

Gummi Bear Long Jump

Grades 2-3

Description:

Using a pre-made or homemade catapult device, students will collect data and determine if a Gummi Bear launched at various settings will hit a target area.

Number of Participants: 2-4

Approximate Time: 15-30 minutes



Materials:

Mini catapult launcher, protractor, pencil, measuring tape, safety goggles, Gummi Bears, target (box of sand, piece of paper with target drawn on), marking tape, data sheets, penny

Event Parameters:

1. Make sure to wear safety goggles! Perform all launches with safety in mind.
2. Set up a launch area 2 meters wide by 10 meters long. Place the mini catapult launcher on a table near the end of the launch area and set its front wheels on a tape marking.
3. Place a clear plastic protractor along the right side of the catapult. You will see that the throwing arm rests at about 70 degrees. Make small pencil marks at 60 degrees, 45 degrees, 30 degrees and 15 degrees.
4. Place targets or sand trays at various distances from the front of the launcher: 2 meters, 4 meters and 6 meters. Lay down a measuring tape alongside the targets from the front of the launcher.

Measuring Your Achievement – Target Accuracy:

1. Before you launch the Gummi Bear, estimate the correct angle needed to hit the target. Record on your data sheet in the corresponding columns for Launch 1.
2. Have one team member load a Gummi Bear on the throwing arm of the launcher and carefully pull back the arm until the desired degree measurement.
3. Fling your Gummi Bear! Have a team member observe at a safe distance and mark your landing spot with a penny (if the bear bounces, mark the initial point of impact).
4. Measure the distance from the center of the target to the point of impact.
5. Repeat the steps above as you change the angle of the throwing arm or the target distance.
6. The launch closest to the target wins! The second closest jump can be a tiebreaker.

Gummi Bear Long Jump Target Accuracy Data Sheet

Using a fixed target, determine the best angle of the launching arm to land a Gummi Bear in the center of the target. After predicting the angle, enter the degree on your data sheet, and fill in the fixed target distance. Once you've launched your Gummi Bear, mark the landing spot with a penny (if the bear bounces, mark the initial point of impact). Measure the distance with a ruler from the landing spot to the center of the target. The smallest distance wins!

Launch #	Launching Arm Angle (degree)	Actual Distance of Target (m)	Distance from Center of Target (m)
Example: Launch #1	30 degrees	4.5 m	.15 m



GUMMI BEAR LONG JUMP DATA SHEET

Instructions: Using a catapult or launching device, pull back the throwing arm to a degree of your choice. Estimate how far you think the Gummi Bear will travel and enter the distance in the Estimated Distance column. Launch your Gummi Bear and mark the landing spot with a penny (if the bear bounces, mark the initial point of impact). Enter the measurement into the Actual Distance column, and subtract to find the difference. How close was your estimate to the actual? Circle the smallest number in the Difference column to reward your best estimation! If you launch different objects, think about how the weight of the object will change the launch distance.

Launch #	Launch Arm Angle (degrees)	Estimated Distance (m)	Actual Distance (m)	Difference (Actual - Estimated) (m)
1				
2				
3				
4				
5				
6				
Example: Launch #1	45 degrees	3 m	2.5 m	.5 m

Build Your Own Gummi Bear Long Jump Launcher

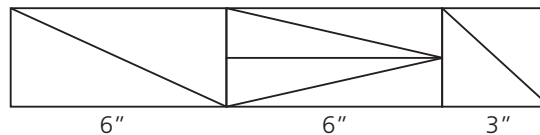
Building Instructions:

We've made these instructions in inches vs. cm to recognize common lumber sizes!

Materials:

- 1 - piece of 2" by 4" lumber, approximately 15" long
- 1 - long handled plastic spoon
- Strips of double-sided Velcro
- 1 - 6" long piece of ruler, yardstick, or other thin, flat wood
- 1 - Small wood square approximately 2"H, 1½"W, 5/8"D
- Masking tape

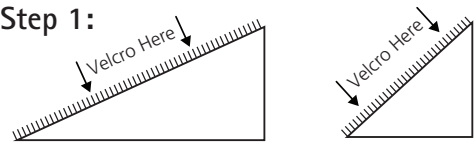
Cut the wood into shapes as illustrated or find wedges or blocks on hand:



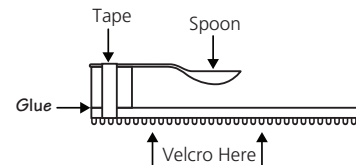
Building Steps:

1. Place sticky Velcro strips (fuzzy side up) on top of each shape, on the side opposite the 90-degree angles.
2. To build the launcher, glue the 1½" end of a 2" x 1½" x 5/8" wood block to a slim 6" x ¾" x ¼" piece of wood. Tape the handle of the spoon to the other 1½" end of the wood block. Loop the tape around all pieces of the apparatus. Cover the bottom of the 6" piece of wood with the looped side of the Velcro. This will allow you to attach and re-attach the launcher to any of the varied wood block wedges.
3. Select a wedge and fasten the launcher with the Velcro connections.
4. Mark the wedge with the proper degree angle (use the protractor included here).
5. Put a Gummi Bear in the bowl of the spoon.
6. Using your finger, push the bowl of the spoon back until it touches the launcher and release the Gummi Bear.

Step 1:



Step 2:



Step 3:

