

Objectives:

Students will combine their knowledge of building mechanical objects with electrical circuits

Introduction

1. Begin the lesson by reviewing the circuit with the switch and the propeller. Ask the kids if they've made the propeller launch in the past and how it happened.
2. Tell students they are going to work in groups to create propeller launchers.
3. Tell students that after building their launchers, they will compete to see whose launcher will fling the farthest.

Discussion: Motion and energy. Ask students: How do objects move? How do we calculate motion? What is acceleration? What is speed? What are some of the forces that act upon objects in motion? How will you ensure that the propeller launches forward instead of upwards?

Design

Goals:

Design a launcher that will fling the farthest in a straight line

Use only the provided materials

Do NOT glue any of the snap circuit parts

Have the students come up with a team name! Then have them draw their designs and answer the questions "What was your group attempting to achieve with its catapult design?", "How does your design match the specifications?" The design should have two parts:

1. Circuit design. Students can use any parts they want, including any resistors if they wish.
2. Platform design. Students can use glue and popsicle sticks to build a platform to help their

DO NOT GIVE THE STUDENTS ANY MATERIALS UNTIL THEY HAVE AN APPROVED DESIGN

Build the catapults the team designed.

Test

Using masking tape, mark a starting line.

Have the student teams place their catapults on the line and release them. Use a meter stick to measure the distance they went and record them on the board. If possible, have a target the kids can aim for.

Determine which launcher was able to launch the furthest distance.

Discussion: Talk about the design of the best launchers. Why did this launcher work the best? What element(s) of its design helped propel the propeller farther than the others?

helped propel the marshmallow farther than the others?

Have each student write a paragraph that answers the following questions.

- What was your group attempting to achieve with its design?
- How did the launcher set the launcher in motion?
- What could you have done to make the launcher better?
- What helped the launcher work as well as it did?
- What did this activity teach you about motion and forces?

Ask for volunteers to share their answers with the class. Discuss students' answers and the forces that work on objects in motion.