

ANNEDROIDS

EPISODE 101

NEW PALS

Watch as Nick and Shania meet their android-building scientist neighbour. Are they able to help power up the new android, PAL?

EXPERIMENT SUMMARY

EXPERIMENT: Power PAL up using lightning!

HYPOTHESIS: If lightning hits a lightning rod that is attached to PAL by a wire, its electrical energy will travel through the wire to strike PAL

METHOD: Build a lightning rod and connect a wire that will attach to PAL.

RESULT: The lightning struck PAL and was strong enough to power PAL up.

CONCLUSION: Lightning contains LARGE amounts of electricity.

EXTENSION ACTIVITY

Let's experiment with another form of electricity – Static Electricity!

When electricity gathers in one place it is known as static electricity. Static electricity is usually created when materials are pulled apart or rubbed together. This process causes positive charges to collect on one material and negative charges to collect on the other surface.

TRY THIS EXPERIMENT TO SEE HOW YOU CAN BEND WATER USING STATIC ELECTRICITY:

1. You will need a balloon for the experiment. When you have your balloon, blow it up and tie the end.
2. Turn on the kitchen faucet to get a narrow, continuous stream of water.
3. Rub the inflated balloon on your hair several times until some of your hair starts sticking to the balloon when you lift the balloon.
4. Place the balloon near, but not touching, the stream of water.
5. Observe how the water bends towards the balloon.

WHAT'S HAPPENING?

The static electricity you built up by rubbing your hair against the balloon attracts the stream of water, bending it towards the balloon like magic!

When you rubbed your hair against the balloon, tiny parts of the atoms in your hair, called electrons, are collected on the balloon. These electrons have a negative charge. Just like magnets, a negative charge will attract things that have a positive charge. When you bring the negatively charged balloon near the faucet it is attracted to the positive force of the water. The attraction is strong enough to actually pull the water towards the balloon as it is flowing!

SYNOPSIS FOR TEACHERS/PARENTS:

In this episode, Nick moves into a new house across the street from a mysterious junkyard. Nick and his new friend Shania learn that the junkyard is the home of a genius kid scientist named Anne. Anne builds her own androids but one of her androids named PAL is not powered up yet. Nick, Shania and Anne design an experiment to power up PAL using electricity generated from a lightning bolt.

This episode introduces children about the different pieces that make up a scientific experiment such as a hypothesis and conclusion. It also teaches children about the science behind lightning and electrical energy.

CURRICULUM EXPECTATIONS:

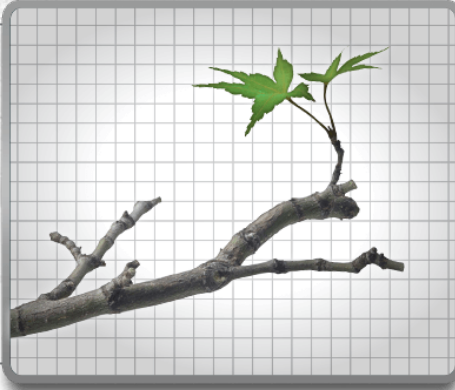
GRADE 6 SCIENCE – UNDERSTANDING MATTER AND ENERGY: ELECTRICITY AND ELECTRICAL DEVICES

- 2.1** Follow established safety procedures for working with electricity.
- 2.5** Use technological problem-solving skills to design, build, and test a device that transforms electrical energy into another form of energy in order to perform a function.
- 3.3** Identify materials that are good conductors of electricity (e.g. metal) and good insulators (e.g. rubber).
- 3.6** Explain the functions of the components of a simple electrical circuit.

THIS OR THAT!

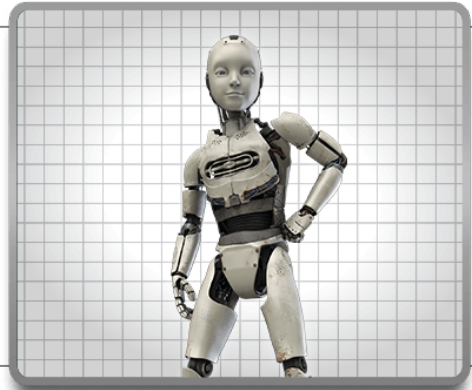
QUESTION #1:

A lightning rod is a rod that people use to protect buildings from getting zapped. Which one of these is a lightning rod?



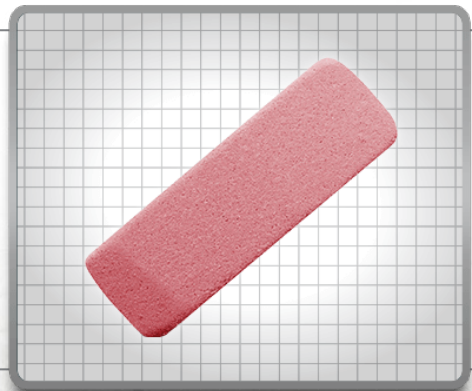
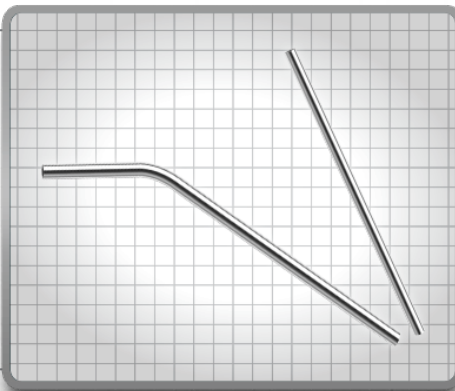
QUESTION #2:

An android acts, and sometimes looks like a person. Which one of these is an android?

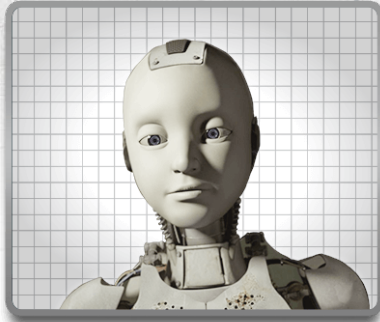


QUESTION #3:

Which of these materials are good conductors of electricity?



MULTIPLE CHOICE



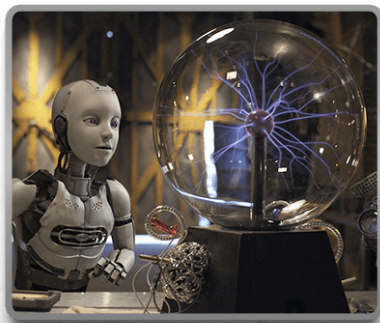
QUESTION #1: A HYPOTHESIS IS...

- A. Something we are going to do during an experiment.
 - B. What we think is going to happen in an experiment.
 - C. An explanation of what happened during an experiment.
 - D. A very large animal that lives on land and water.
-



QUESTION #2: WHICH OF THE FOLLOWING IS A SAFETY RULE WHEN WORKING WITH ELECTRICITY?

- A. Do not use anything with a cord or plug around water.
 - B. Don't put your fingers or any objects in an outlet.
 - C. Ask an adult for help when you need to use something that uses electricity.
 - D. All of the above.
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QUESTION #3: WHAT IS ELECTRICITY?

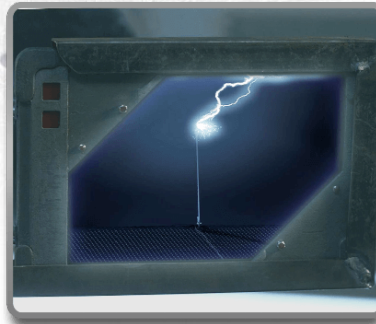
- A. A type of tool.
 - B. A type of energy that can give things the ability to move and work.
 - C. A type of android.
 - D. A type of energy that pulls things downward toward the earth.
-

TRUE OR FALSE

← Grownup—fold this part over before handing to a child!

QUESTION #1:

One lightning strike has enough electrical energy to light 150 million lightbulbs.



TRUE!

Lightning has more electricity in a single bolt than an entire city!

QUESTION #2:

A laboratory is a place where scientists can do their research and experiments.



TRUE!

Scientists need lots of different tools and materials to do their experiments, so a laboratory keeps all supplies in one place!

QUESTION #1:

Thunder is the sound of all the air exploding around a lightning rod.



FALSE!

Thunder is the sound of all the air exploding around a *lightning strike*!

COLUMN MATCH

Match each photo to their correct name.

1

EYES

2

HAND

3

PAL

4

ANNE

A



B



C



D



1.C 2.D 3.B 4.A

SEARCH AND FIND

Can you find the following?



Hand



Shania's ribbon



Nick



Lightning rod



Eyes



PAL