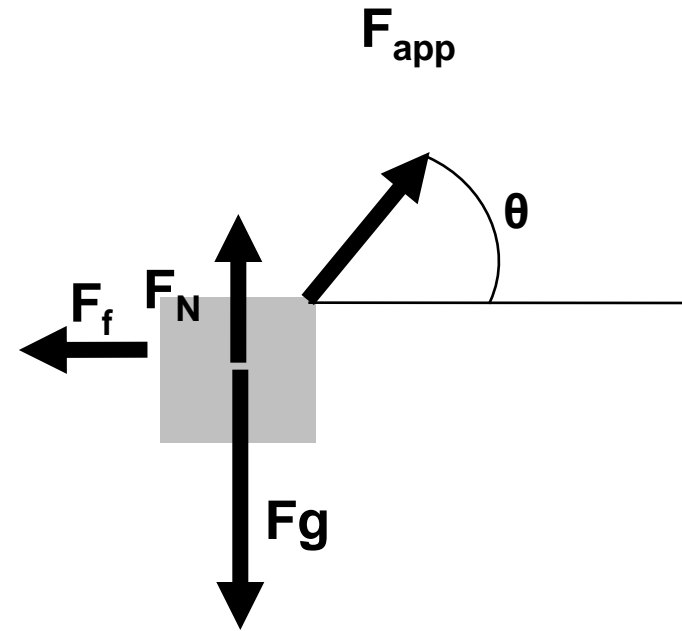
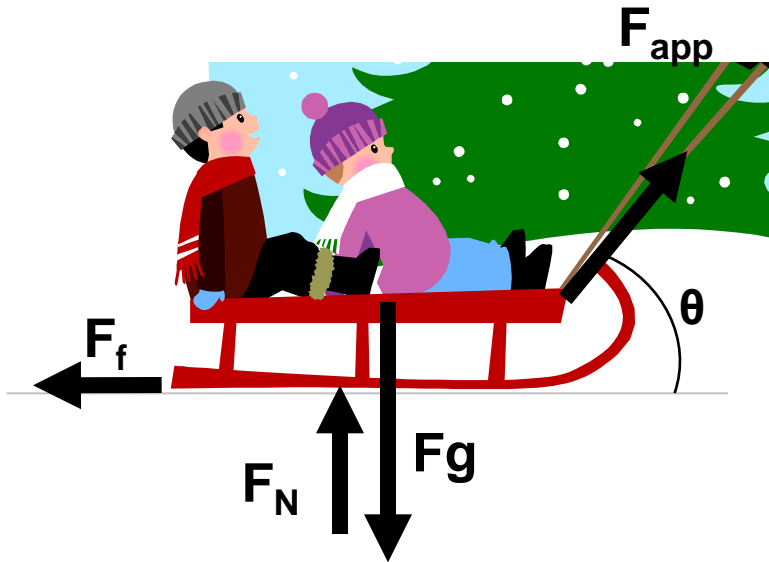
Free Body Diagram Procedure

3. Label objects and forces.



Free Body Diagram Practice

Create a FBD for the sled pictured below.



Free Body Diagram Practice

Create a FBD for the refrigerator pictured below.

