

# **Rube Goldberg Machine Free Body Diagrams**

## *Physical Science and Technology*

As part of the analysis of your Rube Goldberg Machine, you need to make three free-body diagrams of moving objects on your machine. The three objects you pick must **CHANGE** their motion at some point during the operation of your machine – and it is this change that you should depict in your free-body diagram.

Remember that a free-body diagram shows all of the forces acting **ON** an object – but does not show any of the forces that object is exerting. So a free-body diagram of a ball rolling down the ramp would show the force of gravity pulling on the ball, but would **NOT** show the force of the ball pushing down the ramp.

Here are the specific requirements for this assignment:

1. You need to have a total of three diagrams.
2. Use a **RULER** and **CIRCLE TEMPLATES** to make your drawings neat and clean.
3. Make your drawings on clean, unlined paper (you can use one sheet per object or do all three objects on one sheet).
4. Work on your own – you and your partner may discuss the forces acting on the objects you choose, but you should complete and turn in your own work.
5. The drawings you make of the objects do not need to be to scale, but the overall shape should be relatively accurate.
6. For each force acting on the object, draw an arrow in the correct direction.
7. All arrows should be labeled with a description of the force.
8. Once you have drawn all the force arrows, use another type of arrow (for example, a thicker arrow or one drawn with a squiggly line) to show the approximate size and direction of the net force acting on the object.