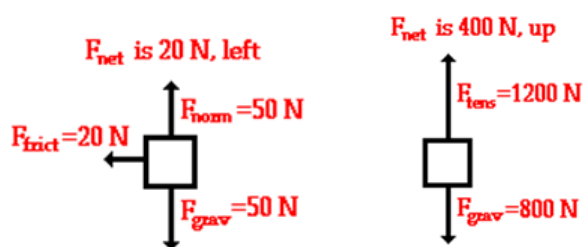


Free-Body Diagrams & F=ma Practice

Examples:

One Dimensional



In these examples, the forces cancel in at least one of the directions.

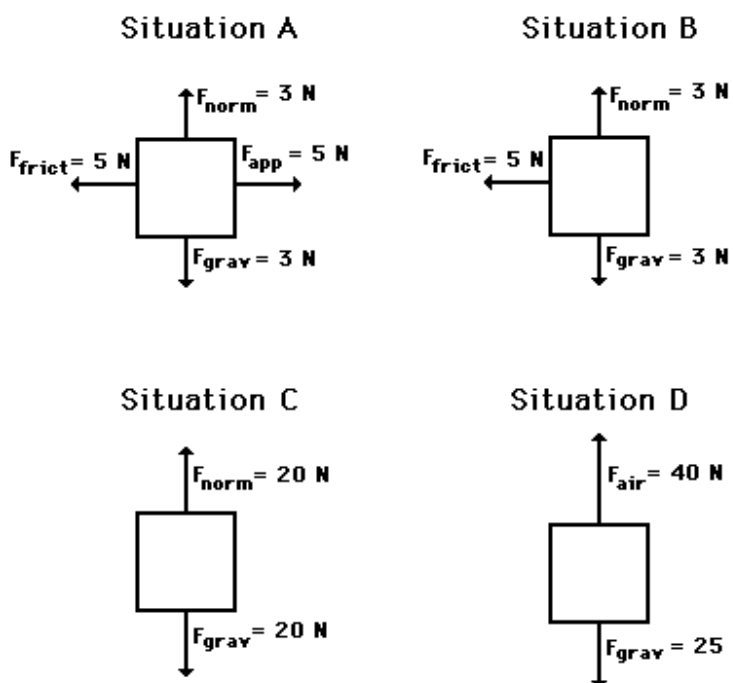
NET FORCE is the total force on the object.
NET FORCE includes direction.

Practice Questions:

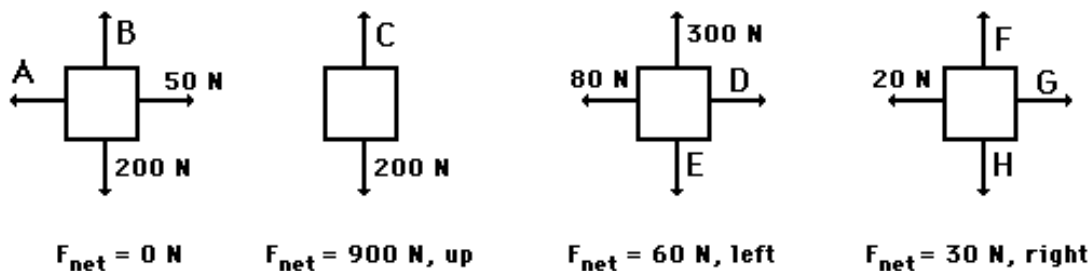
- Free-body diagrams for four situations are shown.

For each situation, **determine the net force acting upon the object.**

Include direction for net force.



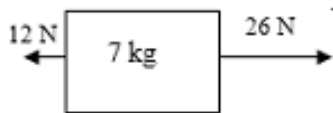
- Free-body diagrams for four situations are shown below. The net force is known for each situation. However, the magnitudes of a few of the individual forces are not known. Analyze each situation individually and **determine the magnitude (sizes) of the unknown forces.**



- Draw a free-body diagram:
 An egg is free-falling from a nest in a tree.
 Neglect air resistance.

4. Madison pulls a wagon with a force of 6N east as Jessica pushes it with a force of 4N east.
- Draw a FBD.
 - What is the net force?
5. Coach Lankster and his wife were trying to move their new couch. Coach Lankster pulls with a force of 30 N while Mrs. Lankster pushes with a force of 25 N.
- Draw a FBD.
 - What is the net force?
6. What acceleration will result when a 12 N net force applied to a 3 kg object? A 6 kg object?
7. A net force of 16 N causes a mass to accelerate at a rate of 5 m/s^2 . Determine the mass.
8. A 15.0 kg box is on the floor. The box is being pushed by Katie to the right with a force of 30 N. The frictional force on the box is 4.5 N.
- Draw a free-body diagram of the box.
 - Determine the magnitude and direction the box is accelerating. Show work!

9. What is the net force on the box below?



10. Two forces are applied to a 2 kg block on a frictionless horizontal surface, as shown in the diagram below. Calculate the acceleration of the block. Show all work!

