Free-Body Diagrams

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

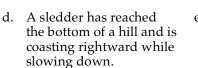
http://www.physicsclassroom.com/Class/newtlaws/u2l2b.html http://www.physicsclassroom.com/Class/newtlaws/u2l2c.html

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.





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



An air track glider moves rightward at constant speed.

f.

i.

1.

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