Recognizing Forces

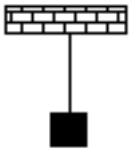
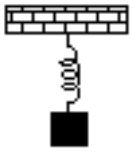
Read from **Lesson 2** of the **Newton's Laws** chapter at **The Physics Classroom**:

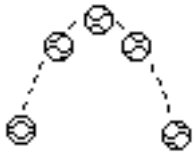
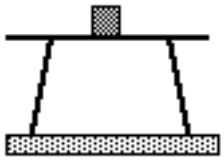
http://www.physicsclassroom.com/Class/newtlaws/u2l2a.html
http://www.physicsclassroom.com/Class/newtlaws/u2l2b.html

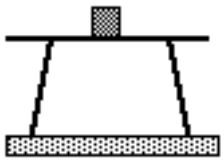
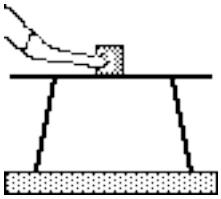
MOP Connection: Newton's Laws: sublevel 4

There are several situations described below. For each situation, fill in the list provided by indicating which forces are present and stating which features of the situation you used to determine the presence or absence of the force. To facilitate this exercise, utilize the Net Force Help Sheet. Upon completion of this assignment, check your answers using the available Web page.

http://www.physicsclassroom.com/morehelp/recforce/recforce.html

Description of Situation	Force Present (P) or Absent (A)?	Explanation
 1. A block hangs <u>at rest</u> from the ceiling by a piece of rope. Consider the forces acting on the block.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____
 2. A block hangs from the ceiling by a spring. Consider the forces acting on the block when it is at rest (at its equilibrium position).	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____

Description of Situation	Force Present (P) or Absent (A)?	Explanation
 3. A ball is shot into the air with a spring-loaded cannon. Consider the forces acting on the ball while it is <u>in the air</u>.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____
 4. A skydiver (who hasn't opened his parachute yet) falls <u>at terminal velocity</u>. Consider the forces acting on the <u>skydiver</u>.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____
 5. A block rests on top of a table. Consider only the forces acting upon the block.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____

Description of Situation	Force Present (P) or Absent (A)?	Explanation
 6. A block is being pushed across the top of a table. Consider only the forces acting upon the block.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____
 7. A block slides across the top of a table. Consider only the forces acting upon the block.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____
 8. The driver of a car has her foot on the gas pedal. The wheels are turning as the car accelerates down the road. Consider only the forces acting upon the car.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____

Description of Situation	Force Present (P) or Absent (A)?	Explanation
 9. A person is sitting on a sled and gliding across loosely packed snow along a horizontal surface. Consider only the forces acting on the person.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____
 10. The wheels of a car are locked as it skids to a stop while moving across a level highway. Consider only the forces acting on the car.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____
 11. A bucket of water, attached by a rope, is being pulled out of a well. Consider only the forces acting on the bucket.	**Gravity** P or A? **Spring**: P or A? **Tension** P or A? **Normal**: P or A? **Friction** P or A? **Air Res.:** P or A?	_____ _____ _____ _____ _____ _____