Bouncing Poppers



Goggles must be worn during this investigation!



Background Information:

- Potential energy is the energy an object has because of its position.
- ▼ The higher an object is, the greater its potential energy.
- ✓ As an object falls or moves, its potential energy is converted to kinetic energy.
- Kinetic energy is the energy an object has because of its motion.
- ▼ The faster or farther something moves, the greater its kinetic energy.

Materials:

| Poppers | Meter stick | Carpet sample | Cardboard |
|--------------|-------------|---------------|-----------|
| Masking tape | Goggles | | |

Procedure:

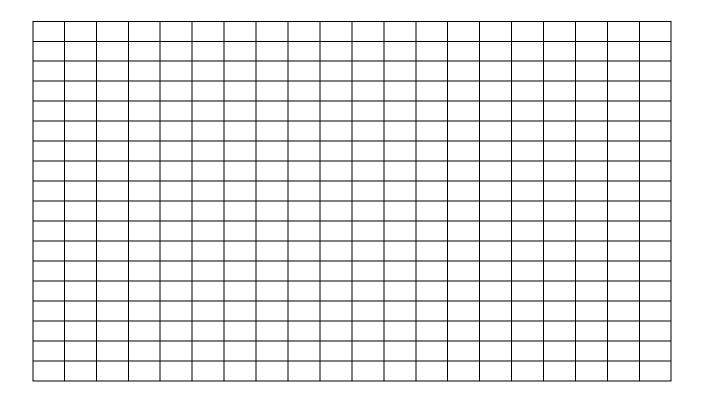
- 1. Tape the meter stick to the wall or you table leg with the "0" end on the floor.
- 2. Turn the popper inside-out and place it on the tile floor.
- 3. Estimate the height in **cm** to which the popper bounces back. Practice until you can estimate accurately.
- 4. When you can accurately estimate the bounce height, drop the popper and measure the bounce height. Record your data.
- 5. Repeat for a total of 5 trials.
- 6. Place the cardboard on floor next to the meter stick.
- 7. Repeat steps 2 5.
- 8. Replace the cardboard with the carpet square.
- 9. Repeat steps 2 5.

Data:

| Popper Bounce Height (cm) | | | | |
|---------------------------|---------|-----------|--------|--|
| | Surface | | | |
| Trial | Tile | Cardboard | Carpet | |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| Average | | | | |

Data Analysis:

Graph your data using an appropriate graph.



| What type of graph did you choose for this data? | | | |
|--|--|--|--|
| What | types of differences do you see in the data? | | |
| | | | |
| What | does this tell you about the surfaces? | | |
| | | | |
| Ques | tions & Conclusions: | | |
| 1. | When do you do work on a popper? | | |
| 2. | What kind of energy does the popper get from the work it takes to turn it inside- out? | | |
| 3. | When does the popper have potential energy? | | |
| 4. | When does the popper have kinetic energy? | | |
| 5. | How does the type of surface affect the conversion of potential energy to kinetic energy? Explain your answer. | | |
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