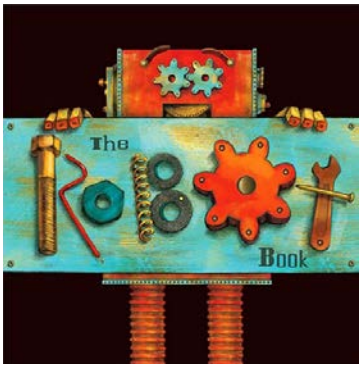
Robot Reading Rally

(4-H Cloverbud Ages 5-7 years old)

Summertime is full of lazy days, which can often leave children with too much time on their hands and the familiar whine, "I'm bored!" If boredom is setting in, try a **ROBOT READING RALLY** to break the monotony and introduce educational fun into those long, hot days. Each of these books is listed with its ISBN number in case you wish to purchase it. Also consider visiting your local library to see if it's on the shelf.



The Robot Book by Heather Brown ($5.96/ISBN: 13:978-0-7407-9725-5).

TIME:
30 minutes

MATERIALS:
Cardstock paper, ink pad, scissors, felt tip pen

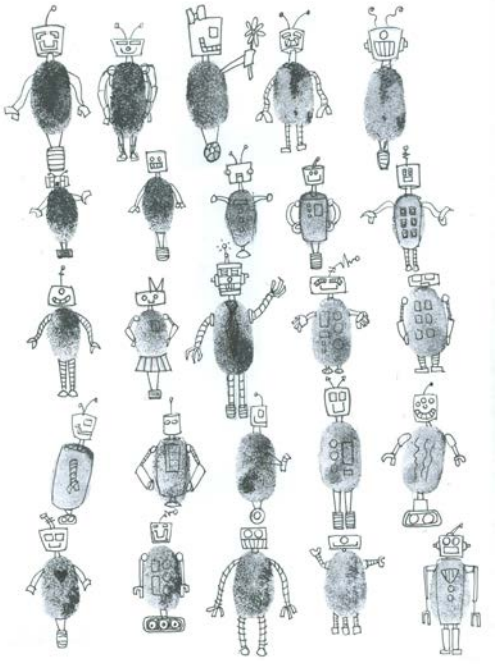
AGE:
5-6 years old

In this book, your child will discover the different parts of a robot. After reading the book, try this activity together.

ASK:
"What do you think a robot is made of?"

DO:
Have your child draw a design for a robot. They will use the design for their next book adventure.

NEXT:
Cut cardstock paper into 8.5 by 2 inch strips to make bookmarks. Using an inkpad, have your child create thumbprints on the bookmark. Think about the parts of the robot and use a felt-tip pen to create thumbprint robots. Some examples are shown to the right. Use the bookmarks to mark your place as you continue on the Robot Reading Rally!



DID YOU LIKE THIS ACTIVITY?
Ask your local Extension Agent about 4-H projects like Creative Arts and Puppetry.

Welcome to Your Awesome Robot by Viviane Schwarz ($11.13/ISBN: 978-1-909263-00-0).

TIME:
90 minutes

MATERIALS:
Cardboard box, construction paper, glue, scissors, pictures of labels and dials (copied or hand-drawn), markers, salvage materials.

AGE:
5-7 years old

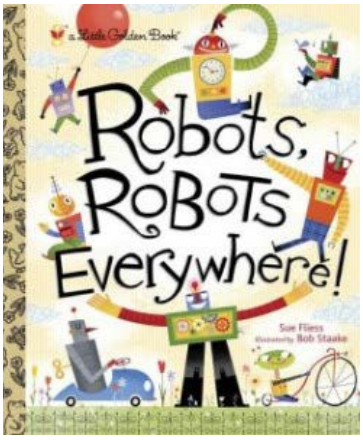
ASK:
"Did you get any more ideas for your robot? What else could you add to make your robot even more awesome?"

DO:
Have your child go back and redesign the robot he or she drew earlier for *The Robot Book.*
Gather the materials necessary to make a robot based on the new robot design. Children will need help cutting the cardboard. This is a good time to review safety rules. Talk about these rules:

- Always have an adult present when using a knife.
- Never leave the blade out.
- Always pass the knife blade down, handle first to the next person.
- Put the knife away when finished.
- If you get cut, apply pressure to the area and seek first aid!

Also, review the "Workshop Rules" listed in the book.

DID YOU LIKE THIS ACTIVITY?
Ask your local Extension Agent about 4-H projects like Creative Arts and Environmental Sciences.



Robots, Robots, Everywhere! By Sue Fleiss ($3.99/ISBN: 978-0-449-81079-8).

TIME:
45 minutes

MATERIALS:
six ring-shaped candies (such as Lifesavers), one drinking straw (make sure the straw fits snugly inside the candy), one pack of 5-count gum, two square candies (such as Starburst), two small candy bars (such as miniature Hershey bars), double sided tape or glue dots, scissors, ruler

AGE:
5-7 years old

ASK:
The book says, "tractor robots could plant and plow." Have you ever seen a robot that could plant? How would a robot move up and down the rows to plant? Most robots have wheels that help the robot move.

Let's build a candy robot tractor with wheels and axles that move!

- Cut your drinking straw into two 1-inch pieces.
- Push one piece of straw through two ring-shaped candies. The straw becomes the axle for your tractor. Wheels and axles make moving things much easier!
- Repeat step 2 to make your second wheel and axle.
- Put glue dots or double-sided tape on each end of the package of gum.

- Press one wheel and axle set onto to glue dot/tape to create your front wheels. Repeat with the second axle to create your back wheels.
- Flip your tractor over so that the wheels are touching the table.
- Put glue dots or tape on the seam side of one candy bar. Press the second candy bar onto the glue dots so the seam sides of the bars are glued/taped together. This is the "engine" of the tractor.
- Use a glue dot to secure the candy bar "engine" to the front of the tractor.
- Use a glue dot to secure a square candy flat to the end of the tractor to make a seat.
- Use a glue dot to secure the second square candy (vertical) to the end of the other square candy to create a seat back.
- Use a glue dot to secure a ring candy to the engine to create a steering wheel.

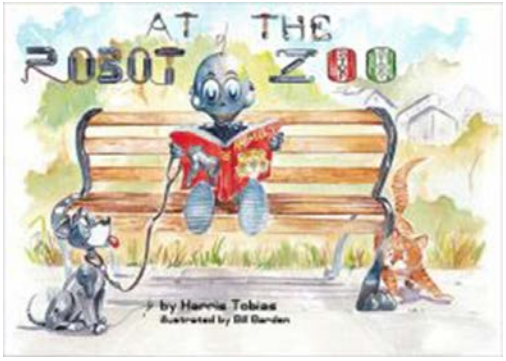
Now, see if the tractor will move. Take the last ring candy and have your child draw around the outside of it. Remove the candy. Explain that the distance around the circle is called the circumference.

Next, take a pencil and draw a short line on one flat side of the ring candy, from the inside to the outside. If you are using a Lifesaver, you can draw your line next to the L printed on the candy. Place the line at the end of the ruler. Roll the candy down the ruler until the line reaches the ruler again. How far did the wheel travel? _____ inches (should be about 3 inches).

The distance between the start point and the end point equals one rotation. A rotation is a complete turn. Robots measure distance in rotations or degrees. How far can your robot go if it moves 3 rotations? ____ inches (9 inches)

Did you like this activity?

Ask your local Extension Agent about 4-H projects like Ag Engineering, Tractor Driving, Small Engines.



At the Robot Zoo by Harris Tobias ($6.99/ISBN: 9781475042320).

Time:

60 minutes

Materials:

one discarded CD, six jumbo paper-clips, strong glue (such as hot glue), one hot-glue stick (cut to one inch), one hobby motor* (3 volts DC or less), one single AA battery case with wire leads*, one AA battery, craft items (pipe cleaners, googly eyes, etc.)
*You can buy the motor and battery case from local electronic retail shops or online from www.allelectronics.com

Age:

5-7 years old

Ask:

"Have you ever had a toy that used batteries?" If so, go and find it. Ask, "How do you think the toy works?" Explain that you are about to make your very own robot animal!

Do:

Follow the instructions for the Jitterbug activity located at: http://www.exploratorium.edu/afterschool/activities/docs/jitterbug.pdf

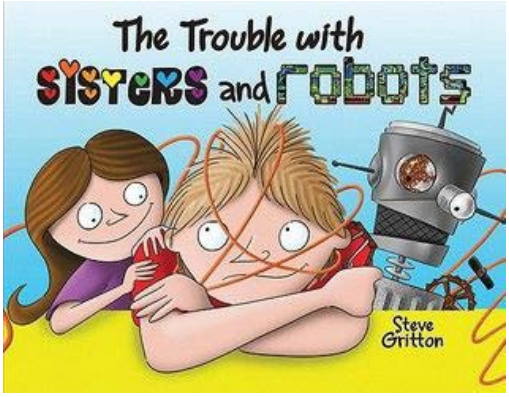
Here's how to make a robot that will shimmy across the table:

- Unbend 6 jumbo paper clips so they form a Z. These will be the legs.
- Hot glue the top of one Z to the side of the CD-ROM that you want to become the top of your bug. The wire should run from the middle toward the outside edge, like the spoke of a wheel.

- Repeat with the other five legs all around the CD. Be sure to spread the legs out evenly.
- Let the hot glue dry completely.
- With the tail of the motor hanging over the edge of the CD-ROM, hot glue the motor to the top of the CD-ROM.
- Cut a hot glue stick so you have a piece about 1/4 inch long.
- Push the tail of the motor into the side of the piece of glue stick. About 1/4 of the stick should be above the motor and 3/4 of it should be below the motor.
- Hot glue a single AA battery case with wire leads on top of the CD, opposite the motor.
- Hook the wire leads onto the motor terminals (1:1)
- Insert a AA battery to verify that it works. You may have to flick the glue stick "tail" to get it going.
- Once you have verified that it works, take the motor out or disconnect the wires to stop the bug.
- Decorate your bug using pipe cleaners, tissue paper, feathers, googly eyes, etc. Ask: "What makes the robot move?"

Did you like this activity?

Ask your local Extension Agent about 4-H projects like Cats & Dogs, Pets, Livestock, and Poultry.



The Trouble with Sisters and Robots by Steve Gritton
($14.22/ISBN: 978-0-8075-8090-5)

Time:

30 minutes

Materials:

one D Battery, one 6x2-inch strip of aluminum foil , one .7 volt lightbulb with screw base

Age:

5-7 years old

Ask:

"In the book, interesting things began to happen when they plugged in the robot. How do you think electricity works? Let's see if we can make electricity!"

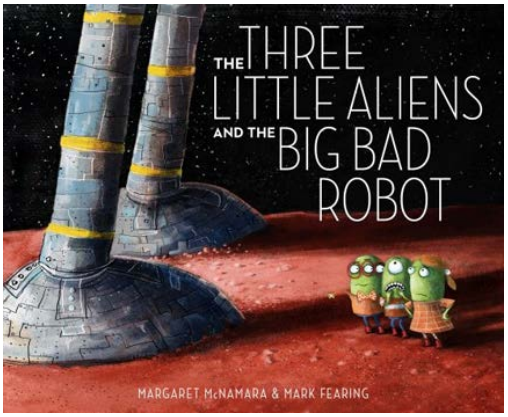
- Fold the aluminum foil back and forth like a fan, making sure the folds are no wider than ¼ inch (in other words, the fan should be very thin).
- Wrap the aluminum foil around the base of the lightbulb (where the screw base is) one time.
- Place the anode (negative) end of the battery on the aluminum foil.
- Touch the light bulb that has the aluminum foil wrapped around its base to the cathode (positive) end of the battery.

What happened?

The light bulb lit up! Just like when the robot sputtered to life when it was plugged in to the electrical outlet, your lightbulb lit up when it was connected to an energy source, the battery. Electricity works when you create a circuit. The energy from the battery flows through the aluminum foil, which conducts it to the base of the light bulb and voila! You have a complete electrical circuit. What happens if you take the aluminum foil from the negative end of the battery? You break the circuit and the light bulb will go out. This is what happened when they unplugged the robot. They broke the electrical circuit.

Did you like this activity?

Ask your local Extension Agent about 4-H projects like Robotics and Electricity.



The Three Little Aliens and the Big Bad Robot by Margaret McNamara & Mark Fearing ($13.61/ISBN: 978-0-375-86689-0)

Time:
30 minutes

Materials:
one 35mm film canister (can be ordered from www.sciencebob.com), two packages of fizzing antacid tablets (such as Alka-Seltzer), water

Age:
5-7 years old

Ask:
In the book, the three little aliens zoomed around the universe in search of a planet. How do you think they flew? How would you fly if you were in search of a planet? Let's make a rocket to zoom about. Be sure to go outside to try this one out!

- Pour 1 tablespoon of water into your film canister.
- Drop ¼ of the antacid tablet into the film canister.
- Quickly snap the lid on and turn it upside down so the lid faces the ground.
- Move back from the canister rocket quickly and watch what happens.

How far did it go?
Experiment with the combinations of water and tablets to see how high you can make your rocket zoom. The carbon dioxide gas bubbles created by the tablets keep expanding to build up pressure within the film canister. Eventually, all that pressure forces the lid to open and send the canister into the air to create a rocket.

Did you like this activity?
Ask your local Extension Agent about 4-H projects like Science, Aerospace, and Rocketry.

Randy Riley's Really Big Hit by Chris Van Dusen ($12.81/ISBN:978-0-7636-4946-3)

Time:
45 minutes

Materials:
one LED light, one CR 2032 battery (you can find these inexpensively in battery operated tea light at dollar stores), one glass jar, one piece black construction paper, one print-out of a constellation (optional), one pair scissors, one roll of tape

Age:
5-7 years old

Ask:
"Randy likes to search the sky for constellations and stars. What is a constellation?" (A constellation is a group of stars that make up a shape or character in the night sky.) "Have you ever seen a constellation in the night sky? Which one was it?"

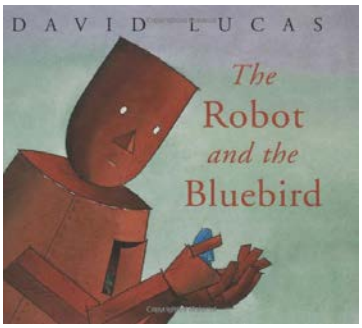
Here's how to create your very own constellation.

- Cut the black construction paper to fit the inside of your glass jar.
- Draw a constellation on the paper (use one you and your child have researched together or let your child imagine one).

- Use a pencil to poke holes for the stars in the construction paper. Be careful to poke away from yourself to avoid getting hurt.
- Once your constellation is complete, roll the construction paper up and put it in the jar. Let it expand to fill the jar.
- Next, look at your LED light. Notice that it has a short leg and a long leg. The short leg is the negative end and the long leg is the positive end.
- Locate the positive side and the negative side of the CR 2032 battery.
- Place the positive (longer) leg of the LED light to the positive side of the battery so they touch. This should leave the negative leg of the LED touching the negative side of the battery.
- Tape the LED to the battery.
- Place the light in the jar and screw on the lid.
- Turn off your overhead lights or go into a dark room to see the constellation glow.

Did you like this activity?

Ask your local Extension Agent about 4-H projects like Creative Arts, Astronomy, or Electricity.



The Robot and the Bluebird by David Lucas
($14.71/ISBN: 978-0-374-36330-7)

Time:

45 minutes

Materials:

one empty carton (from juice, milk, or similar), one pair scissors, one roll of tape, craft supplies, googly eyes, twine, etc.

Age:

5-7 years old

Ask:

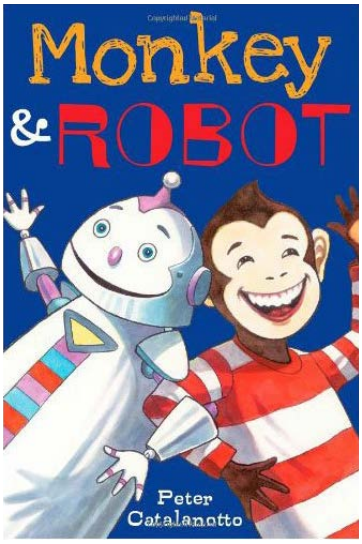
"In our book the bluebird lived in the robots' heart always. Do you think it is a good idea to leave a robot outside? What might happen to the robot?"

Instead of leaving a real robot outside to rust, let's make a pretend robot for the birds to visit.

- Wash out the juice or milk carton. Let it dry.
- Cut an opening in the carton. The hole should start about 1 inch from the bottom of the carton. Your opening should be at least 4 inches tall.
- Use googly eyes, bottle caps, paint, etc., to make your robot.
- Punch a hole through the top of the carton and run twine through the hole to create a loop with which to hang your feeder.
- Pour bird food into the carton. A mixture of striped sunflower seeds, raw peanuts, raisins, and corn kernels will work well.
- Hang your robot bird feeder and record what how many and what type of birds visit your feeder.

Did you like this activity?

Ask your local Extension Agent about 4-H projects like Creative Arts and Recycling/Conservation.



Monkey and Robot by Peter Catalanotto ($5.99/ISBN: 978-1-4424-2978-9)

TIME:
45 minutes

MATERIALS:
one bowl, one potato masher or fork, one jar, one paintbrush, one flashlight, one banana, 2 tablespoons molasses, 2 cups brown sugar, 2 tablespoons apple cider vinegar

AGE:
5-7 years old

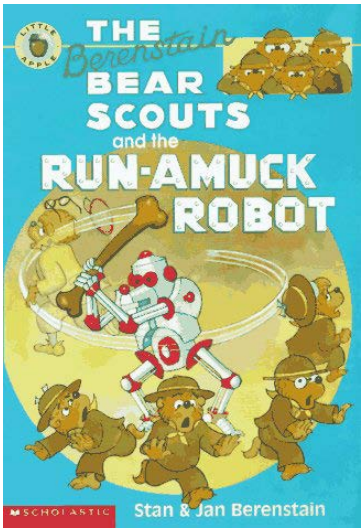
ASK:
"What did the catepillar turn into? Was it a racoon? Of course not, it turned into a moth! Have you ever seen a moth?"

Let's make a snack for a moth and see if it will bite! This activity comes from: http://www.planitdiy.com/inspiration/in-kids/sugaring-for-moths/

- Mash the banana with your potato masher or fork in the bowl.
- Pour the molasses, sugar, and vinegar into the bowl and mix it with the banana.
- Pour the mixture into the jar.
- Set the jar in the sunlight for several hours.
- Two hours before dusk, paint a 10-inch square on the trunk of a tree using your moth food mixture.
- An hour after dusk, shine your flashlight at an angle onto the square you painted.

Do you see any moths feeding on your yummy snacks? If so, what kind are they? Visit this website to compare and learn more about the moths in your backyard: http://www.butterfliesandmoths.org/gallery

DID YOU LIKE THIS ACTIVITY?
Ask your local Extension Agent about 4-H projects like Entomology.



The Berenstain Bear Scouts and the Run-Amuck Robot
($6.00/ISBN: 0-590-94477-0)

TIME:
45 minutes

MATERIALS:
one 18 oz. plastic cup, three fine-tip markers, two rubberbands, one hobby motor (3 volts DC or less), one single AA battery case with wire leads, one AA battery, one large sheet of paper, glue dots or masking tape

AGE:
5-7 years old

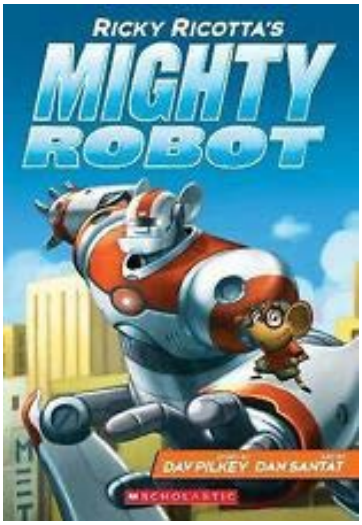
ASK:
"In the book, Robo One is set to do all of the work for everyone in Bear Country. What kind of work would you have a robot do? Let's make a robot that can draw."

- Turn the plastic cup upside down.
- Tape the battery case to the closed end of the cup.
- Tape the motor to the open end of the cup so that the axle hangs over the rim of the cup.
- Connect the wire leads to the motor.
- Use rubber bands to secure the markers to the cup, tip down. The tips of the marker should be placed just below the rim of the cup.
- Insert the AA battery into the case.

You may have to give your robot a nudge to get it to start drawing on the paper. Keep a close eye on the robot or it will wander off! How does this robot work?

Did you like this activity?

Ask your local Extension Agent about 4-H projects like Electricity and Robotics.



Ricky Ricotta's Mighty Robot by Dav Pilkey
($5.99/ISBN: 978-0-590-30720-8)

Time:

45 minutes

Materials:

one bar of Ivory soap, one permanent pen (such as Sharpie), one paper plate

Age:

5-7 years old

Ask:

What did the evil Dr. Stinky do to the lizard? Could you make a magic potion? It probably would not be a good idea to try on a real lizard! Let's see if we can make an expanding lizard.

- Use the permanent pen to draw a lizard on the bar of Ivory soap.
- Place the soap in a bowl of water for 2 minutes.
- Take the soap out of the water and place it on a paper plate. Still see your lizard?
- Place the plate of soap in the microwave and cook the soap for 2 minutes.

What happened to your lizard? Why did it expand? Ivory soap floats because it has air in it. Did you see any air bubbles in the soap? No, because the air is mixed in with the soap as it is being made. When the watery soap is heated up, the water evaporates, leaving bubbles. The heat from the microwave causes the air bubbles to expand, creating your puffy soap lizard! Can you bathe with your soap lizard? Yes, you can!

Did you like this activity?

Ask your local Extension Agent about 4-H projects like Science.

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By **Dr. Mariah Morgan,** Assistant Extension Professor, Extension Center for Technology Outreach.

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