Ping Pong Catapult

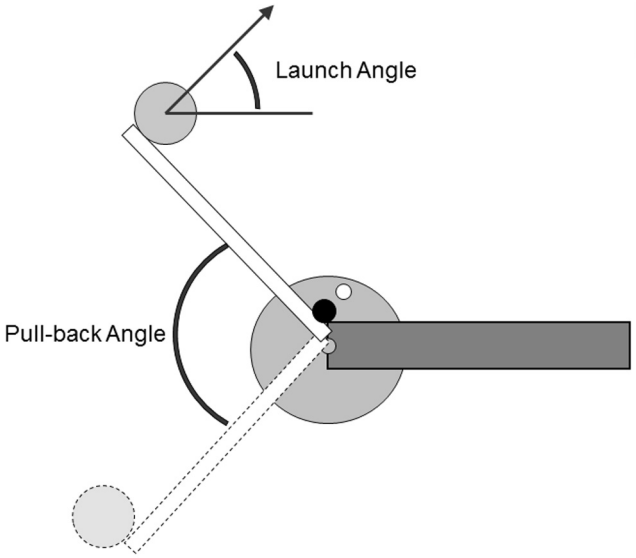
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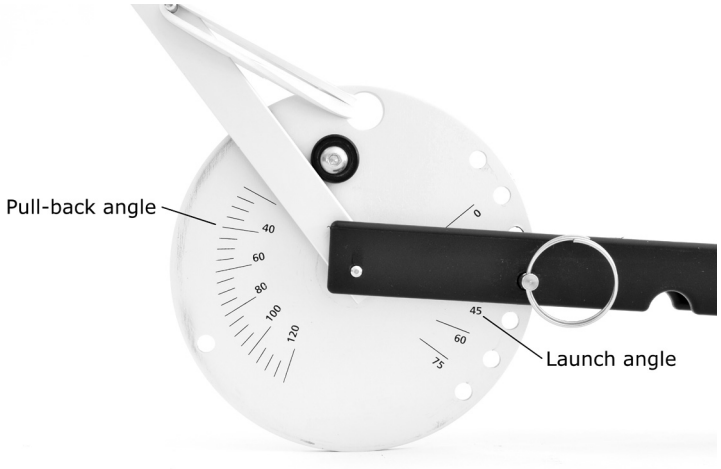
Student worksheet

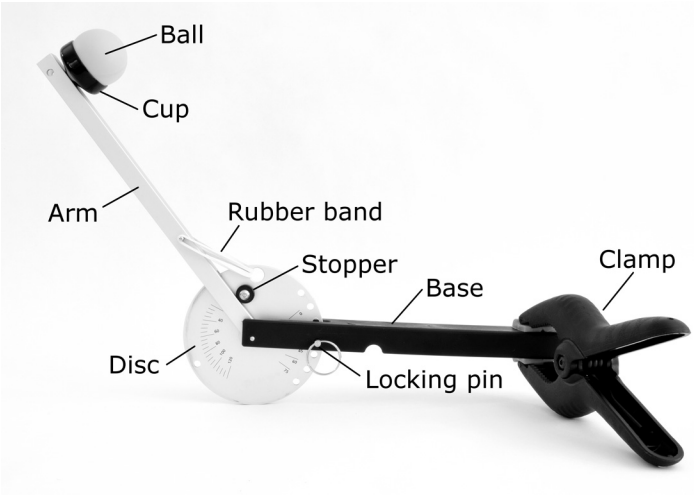
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Directions: Refer to the instructions and diagrams below when setting up and using your Ping Pong Catapult.

1. **Set up your catapult**
   a. Use the clamp to attach the catapult to the edge of a desk.
   b. Push the locking pin through the base and disc to set the launch angle.
   c. Thread the rubber band through the large hole in the disc and hook it over the pins on the arm.
   d. Place a ping pong ball in the suction cup, pull back, and release.







Key Definitions

Kinetic energy: the energy an object has due to motion

Gravitational potential energy: the stored energy an object has due to its height off the ground

Elastic potential energy: the stored energy an object has when it is stretched or compressed

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Name: _____

Directions: Follow the instructions below to write your own experimental procedure.

2. Design an experimental procedure. Your goal is to determine how changing the amount of potential energy stored in the rubber bands affects the ping pong ball's resulting motion. Here are some questions you can ask yourself when designing your procedure:
   a. How can you change the amount of potential energy stored in the rubber bands?
   b. How can you measure the ping pong ball's motion?
   c. How do you think changing the amount of potential energy in the rubber bands will affect the ping pong ball's motion?
   d. What are your independent and dependent variables in this experiment?
   e. How many data points should you collect? How many trials should you do?

Write your procedure here:

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Name: _____

Directions: Follow the steps below to test the experimental procedure you wrote on page 2.

3. Test your procedure.

   a. Use the data table below to record your results. Fill in the blanks for your independent and dependent variables. Remember to include units.

	Dependent Variable: _____			
Independent variable: _____	**Trial 1**	**Trial 2**	**Trial 3**	**Average**

   b. Make a graph of your data using the grid below. Remember to label your axes!



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Name: _____

Directions: Answer the questions below about your experiment.

4. Analyze your results.
   a. What is the general relationship between your independent and dependent variables?

   b. Does this relationship match your prediction?

   c. Explain your results in terms of kinetic and potential energy.

   d. Is the data on your graph linear (a straight line) or nonlinear (a curve)?

   e. What were some possible sources of error in your experiment? How could you eliminate or decrease them if you did the experiment again?