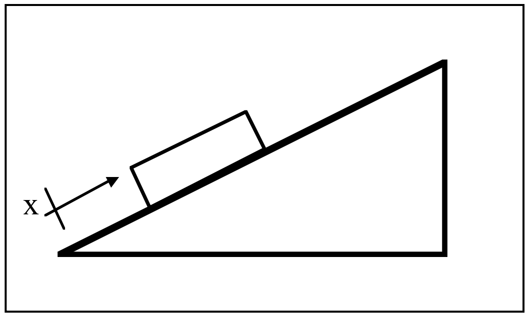
A. Consider a block of wood given an initial push and then sliding up an incline. It reaches the top of the incline, turns around, and slides down the incline. There is friction between the block and the incline.



There is friction.

1. In the space below, sketch a free-body diagram for the block

   a. on its way up the incline and

   b. on its way down the incline.

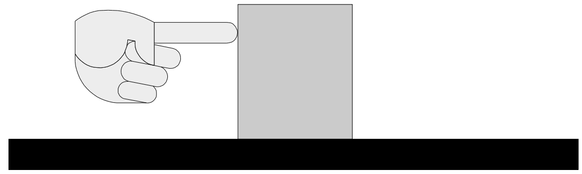
Label all forces clearly.

Block Moving Up Incline	Block Moving Down Incline

2. In the space below, sketch the velocity vs. time and acceleration vs. time graphs for the block of wood during its *ENTIRE* motion up and down the incline.

Explain how you determined the shapes of your graphs.

B. You are pushing horizontally on a block that is resting on a table.



1. You press on the block but it does not move. In the box provided below the figure, draw a free body diagram for the block. (Be sure to specify the type of force and the object causing each force.)

2. Compare the magnitudes of the horizontal forces. Explain your reasoning.

3. You press a bit harder and then the block moves with a constant velocity. Draw a free body diagram below for the block when it has a constant velocity.

4. Compare the magnitudes of the horizontal forces. Explain your reasoning.

5. Suppose the mass of the block is 0.4 kg and the coefficient of friction between the block and the table is 0.3. What force will you have to use to keep it going at a constant velocity of 0.2 m/s? (You may take g = 10 N/kg.)

6. If you now push with twice the force as in the previous question, how if at all does the motion of the block change? Explain your reasoning.