High-low Road

| Purpose: A simple hands on demo that allows students to see that the shortest distance between two points is not necessarily the fastest. |

Required Materials: Table (flat relatively level)
Supplied Materials: Metal track straight, Metal track bent, 2 1" steel balls, large support block, and small support block.

To keep this demonstration there will be no use of the formulas for potential and kinetic energy other than simple relationships.
- When the steel ball is held prior to release on the track it has a potential energy,
- When the ball rolls downhill the potential energy is decreased and kinetic energy is increased. \( PE = KE \)
- When the ball rolls uphill the potential energy is increased and kinetic energy is decreased. \( PE = KE \)

By releasing the steel balls simultaneously the ball that is on the bent track finishes much sooner than the ball that is on the straight path. This is due to the faster initial acceleration of the ball in the bent track.

Assemble the unit so that the end of the bent channel with the bend nearest the end on the large support block. See figure

Step 1) Release both balls at the same time at the top of the ramp.

The kinetic energy of both balls will be almost equal except for friction losses; both balls should have the same exit velocity.
Place the end with the bend nearer on LG block

Large Block

Small Block

2 Balls

Straight Track

Bent Track