



TOILET PAPER TUBE LIGHT BULB

SCIENCE SAFETY

PLEASE follow these safety precautions when doing any science experiment.

- **ALWAYS** have an adult present.
- **ALWAYS** wear the correct safety gear while doing any experiment.
- **NEVER** eat or drink anything while doing any experiment.
- **REMEMBER** experiments may require marbles, small balls, balloons, and other small parts. Those objects could become a **CHOKING HAZARD**. Adults are to perform those experiments using these objects. Any child can choke or suffocate on uninflated or broken balloons. Keep uninflated or broken balloons away from children.

INGREDIENTS

- Electrical Tape
- 8 "D" Batteries
- 0.7 mm Pencil Lead
- Mason Jar
- 2 Wires with Alligator Clips
- Toilet Paper Tube

INSTRUCTIONS

STEP 1: Use the electrical tape to secure all of the "D" batteries together in a series.

STEP 2: Use the electrical tape to secure the alligator clips to the sides of the toilet paper tube.

STEP 3: Place a 0.7 mm piece of pencil lead between the alligator clips at the top of the toilet paper tube.

STEP 4: Place the Mason jar over the toilet paper tube, alligator clips, and 0.7 mm piece of pencil lead.

STEP 5: Close the circuit by touching the ends of the alligator clips to the ends of the batteries. Make observations to provide evidence that energy can be transferred from place to place by electric currents.

Apply scientific ideas to refine your toilet paper tube light bulb, which converts energy from one form to another.

EXPLANATION

The electrons, from the battery, flow through the alligator clips and pencil lead, creating a closed circuit. The pencil lead or filament becomes so hot, it glows, weakens, and eventually breaks.



SCIENCE BACKGROUND

Energy is the ability to do work. Energy is present whenever there are moving objects, sound, light, or heat. Energy can be transferred from place to place by electric currents, which can then be used to produce motion, sound, heat, or light. When electric currents flow in a path that is not broken or complete, a closed circuit is created. If a path is broken or incomplete, an open circuit is created. An electrical current flows easily through a conductor, but not so easily through an insulator.

I CAN STATEMENT

- ✓ I can make observations to provide evidence that energy can be transferred from place to place by electric currents.
- ✓ I can apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

NEXT GENERATION SCIENCE STANDARDS CONNECTION

4 – Energy | Energy and Matter