MAKERSPACE PROMPT CARDS

http://tcoffey.edublogs.org

Contents

Teacher Notes:

Use Stand-Up Sign Holders, Vertical, 11"H x 8 1/2"W

Blinky Light Project

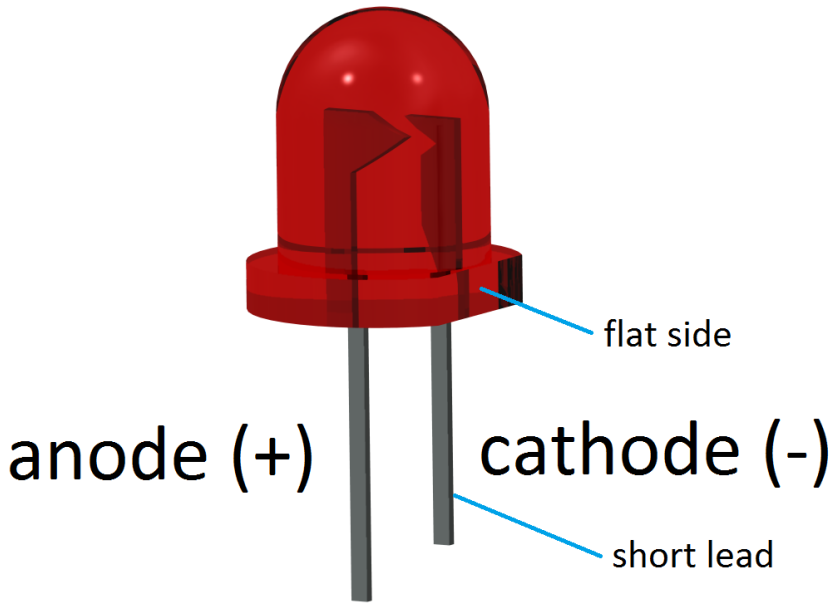
Each person gets:

1 – fast LED

1 – slow LED

1 – battery

Use the battery and LEDs to create a working circuit. Then make something out of it using recycled materials and craft supplies!



Digital Bling

Each person gets:

1 – LED

1 – Battery

1 – Binder Clip

Use a binder clip, a battery, an LED, and foam to create a working circuit. Then make it interesting with craft materials!

Cubelets

- Watch the Cubelets Video

- Create a Robot with three cubes. Change the cubes around and see what happens.

- Look through the book of example robots for ideas and create your own robot.
- Make sure to take a picture or video of what you create.

Cubelets

Each cubelet has its own job.

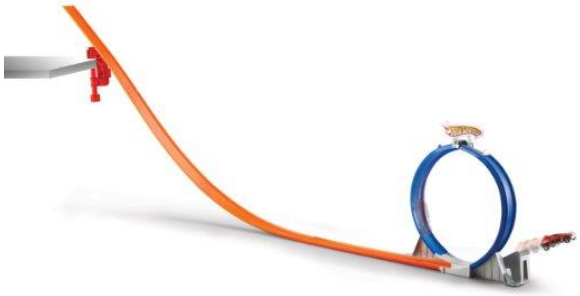
Sense blocks are inputs, like eyes and ears. Sense blocks are black.

Action blocks are outputs. They do things like move or light up. Action blocks are clear.

Think blocks calculate. They do math or compute. Think blocks are colorful.

....And you always need a battery.

Ramps and Cars



Challenge 1: Build a ramp to get your Hot Wheels car to <u>go as far as it can</u>.

- Watch the Speedometry Video Challenge 1

- Check out the video of a Real-Life Ramp

Ramps and Cars

Things to Think About When Building Your Ramp

- How can you change your design to give your cars more energy to go farther?
  - What if you change how you let the cars go at the top?
  - Could you change the texture of the track?
  - Could you change the surface when the car hits the floor?
  - Could you somehow change the car to give it more energy?
  - What if you used loops in your track?

Challenge 2: How can you design a racecourse that keeps building kinetic and potential energy so your car will keep moving as long as possible?

Challenge 3: How can you design a track that will make your car go as fast as possible? How will you measure speed?

Watch the Speedometry Video Challenge 2

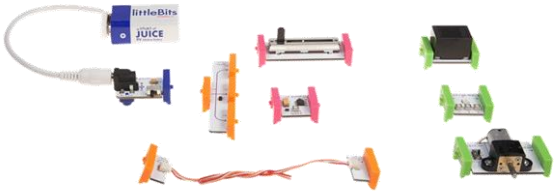
How will the speed of the car affect the collision?

What happens when two cars collide when you change the potential energy?"

How do different types of collisions affect how energy transfers from one object to another?

Crashes with and without seatbelts

Little Bits



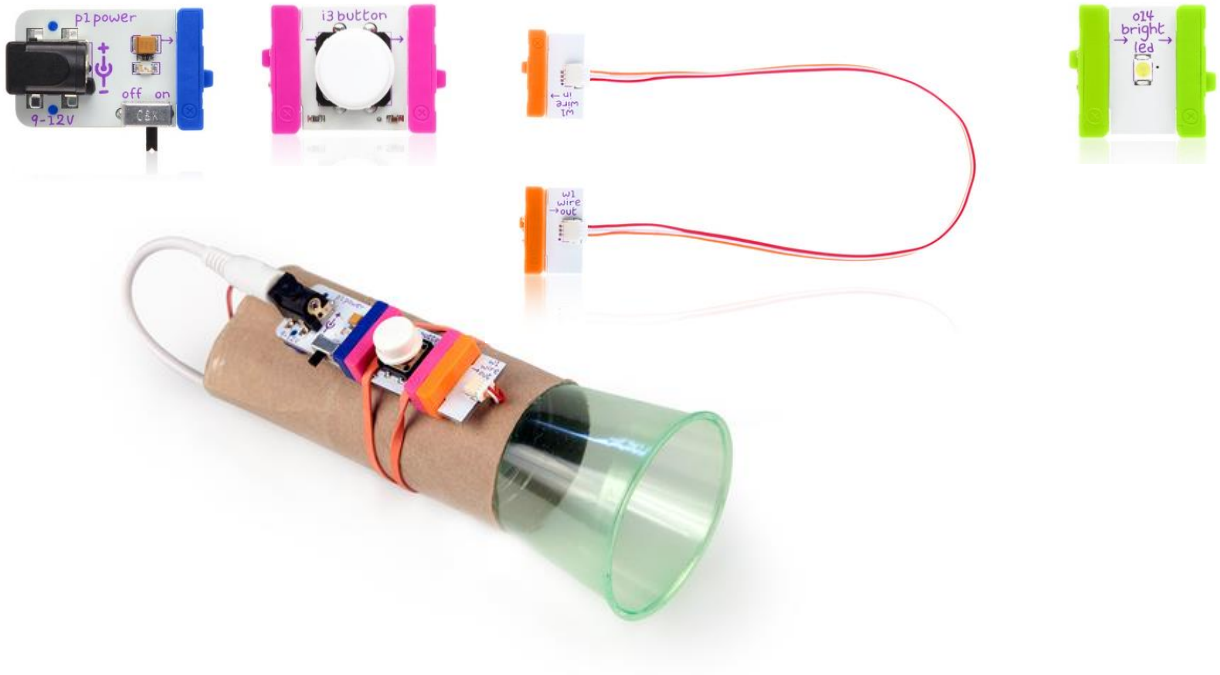
- Try one of each type of bit:

Power | Input | Wire | Output

- Try making the Tickle Machine or Flashlight.
- Watch tips and tricks videos for ideas:

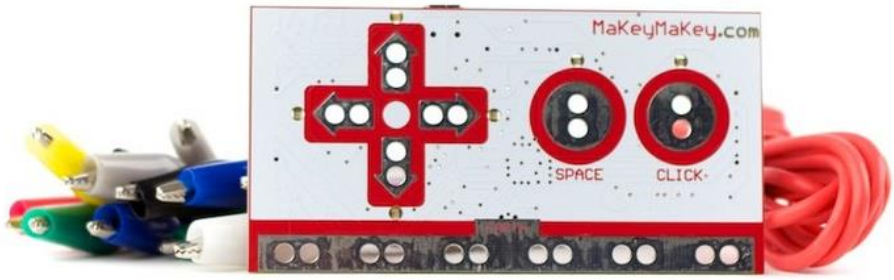
- Look through the Little Bits Notebook for other ideas! Make your own invention.
- Make sure to take a picture or video of what you create.

Flashlight



Tickle Machine

Makey Makey



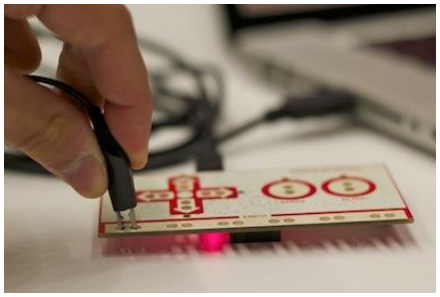
- Watch the Makey Makey Video

- Find a creative way to use the Makey Makey. Try attaching different materials or playing different games.

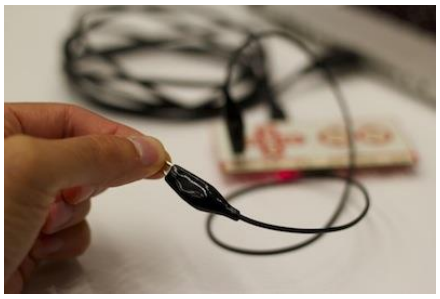
- Make sure to take a picture or video of what you create.

Makey Makey

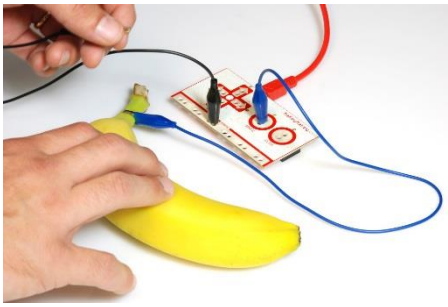
Connect to Earth -- Connect one end of an alligator clip to "Earth" on the bottom of the front side of MaKey MaKey.



Connect to Yourself -- Hold the metal part of the other end of the alligator clip between your fingers. You are now "grounded."



Connect to Arrows, Space, and Click –Connect one end of another alligator clip to arrow, space, or click on the board. Attach the other end to a conductive object.



Open the Makey Makey How-To Page on the Computer. http://makeymakey.com/howto.php
Pick a game at the bottom.

Try tapping the object while holding the ground wire.

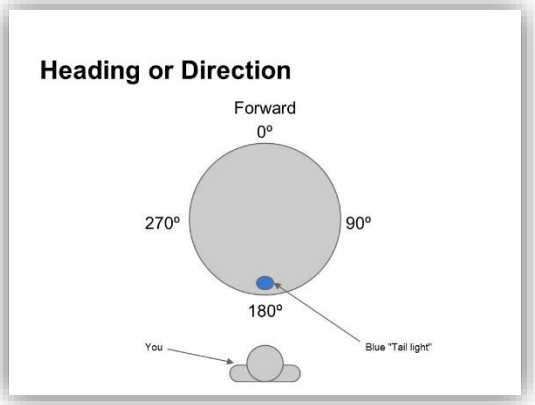
Coding with Spheros

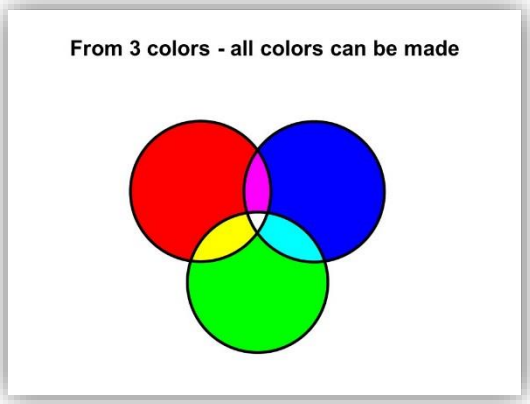
- Watch the Sphero Video

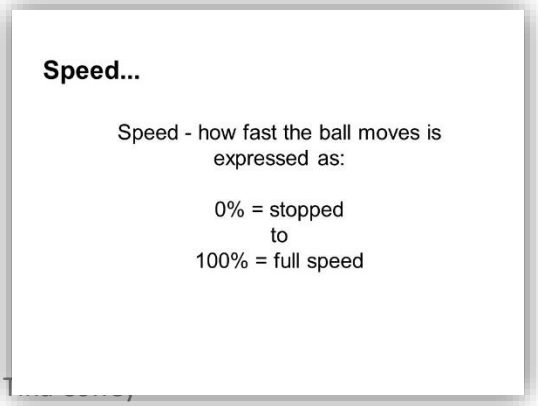
How to Program the Sphero

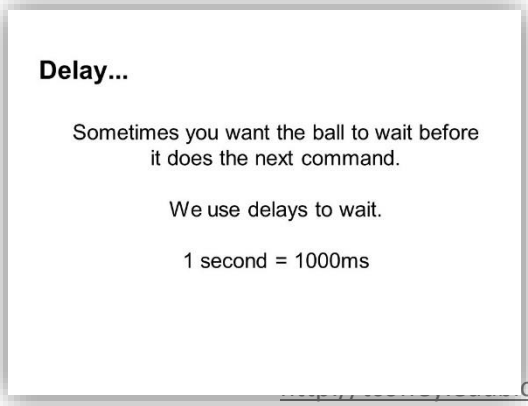
- Open up MacroLab App
- Tap + at the bottom of the screen.
- Name your Macro>Tap **Create Macro**.
- Tap the +
- Tap a Command>Tap **Create**
- Add a few more commands.
- AIM your Sphero
- Click the Play button.

- How Sphero Sees the World:





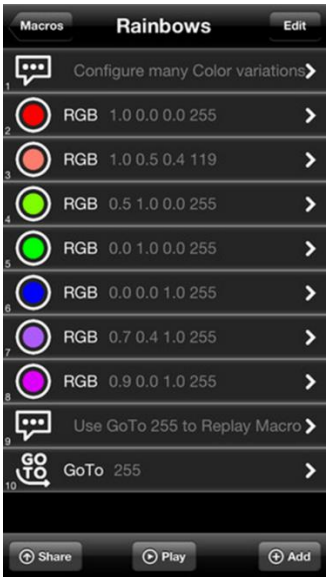




Coding with Spheros

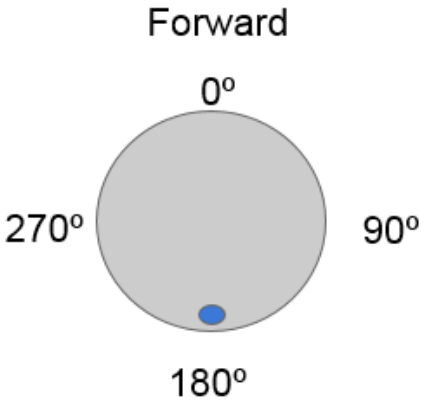
Challenge 1: Make a Rainbow

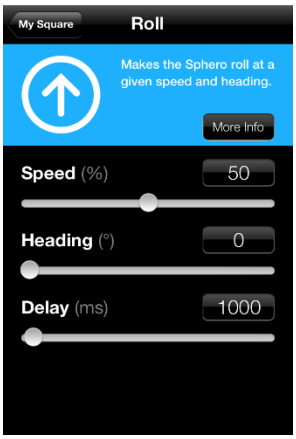
- Add a Different Color
- Add a Delay
- Repeat this 3 Times.
- Press Play



Challenge 2: Make a Square

- Make a new macro and name it My Square
- Add a Roll command to go forward for 1 second at 50% speed.
- AIM the Sphero with blue tail light pointed at you.
- Press Play





Reconstruct a Fan

Getting started: Examine the Fan!

- Watch it while it works. Make sure to look at the switch.

Take Apart the Fan

- Take apart a fan very carefully being careful not to break anything. Keep all the parts. Try and identify the components of the circuit.

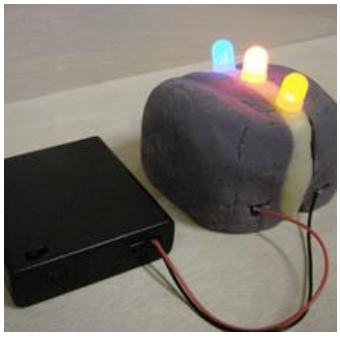
Build a Fan.

- Use the materials from the fan you disassembled or that are on the table to construct your own working fan (or other creation).

Squishy Circuits

- Watch the Squish Circuits Video

- Make your own squishy circuit.

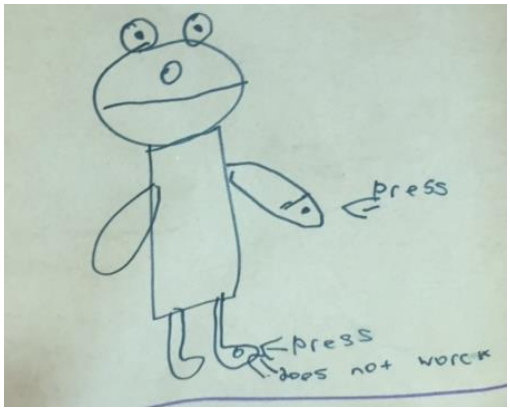


- Make sure to take a picture or video of what you create.

Take Apart Toys

Getting started: Get to know your toy!

Add new batteries and see if you can make it work. Notice what it does (or take a guess at what it might do if the toy is broken).



Notice how it is held together. Pick a spot to begin dissecting your towy. Work carefully as not to cut any wires hidden just below the surface of the toy. Try to keep the toy working as long as possible.

Removing screws is often a good place to start with toys made from plastic. You may need to use a saw to get through fused plastic seams. For mechanical plush toys, find a seam or start from the activation switch and cut through the outer layer of fabric (or fur).

You may discover lights, motors, switches, speakers, and other parts that can be reused in other projects.

Take Apart Toys

Take it further

Make a "franken-toy": Incorporate elements - from several taken-apart toys into one. Combine the skin from one toy with the movement from a second and the noisemaker from a third to create a new crazy contraption!

Turn it inside out: reverse the "skin" of a plush toy, re-stuff, then re-sew to give a familiar toy. A whole new look. You can also try sewing together the skins of several plush toys.

Credits

Kevin and Amanda Fonts
http://www.kevinandamanda.com/fonts/

Pink Cat Studio
http://www.teacherspayteachers.com/Store/Pink-Cat-Studio

Borders and Papers by
http://imlovinlit.blogspot.com/

The 3AM Teacher
http://the3amteacher.blogspot.com/