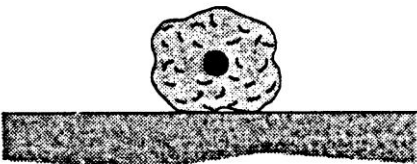
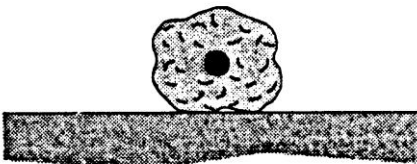
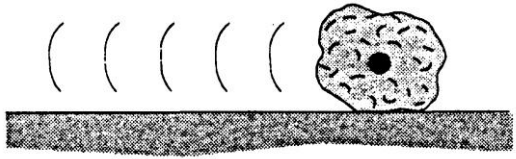
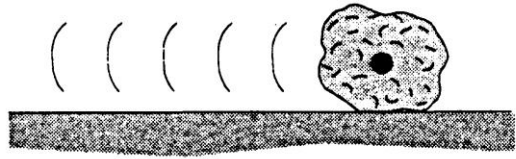


----- Demonstration -----

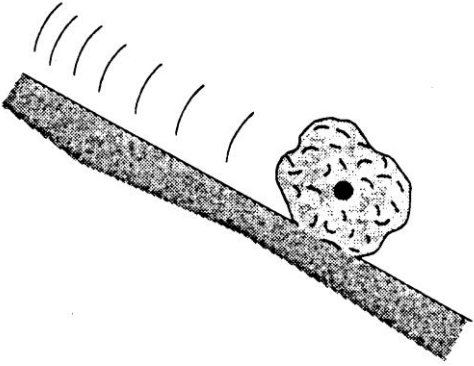
When completing each of the free-body diagrams use this notation:

F_G = weight, T = tension, F_f = friction, F_n = normal force, a = acceleration

It may also help to use a different color for acceleration (since it is not a force)

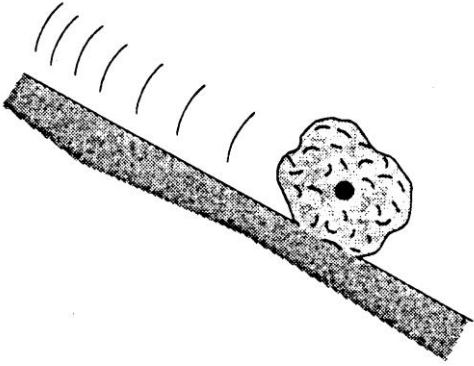
<p style="text-align: center;">Prediction Situation A</p> <p>Complete the Free-Body diagram.</p> <p>LM-6. Equilibrium</p> <div style="text-align: center;">  </div>	<p style="text-align: center;">Result Situation A</p> <p>Record the solution shown.</p> <p>LM-6. Equilibrium</p> <div style="text-align: center;">  </div>
<p style="text-align: center;">Prediction Situation B</p> <p>Complete the Free-Body diagram.</p> <p>LM-11. Rock is sliding at constant speed on a frictionless surface.</p> <div style="text-align: center;">  </div>	<p style="text-align: center;">Result Situation B</p> <p>Record the solution shown.</p> <p>LM-11. Rock is sliding at constant speed on a frictionless surface.</p> <div style="text-align: center;">  </div>

Prediction Situation C
Complete the Free-Body diagram.
LM-9. Rock is sliding on a frictionless incline.



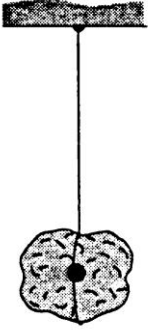
A diagram showing a rock on a frictionless incline. The incline is represented by a thick, shaded line sloping downwards from left to right. Above the incline, several curved lines indicate the surface is frictionless. A rock is shown on the incline, with a central dot representing its center of mass.

Result Situation C
Record the solution shown.
LM-9. Rock is sliding on a frictionless incline.



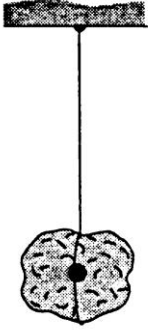
A diagram showing a rock on a frictionless incline, identical to the one in Prediction Situation C. The incline is a thick, shaded line sloping downwards from left to right, with curved lines above it indicating it is frictionless. A rock is on the incline with a central dot for its center of mass.

Prediction Situation D
Complete the Free-Body diagram.
LM-2. Equilibrium



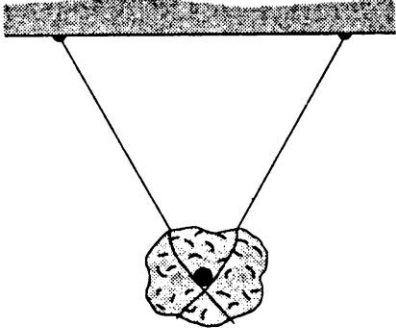
A diagram showing a rock hanging from a ceiling. A thick, shaded horizontal line at the top represents the ceiling. A vertical line connects the center of the ceiling to the center of a rock. The rock has a central dot representing its center of mass.

Result Situation D
Record the solution shown.
LM-2. Equilibrium

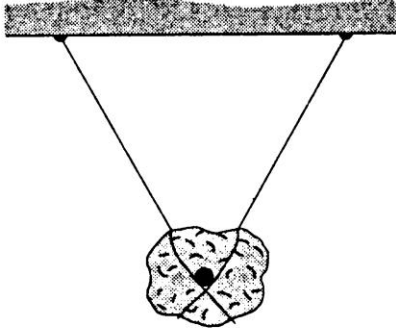


A diagram showing a rock hanging from a ceiling, identical to the one in Prediction Situation D. A thick, shaded horizontal line at the top represents the ceiling. A vertical line connects the center of the ceiling to the center of a rock. The rock has a central dot representing its center of mass.

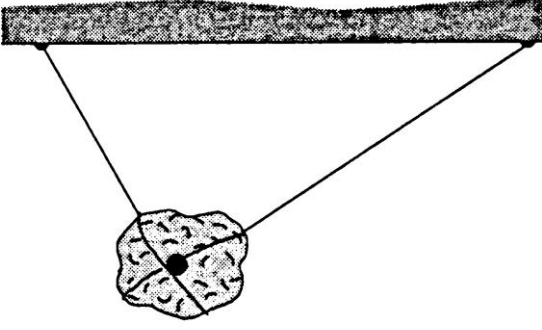
Prediction Situation E
Complete the Free-Body diagram.
LM-4. Equilibrium



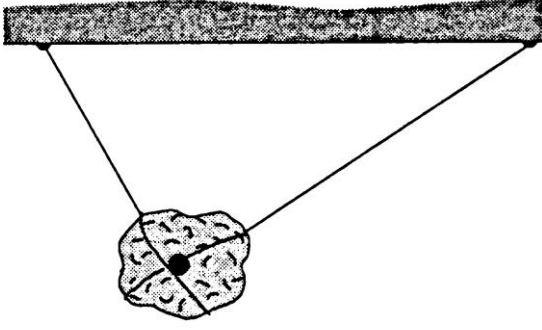
Result Situation E
Record the solution shown.
LM-4. Equilibrium



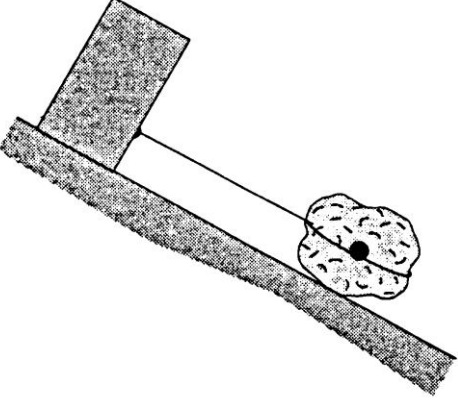
Prediction Situation F
Complete the Free-Body diagram.
LM-5. Equilibrium



Result Situation F
Record the solution shown.
LM-5. Equilibrium

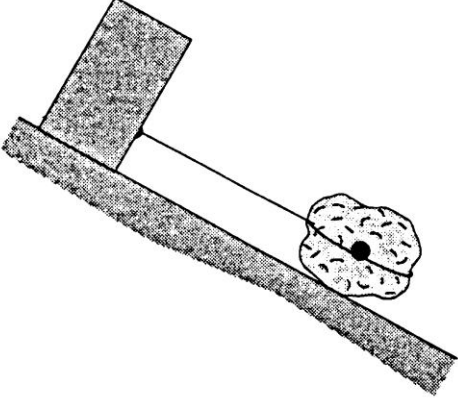


Prediction Situation G
Complete the Free-Body diagram.
LM-7. Equilibrium



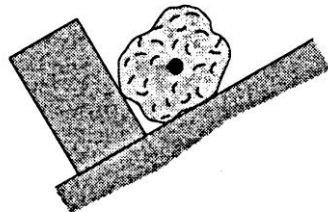
The diagram shows a rectangular block resting on an inclined plane. A string is attached to the top of the block and extends up the incline to a vertical wall. The block is shaded with a stippled pattern.

Result Situation G
Record the solution shown.
LM-7. Equilibrium



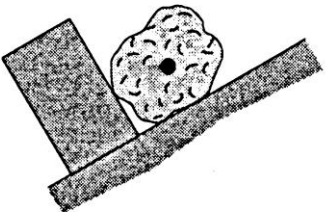
The diagram is identical to the one in Prediction Situation G, showing a block on an inclined plane with a string attached to a vertical wall.

Prediction Situation H
Complete the Free-Body diagram.
LM-8. Equilibrium



The diagram shows a rectangular block wedged between two surfaces. One surface is a vertical wall on the left, and the other is an inclined plane on the right. The block is shaded with a stippled pattern.

Result Situation H
Record the solution shown.
LM-8. Equilibrium



The diagram is identical to the one in Prediction Situation H, showing a block wedged between a vertical wall and an inclined plane.

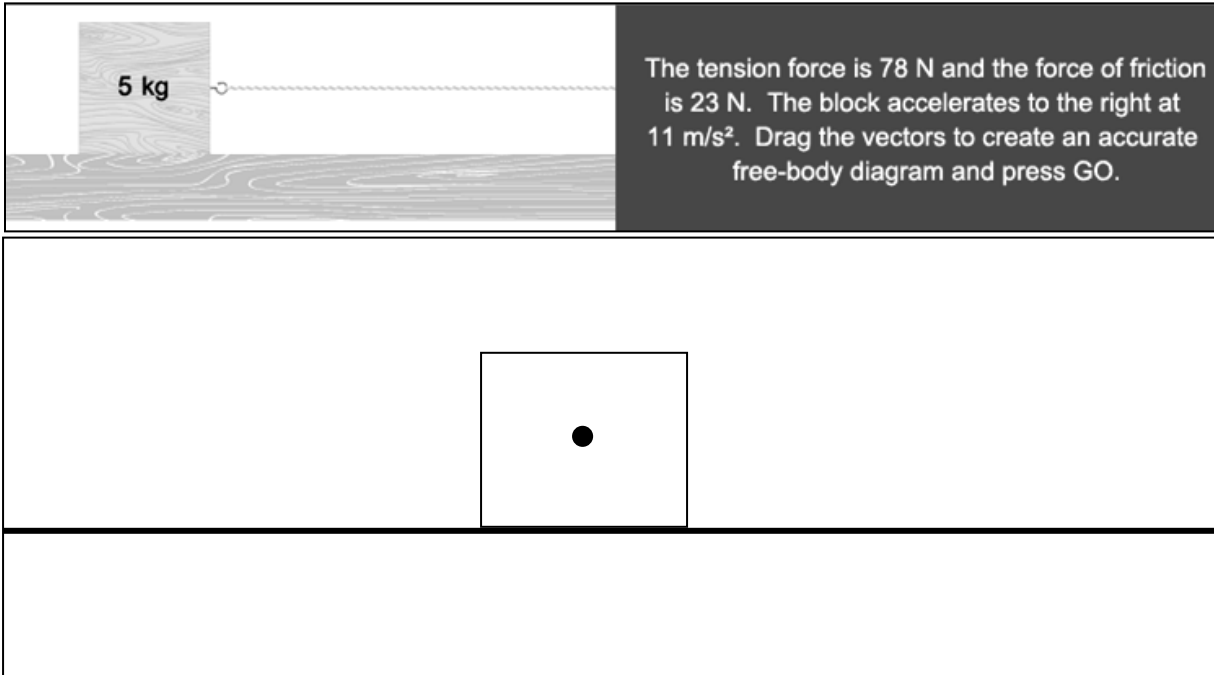
Name _____

Block _____

----- Extend -----

Now it is time to practice what you have just learned.

1. Draw an accurate free-body diagram of this situation using the forces: weight (mg), normal force (F_N), friction (F_f) and tension (F_T).



The tension force is 78 N and the force of friction is 23 N. The block accelerates to the right at 11 m/s^2 . Drag the vectors to create an accurate free-body diagram and press GO.

2. Calculate the values for all the unknown forces in your free-body diagram. **Show all work including substitution with units.**

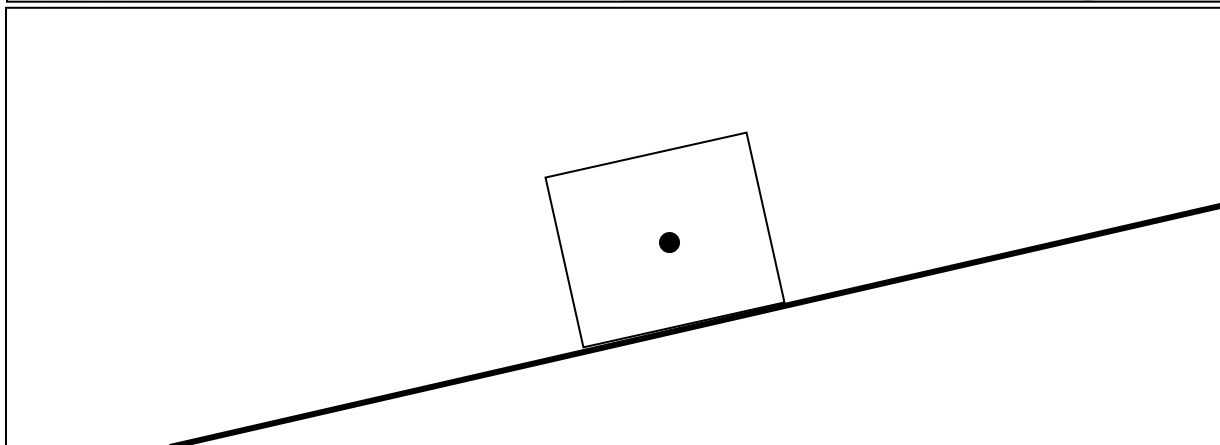
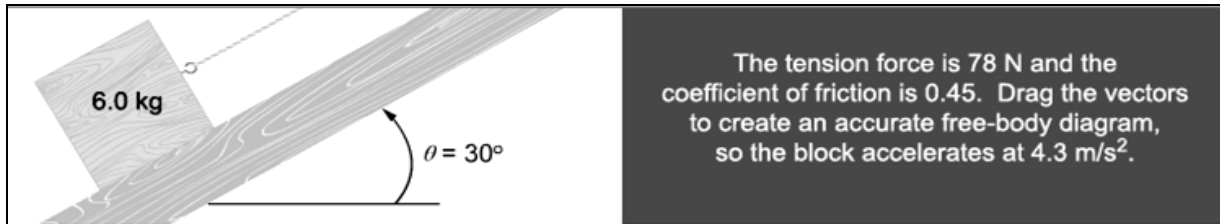
Open the shortcut “**IDIL FB 1**” on one of the lab stations. Open the simulation contained in this section. **Do Not follow the directions in the simulation follow these instructions.**

Enter your values from above to the nearest newton and press GO.

3. Was your solution correct? Yes No

If it was not correct keep trying new solutions until you get it correct.

4. Draw an accurate free-body diagram of this situation using the forces: weight (mg), normal force (F_N), friction (F_f) and tension (F_T).



5. Calculate the values for all the unknown forces in your free-body diagram. **Show all work including substitution with units.**

Open the shortcut “**IDIL FB 2**” on one of the lab stations. Open the simulation contained in this section. **Do Not follow the directions in the simulation follow these instructions.**

Enter your values from above to the nearest newton and press GO.

6. Was your solution correct? Yes No
 If it was not correct keep trying new solutions until you get it correct.

7. What did you learn by doing this interactive?
