SolarBot

National Inventors Hall of Fame®
EDUCATION PROGRAMS

SolarBot™

INVENTOR LOG

Safety and Hygiene

- All activities require adult supervision.
- Ages 5+
- Read and follow all instructions.
- Wash your hands after each activity.
- Properly hold and use scissors. Do not run with scissors.
- Do not put materials near eyes, mouths, and ears.
- Safely handle objects with a point, such as pipe cleaners.
- Do not shoot others with the rubber bands.
- Do not play with or place plastic bags near face or mouth.
- Ventilate the room when using markers.
- If anyone has an allergy, remove any materials that may trigger an allergic reaction.


For an enhanced experience, access MUSIC, POSTERS, and VIDEOS online at invent.org/recharge/solarbot
PASSWORD:
CRICKET
EXPLORE THE WORLD OF INSECTS!

Build You

Build your very own SolarBot by following the steps here or watching the SolarBot Assembly video.

Do not tug or pull on the wires or they will disconnect.

If needed, use the second SolarBot kit for spare parts.

1.

Snap the motor into the body of the cricket.
The axle should point toward the back of the cricket.

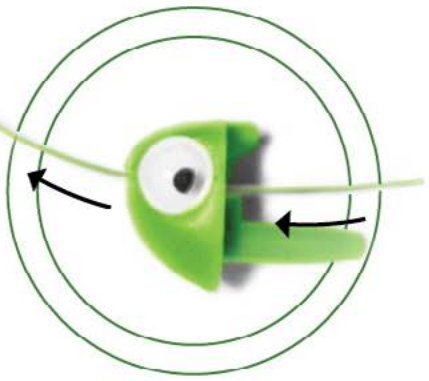
2.

Hold the solar cell just like the picture, and **tuck it under** the tab on the back of the cricket.

r SolarBot

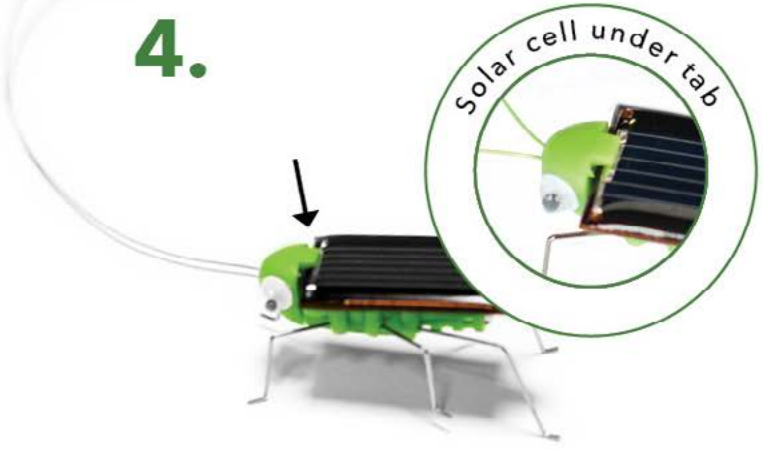
Take your SolarBot to a sunny spot! It works best when powered by the sun.

3.



Thread the ends of the long green wire through the small holes from the back of the cricket's head. It should come out through the front to create the antennae.

4.



Push the head into the body and **position** the small tab on the back of the head over the top of the solar cell **to hold it in place.**

5. Customize your SolarBot!

Add a hat sticker or adhesive gem. Remember **not** to cover the solar cell!

Explore Cricket Anatomy

YOU'LL NEED:

Crickets have many special abilities! Circle your favorite part of the cricket.

Wings rub together to make sound (this is called stridulation)

Large hind legs for jumping

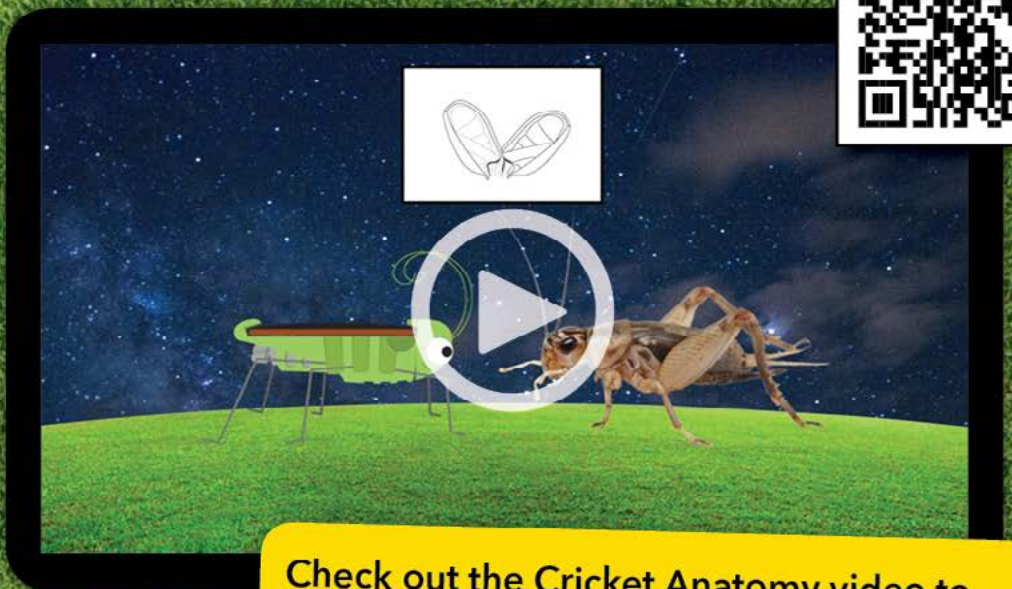
Palps are appendages by the mouth used to touch and taste

MEET A HALL OF FAMER

Otis Boykin invented and improved electronic resistors to withstand extreme changes in temperature and pressure. Electrical resistors help to slow the flow of electricity in a circuit. Thanks to Boykin, many electronic devices could be made less expensive and more reliable. Learn more about Boykin here: invent.org/inductees/otis-boykin

Long, narrow antennae used to feel and smell

Ears on their front legs



Check out the Cricket Anatomy video to compare a live cricket to your robotic one!

GIVE YOUR SOLARBOT A NAME!

Find the first letter of your first name and circle the word next to it.	
A	Jammie
B	Pinky
C	Fip
D	Zinga
E	Vern
F	Teak
G	Pokey
H	Sprink
I	Chingo
J	Meebo
K	Zippy
L	Sunny
M	Nino
N	Derbo
O	Inchie
P	Jumpit
Q	Crick
R	Dilly
S	Leafie
T	Exo
U	Robo-bo
V	Wingle
W	Yoyo
X	Babby
Y	Sensie
Z	Antennie

Find the month of your birthday and circle the word next to it	
January	McJumperson
February	Plinkoplink
March	Crickerbean
April	Monomono
May	Grassafrass
June	Hopperkin
July	Von Splat
August	Meadowton
September	Chirpity
October	Springabinga
November	Nightsky
December	Daisybottom

Adopt Your SolarBot

YOU'LL NEED:

Write your SolarBot's first and last name on the Adoption Certificate.

Write today's date for your SolarBot's date of adoption.

Play the SolarBot Music to celebrate!

ADOPTION CERTIFICATE

My SolarBot's name is

(SolarBot's first and last name)

My SolarBot's adoption date is

(Today's date)

Together, we will overcome challenges, dream up big ideas, and build inventions that will change the world.

Congratulations on adopting your very own SolarBot!

Design A Habitat

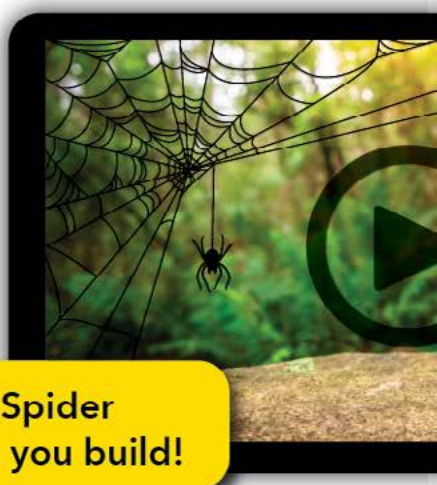
1. Get your SolarBot habitat box.

2. Pop open the SolarBot habitat box by pushing in the bottom corners toward one another.

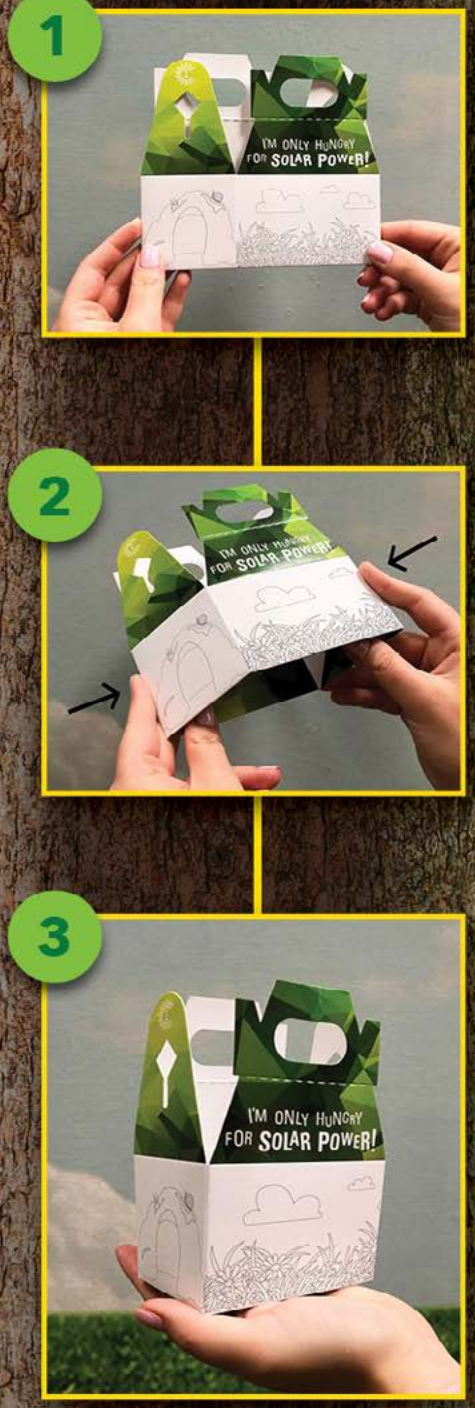
3. Customize your habitat! Use markers to color and draw features.

Add the habitat stickers and the **NATURE CUT-OUTS** on the right side of the next page!

Use the paper plate to make the habitat even larger!



Play the Spider Music as you build!



Spiders are predators of crickets, which means that they hunt and eat them as prey. There are many types of spiders in the world. Check out a few of them!

How else can you improve SolarBot's habitat?

How could the habitat help protect your SolarBot from a spider?

Did you know that a habitat is the home or environment where an animal lives?

SPIDER SPECIES FACTS

Has four eyes!
Jumps with hind legs like a cricket.

Can cartwheel!
Spins sideways, up to 42 times a second.

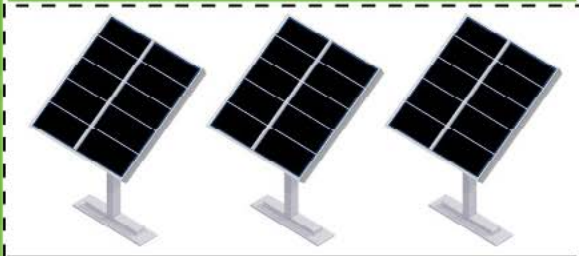
Has reflective silver patches!
Patches shrink and grow with its mood.

Runs up to 12 miles per hour!
Uses six out of its eight legs to run.

NATURE CUT-OUTS

Cut these out for your habitat!
(Fold the flaps after you cut to stand them up.)

FOLD HERE



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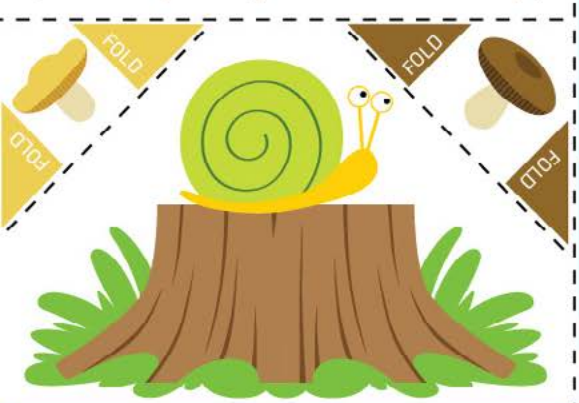

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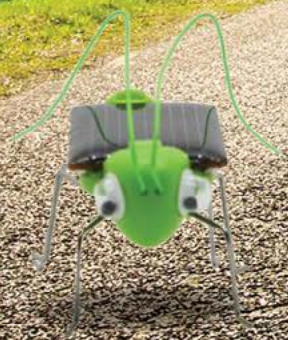
Get Outsi

Take your SolarBot to a sunny spot!

YOU'LL NEED:

Hold SolarBot in the palm of your hand. What do you notice?



Place SolarBot on a hard surface in the sun. Using your hand, cover the solar cell on SolarBot. Notice how it stops moving. How else can you create a shadow over your SolarBot?

de!

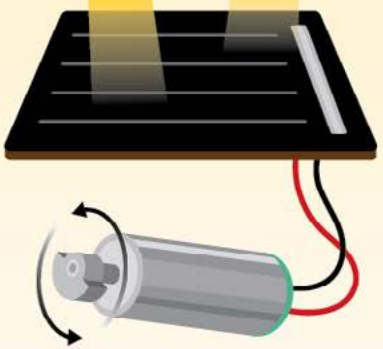
Play these games as a cricket!

- Shadow tag
- Hopscotch
- Race between two trees or objects
- Soccer

Lift up SolarBot and look under it. Observe the motor moving.

MORE TO EXPLORE

Your SolarBot works best when powered by the sun. It contains a solar cell connected to a motor. The solar cell captures sunlight and turns it into electricity.



Learning about how an object moves can help you build an invention to help SolarBot get across the puddle. Take a look at these crickets in play!

Build an Invention to Help SolarBot

SolarBot discovered that a hose was left running, and now there is a big puddle! SolarBot needs to act fast to turn off the hose before more water is wasted.

What could you build to get SolarBot across the puddle?

YOU'LL NEED:

Brainstorm and sketch ideas below. If you need more room, use a piece of paper. Then, build your idea!

Test your invention by getting your Solarbot across the puddle located on the next page!

Get SolarBot across the puddle!

MORE TO EXPLORE

Did you know that a family of four uses about 400 gallons (=1,500 liters) of water daily? **That's 10 bathtubs of water!**

MEET A HALL OF FAMER

Harriet Strong came up with a way to control the flow of water with a series of dams. This allowed for the collection of the water until it was needed.

This was a huge help to farmers who needed water for their crops. It also helped reduce flooding where people settled.

Learn more about Strong here:
invent.org/inductees/harriet-w-r-strong

MEET A HALL OF FAMER

Sometimes inventors draw inspiration from other hobbies. National Inventors Hall of Fame Inductee Radia Perlman is an inventor and also a musician. She compares her invention to a bunch of musicians playing together. Learn more about Perlman here: invent.org/inductees/radia-perlman.

Check out Radia Perlman's video!

MORE TO EXPLORE

Learning to be an inventor is like learning to play a musical instrument. It takes time and practice. Keep an open mind, and remain persistent as you invent!

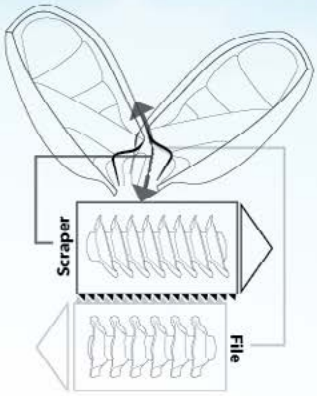
The Chirp-Off!

Create your own instrument.

YOU'LL NEED:

Play your instrument in a grand finale Chirp-Off!

Play the Chirping Crickets video.



When the cricket moves its **wings,** the **teeth on the scraper** side of the wing rub against the **teeth on the file** side of the wing, creating vibrations, and making the cricket chirp!

Did you know?
Crickets have wings that are thin and light, but most crickets do not use them to fly.

Crickets **lift their wings** to create an empty pocket of air. This **amplifies their chirp,** making it louder! A cricket's chirp is amplified like a megaphone!

SolarBot

CHECK OFF EACH ACTIVITY AS YOU COMPLETE IT!

- [ ] Build Your SolarBot
- [ ] Explore Cricket Anatomy
- [ ] Adopt Your SolarBot
- [ ] Design a Habitat
- [ ] Get Outside!
- [ ] Build an Invention to Help SolarBot
- [ ] The Chirp-Off!

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Learn more at **invent.org**

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