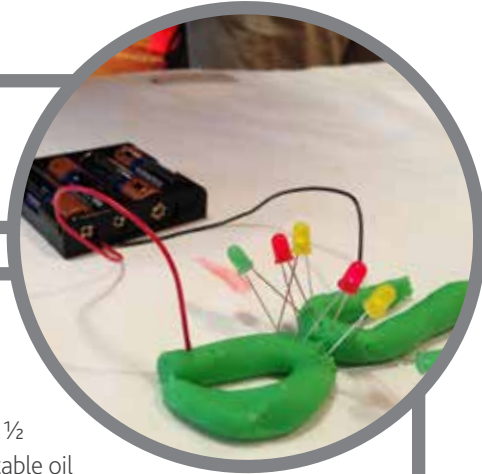




Circuitry Madness

THE ADVENTURE:

Cub Scouts learn about conductors and insulators and build their own circuits to light LED lamps.



PLAN:

- Howlers can help Scouts prepare the conducting and insulating playdoughs in two different colours ahead of time.
- Mix all the ingredients in a saucepan on the stove and stir until a ball forms in the center.
 - For conductive dough: 1 cup water, 1 ½ cup flour, 1/4 cup of salt, 3 Tbsp. Cream of Tartar, 1 Tbsp vegetable oil, food coloring
 - For insulating dough: 1/2 cup distilled water (regular tap

water can be used but the resistance of the dough will be lower), 1 ½ cup flour, 3 Tbsp. vegetable oil

- Prepare a simple circuit with a battery, wires and LED for Cubs to inspect.
- You can give Cubs other electrical elements, such as a motor and fan, to create more complicated creatures.

DO:

- Scouts show Cubs a simple circuit with batteries, wires and the LED light and explain how the wires transfer electricity.

Activity #1: Test Your Playdough

- Cubs may need some help to figure this out. Ask questions to help Cubs guide and organize their thinking.

Activity #3: Circuit Creatures

- If Cubs find it difficult to design creatures involving circuits, have them start from simple designs with only one LED and move up from there.
- Show them pictures as a guide, encouraging them to be creative and design their own.

SUGGESTED TIMING:

- Finding the conducting playdough - 15 minutes
- Making the circuit and experimenting – 15 minutes
- Designing and building a creature – 20 minutes
- Review – 10 minutes





SOME BACKGROUND INFORMATION

- An electrical conductor is a material that allows electricity to pass through it. Some materials that conduct electricity are copper, aluminum and salt water.
- An electrical insulator is a material that does not allow electricity to pass through it. Some insulating materials include glass, cotton and plastic.
- If two pieces of conducting playdough are touching and connected to the LED, it will not light up because it is easier for the electricity to flow through the playdough instead of the lamp. This is called a short circuit. The same effect is reached with the insulating playdough.
- A thicker or shorter piece of playdough makes it easier for electricity to pass through and the LED bulb can be brighter. Thinner or longer playdough makes it harder for electricity to pass through and so the battery might not be able to light up the LED lamp.

