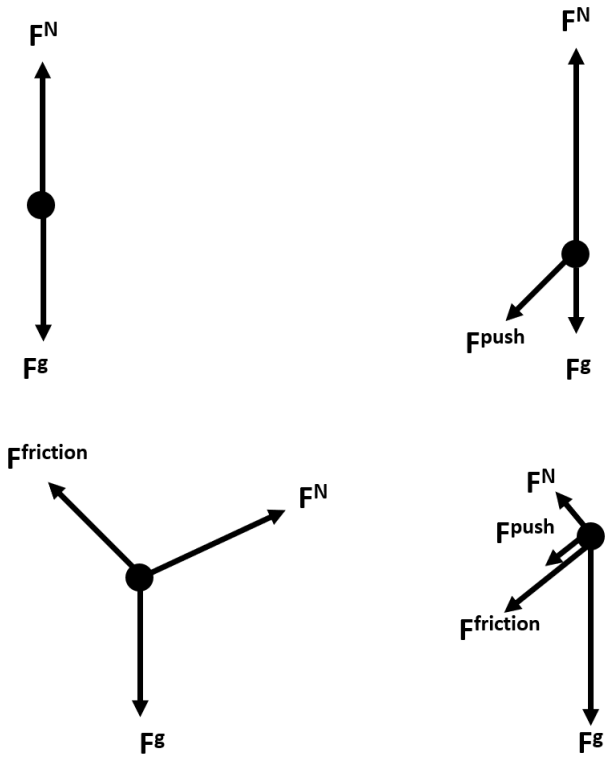
Free Body Diagrams Draw a picture of the situation and then construct a free body diagrams for all forces on the object with accurate, approximate arrow length for the following situations. Include friction, where applicable, unless otherwise specified. Then pick and draw a coordinate system that makes sense for that diagram.

a. A child sledding down a hill of angle θ.

b. An acrobat is hanging from a tightrope with a fan blowing diagonally up on their lower left foot.

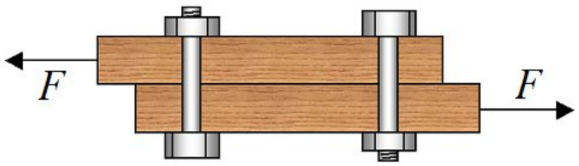
c. Cheerleader A is standing on a hill holding up cheerleader B in their hands. Draw a FBD for each cheerleader.

Newton's 2nd Law Set up the sum of forces for each of these free body diagrams. Substitute in what you know to reduce them. Write a story for how that object would be moving.



[0]Select problems may be modified from Walsh, Harrison, or the Internet.

Bolted Boards Two boards are bolted together with two bolts, as shown. The squeeze force between the boards is $500lbs$. If the shear strength of each bolt is $5000lbs$ and the coefficient of static friction between the boards is $\mu_s = 0.5$, what is the maximum force F that can be applied to the boards and not pull them apart?



Your choice As a group pick a problem from the Forces Lab Worksheet, the Challenge Homework, or the practice problems section of Boxsand that has to do with forces and work on it together.