Free-Body Diagrams

Read from **Lesson 2** of the **Newton's Laws** chapter at **The Physics Classroom**:

http://www.physicsclassroom.com/Class/newtlaws/u2l2b.html
http://www.physicsclassroom.com/Class/newtlaws/u2l2c.html

MOP Connection: Newton's Laws: sublevel 5

Construct free-body diagrams for the following physical situations. Label all forces (e.g, F_{grav}, F_{norm}, F_{app}, F_{frict}, F_{air}, F_{tens}, etc.).

a. A physics book rests upon a level table.

b. A skydiver is falling and has reached a terminal velocity.

c. A large crate is being pushed leftward at a constant velocity.

d. A sledder has reached the bottom of a hill and is coasting rightward while slowing down.

e. A ball is moving upwards towards its peak. Ignore air resistance.

f. An air track glider moves rightward at constant speed.

g. The brakes are applied to a rightward moving car and it skids to a stop.

h. A spider is slowly descending a thin silk thread at constant speed.

i. A projectile is moving upwards and rightwards towards the peak of its trajectory.

j. An elevator is rising at a constant velocity; it is not touching the elevator shaft.

k. An upward rising elevator is slowing down; it is not touching the elevator shaft.

l. A force is applied to accelerate a crate across a rough horizontal surface.

