

PARTS IN PLACE



TEACHER GUIDE



PLANNING

ACTIVITY INFORMATION	SECTION (S)	TIME REQUIRED	DAY/ LESSON
ACTIVITY 1: ELECTRIC DOUGH Find out what modeling dough can do besides make shapes. Time required: 30 min	<input type="checkbox"/> Soft Circuit	30 minutes	Day 1
ACTIVITY 2: PARTS MAKE THE WHOLE Make a toy car that lights up and learn how matter is made of tiny pieces. Time required: 1 h 30 min	<input type="checkbox"/> Light the Way	45 minutes	Day 2
	<input type="checkbox"/> Structure and Function	45 minutes	Day 3
ACTIVITY 3: MAKE MORE DOUGH Mix up some salty and sugary doughs to test their properties. Time required: 30 min	<input type="checkbox"/> Recipe		

Full schedule
available with
purchase

1

activity

ELECTRIC DOUGH

Modeling dough doesn't just make fun shapes. What else can it do? Your student will find out in this activity.

SOFT CIRCUIT



WARNING:

CHOKING HAZARD - Small parts. Not for children under 3 years.

WARNING! DO NOT EAT OR DRINK anything in this kit.

WARNING! Batteries can be dangerous. Store away from metal objects. Only use with an adult's supervision.



PREPARATION AND SUPERVISION

- Your student will test the conductivity of the modeling dough and the modeling clay.
- The dough is the one in the canister, while the clay is the rectangular one in the plastic wrapper.
- Help your student make two ball shapes from the modeling dough, connect each ball to a wire from the battery cap, and connect the LED to the two balls.
- The LED should light up when placed between the dough balls but not when placed between the clay balls.
 - If it doesn't light up for the dough, try flipping it around; current only flows in one direction through this type of bulb.
 - If that doesn't work, try a different bulb.
 - The modeling dough has a high salt content, which allows it to conduct electricity. The clay doesn't have enough salt to conduct.
 - While not explained to the student, salt is an ionic compound. When dissolved in water, it separates into ions (charged atoms) that quickly transfer electrons in the flow of electricity.
 - The two balls need to have some separation between them. If they are touching, electricity will flow back through the dough and not toward the bulb, causing a short circuit.



THINK ABOUT IT!

? **Question 1: What happened when the bulb wires were stuck in the modeling dough?**

Answer: The LED bulb lit up.

How to Help: Follow the troubleshooting tips in this section under "Preparation and Supervision" if that didn't happen.

? **Question 2: What happened when the bulb wires were stuck in the modeling clay?**

Answer: The bulb did not light up.

WHICH WILL WORK?



PREPARATION AND SUPERVISION

- Your student will repeat the experiment from Activity 1 (lighting the LED bulb) using the two homemade doughs.
- The Salty Dough should conduct electricity but the Sugary Dough should not.
- You may observe a weak conductive effect from the sugary dough, but it should result in only a dimly lit bulb.
- If the dough doesn't form perfect balls, that's okay. They just need to be able to have



THINK ABOUT IT!

❓ **Question 1: Did either of the doughs help light up the bulb? If so, which one(s)?**

Answer: The Salty Dough should have lit up the bulb.

❓ **Question 2: What is the same about the doughs?**

Answer: Both are soft and can be molded into different shapes.

- Both were made with flour, water, and a white, crystallized powder.

How to Help: Let your student observe the doughs and reflect on how they were made.

❓ **Question 3: What is different about the doughs?**

Answer: One was made with salt and the other was made with sugar.

- The one made with salt lets the light bulb light up and the one made with sugar does not.

How to Help: Encourage your student to think about both what the doughs are like and what they can or cannot do.

❓ **Question 4: Do you think the modeling dough in Activity 1 was more like the Salty Dough or the Sugary Dough? Why?**

Answer: The modeling dough is more like the Salty Dough because it lets the bulb light up.

How to Help: In fact, the modeling dough does have a high salt content, so it is more similar to the Salty dough in terms of what it can do and what it is made of.

Properties of Materials

- The following vocabulary words are defined: property, conductivity, and insulator.
- Conductors are described, but not at a particle level.

Modeling clay	Salty dough	Sugary dough
Bright color	Bright color	Bright color
Soft	Soft	Soft
Easy to flatten	Easy to flatten	Easy to flatten
Can be made into shapes	Can be made into shapes	Can be made into shapes
Helps an LED bulb light up	Helps an LED bulb light up	Helps an LED bulb light up

Answer: The answers are circled above. The properties of the Salty Dough and Sugary Dough can vary somewhat, so your student might say that either of them is not soft or cannot be made into shapes. These are subjective terms.



© Home Science Tools. All rights reserved.
Reproduction for personal or classroom use only.

Contact us at: www.homesciencetools.com/customer-service/

A Product of Homesciencetools.com

Kit	SU-PARTIN
Instructions	IN-PARTINT
Revision Date	3/2021