04-01 Bumper Testing Lab

Objective

• Create a bumper resulting in the lowest force during a collision.

Materials

- Dynamics track
- Lab cart with built-in force sensor
- Paper
- Tape
- Scissors

Setup (before class)

- 1. Arrange dynamics track so it slopes mildly.
- 2. Place a stopping bar at the end of the track. The bumper will rest against it.
- 3. Place a second stopping bar at the point where the cart is to be released. The force sensor should not quite max out with no bumper in place.

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Procedure

- 1. Each team makes a bumper out of paper and tape.
 - a. 2.5 cm thick × 4 cm high × 10 cm long
 - b. Do not use excessive tape.
 - c. Paper is the structural component; tape is only to hold the paper together.
 - d. No wedges or parts to go under/around force sensor to slow it by friction. The sensor should hit the bumper directly.
- 2. The bumper is placed against the end of the track.
- 3. The cart is released from a distance as set by the teacher.
- 4. The maximum force is read from the sensor.
- 5. What is your group's lowest force?
- 6. What could be done to lower the force? _____