

ANNEDROIDS

EPISODE 105

GARBAGE BAND

Watch as Anne uses different strategies to upgrade her security system in the junkyard! Will Nick be able to get past all the lasers and cameras?

EXPERIMENT SUMMARY

EXPERIMENT: Upgrade the junkyard security system!

HYPOTHESIS: If we add more cameras, lasers and microphones around the junkyard, the androids will be fully protected from any intruders because cameras can show us where the intruders are, lasers can detect movement if someone breaks through the beam of light and microphones can detect sound waves!

METHOD: Add more cameras, lasers and microphones around the junkyard!

RESULT: Adding more cameras and lasers were helpful but still left some gaps in the system. However, when we added microphones around the junkyard, we were able to detect sound waves which triggered the security system to go off!

CONCLUSION: The security system has now been fully upgraded and there are no more gaps in the system. The androids will be protected from now on!

EXTENSION ACTIVITY

Start your own garbage band! Create instruments using recycled materials!

GUITAR

Materials:

1. empty tissue box
2. cardboard tube (can use toilet paper roll or paper towel roll)
3. marker,
4. scissors
5. rubber bands
6. tape.

Directions:

1. Trace one end of the cardboard tube to one of the smaller sides of the tissue box with a marker.
2. Have a parent help to cut the circle you traced on the tissue box. Slide the cardboard tube into the hole you cut and tap it in place.
3. Wrap rubber bands around the empty tissue box - two on each side of the cardboard tube.
4. You can then decorate your guitar the way you like and rock out to your favourite song!

SYNOPSIS FOR TEACHERS/PARENTS:

In this episode, Shania's brothers enter the junkyard without setting off Anne's security system. Anne must find out how to upgrade her security system so no one can enter the junkyard without being notified. She adds different upgrades such as using more cameras, lasers, and sound waves to finally come to a solution.

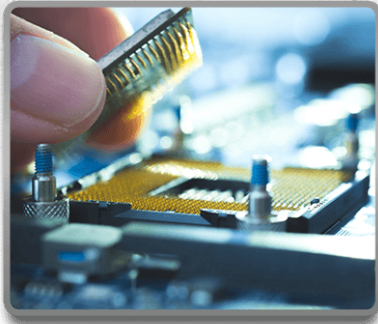
This episode teaches children about the elements of light and sound and how they work. It also introduces children to the concept of upgrading something that has gaps and using trial and error to finally come to a logical solution.

CURRICULUM EXPECTATIONS:

GRADE 4 SCIENCE: UNDERSTANDING MATTER AND ENERGY – LIGHT AND SOUND

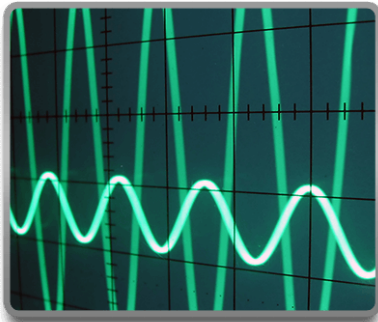
- 2.1 Follow established safety procedures for protecting eyes and ears
- 2.2 Investigate the basic properties of light
- 2.3 Investigate the basic properties of sound
- 2.4 Use technological problem-solving skills to design, build and test a device that makes use of the properties of light and sound
- 3.3 Describe properties of light, including the following: light travels in a straight path; light can be absorbed, reflected and refracted
- 3.4 Describe properties of sound, including the following: sounds travels, sound can be absorbed or reflected and can be modified
- 3.8 Identify devices that make use of the properties of light and sound

MULTIPLE CHOICE



QUESTION #1: ANNE UPGRADED HER SECURITY SYSTEM TO PROTECT THE ANDROIDS. WHAT DOES IT MEAN TO UPGRADE SOMETHING?

- A. To take apart something so it stops working.
 - B. To create a new invention.
 - C. To improve something by adding or replacing parts.
 - D. To build something.
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QUESTION #2: AN OSCILLOSCOPE IS...

- A. A type of instrument that can display sound waves.
 - B. A type of eye doctor.
 - C. A type of security system that uses lasers.
 - D. A type of machine that can measure electricity!
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QUESTION #3: ANNE THOUGHT HER SECURITY SYSTEM MALFUNCTIONED. WHAT DOES IT MEAN FOR SOMETHING TO MALFUNCTION?

- A. To work perfectly with no problems.
 - B. To stop working normally.
 - C. To create a set of instructions that are written in a language that the computer can understand and follow.
 - D. To magically work with missing parts.
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THIS OR THAT!

QUESTION #1:

When you press the keys of this instrument, small hammers inside hit strings to make sounds. Which instrument is it?



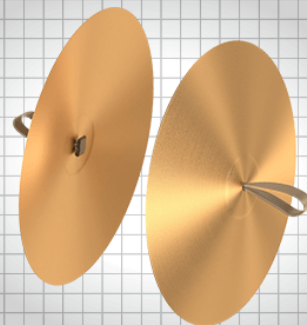
QUESTION #2:

Which instrument do you hit with sticks or your hands to make sound?



QUESTION #3:

In order to make sounds on this instrument, you need to pluck its strings. Which instrument is it?



TRUE OR FALSE

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

QUESTION #1:

Lasers are concentrated beams of light that are easier to see through fog or dust.



TRUE!

Lasers are a different type of light source than light bulbs or flash lights. They produce very narrow beams of light that aren't always easy to see!

QUESTION #2:

Sound waves travel in one direction.

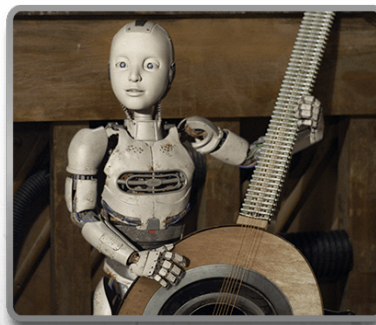


FALSE!

Unlike lasers that only point in one direction, sound waves can travel in all directions.

QUESTION #3:

Different sounds make waves of different shapes and sizes.

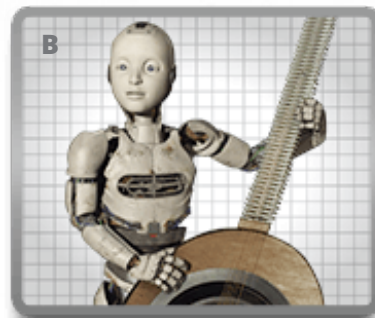
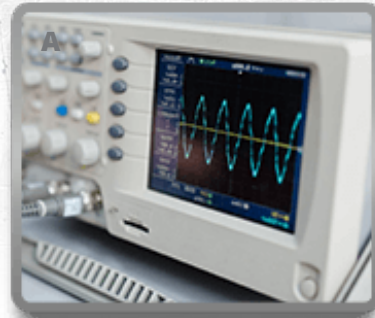
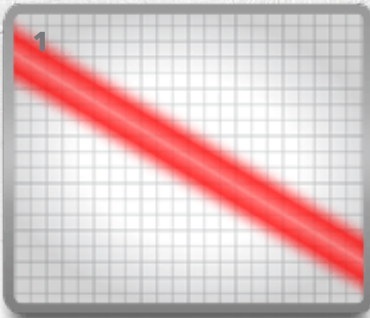


TRUE!

Sound waves can be big, small, tall, short, or long!

COLUMN MATCH

Match the following!



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

SEARCH AND FIND

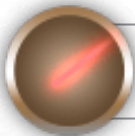
Can you find the following?



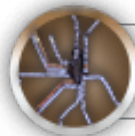
Microphone



Guitar



Laser



Laser grid



Binoculars



Piano