T
Tinker

5
Points

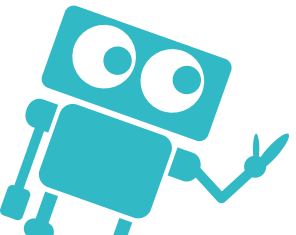
Makey Makey

Conductive Bongo

Create a bongo using Makey Makey and an online bongo program. Can you add conductive elements to make the bongo?

https://apps.makeymakey.com/bongos/

MackinMaker



T
Tinker

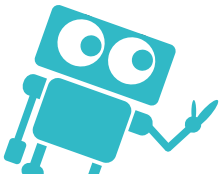
5
Points

Materials:

- Makey Makey
  Gator clips
- USB cable & computer with web access
- Assorted conductive items (metal, copper tape, foil, etc.)

Quick Start:

1. Follow the Makey Makey setup instructions (plug in USB to Makey Makey and into the computer).
2. Attach one gator clip to "Earth."
3. Attach other gator clips to the arrow pointing left and the "space" on the Makey Makey.
4. Attach the other ends of both gator clips to different conductive items or practice holding one of them while completing the next step.
5. Hold the "Earth" gator clip with one hand and touch one of your conductive items with the other hand to trigger your bongo sounds.



Hints and Tips:

- Makey Makey has a wealth of information, games, apps, and ideas on how to use your Makey Makey. Head to Makeymakey.com for resources.
- To make sure the Makey Makey is working, touch the "Earth" with one hand, and the "arrow" or, "space" with the other hand. If a red light turns on, the Makey Makey is working.

Extended Challenges

Music: Try out other virtual instruments like the piano at https://apps.makeymakey.com/piano/.

Music: Rhythm! Can you play the bongos in time with another Makey Makey piano (or other instrument)? Try making your own band!

S
Skill-Up

10
Points

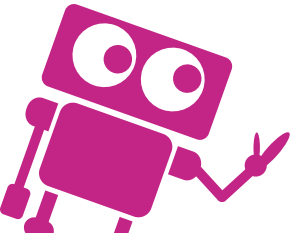
Makey Makey

Scratch + Makey Makey

Learn to trigger sounds, movements and more by combining Scratch and Makey Makey. Can you make Makey Makey trigger custom sounds and recordings?

Scratch.mit.edu

MackinMaker



S
Skill-Up

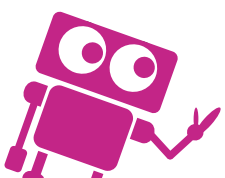
10
Points

Materials:

- Makey Makey
  Gator clips
- USB cable & computer with web access
- Assorted conductive items (metal, copper tape, foil, etc.)

Quick Start:

1. Follow the Makey Makey setup instructions (plug in USB to Makey Makey and into the computer).
2. Attach one gator clip to "Earth."
3. Attach the other gator clips to arrow keys on Makey Makey.
4. Attach the other ends of the gator clips to conductive items.
5. Use MIT's Scratch block coding to map keyboard keys to sounds, or make digital characters move.



Hints and Tips:

- Look in the "Events" section of Scratch to find the "When ____ is pressed" block to get started.
- You can trigger sounds or even record your voice with Scratch and trigger what you've recorded!

Extended Challenges

Music: Make something that plays notes. Can you play a song?
Social Studies: Research a topic and engineer a way to share something you learned through Scratch and Makey Makey.

D
Design

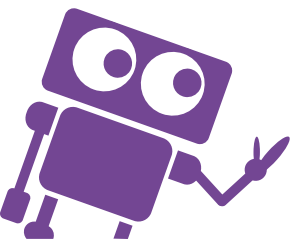
14
Points

Makey Makey

Far Out Space Design

Draw a space scene and use Scratch to program some space sounds into your art. Will you include an alien spaceship? A planet and stars? A rover? You decide!

MackinMaker



D
Skill-Up

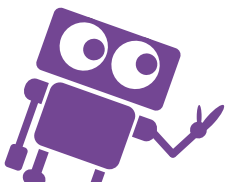
14
Points

Materials:

- Makey Makey
  Gator clips
- USB cable & computer with web access
- 6B pencil and paper
- Optional: Foil & black markers, conductive tape, or conductive paint

Quick Start:

1. Gather a 6B pencil, paper, Makey Makey, and any other materials you want to use to create your drawing.
2. Draw your space design. How and where will you connect the Makey Makey to trigger Scratch?
3. Plug your Makey Makey into the computer.
4. Connect the Makey Makey to the conductive pieces of your image. Do you have a spot for your Earth connection?
5. Create a new project in Scratch with your space sounds mapped to keys.
6. Test your drawing. Does it work?



Hints and Tips:

- Make sure each alligator clip is attached to a unique conductive shape that you have drawn. If any lines are connected to other parts of the drawing, they will not work the way you want.
- In the sounds on Scratch, there is an entire Space sounds section. Make sure to grab some sounds from that section or make your own custom sounds!

Extended Challenges

English/Language Arts: Can you write a story about the space scene you have created? Could you add a touch pad to the drawing that when pressed tells part of your story?
Computer Science: Can you add in more than just sounds? Could your space drawing trigger online Scratch animations? Or move a character through a programmed space scene? Think creatively and deepen your coding skills too!

G
Global

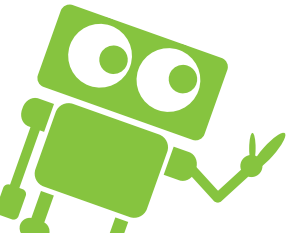
19
Points

Makey Makey

Model Talk

Build a 3D model or structure and use Makey Makey and Scratch to make it talk. What will it say? Will it tell a story or explain something you've recently learned? Or will it make a silly sound?

MackinMaker



G
Global

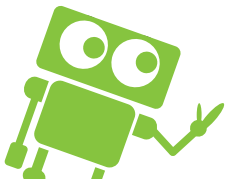
19
Points

Materials:

- Makey Makey
  Gator clips
- USB cable & computer with web access
- Cardboard and other assorted materials of your choice
- Foil & black markers, conductive tape, or conductive paint

Quick Start:

1. Gather a Makey Makey and any other materials you want to use to create your 3D model.
2. Sketch out a plan. How and where will you connect the Makey Makey to trigger Scratch when you want it to?
3. Plug your Makey Makey into the computer.
4. Connect the Makey Makey to the conductive pieces of your model. Do you have a spot for your Earth connection?
5. Create a new project in Scratch with your sounds mapped to keys.
6. Test your 3D model. Does it work?



Hints and Tips:

- Look in the "Events" section of Scratch to find the "when _____ is pressed" block to get started.
- You can trigger sounds or even record your voice with Scratch and trigger what you've recorded!
- What materials are conductive? Brainstorm the conductive materials you want to use so the Makey Makey can more easily get triggered through your structure. Can you make tabs that you connect the alligator clips to?

Extended Challenges

Computer Science: Can you add in custom sounds or recordings? Could your model trigger online Scratch animations? Think creatively and test out different codes in Scratch!

English/Language Arts: Can your model be related to a story you are reading in some way? What would a main character say or sound like? Record a custom sound that is triggered by touching your model.

I
Innovator

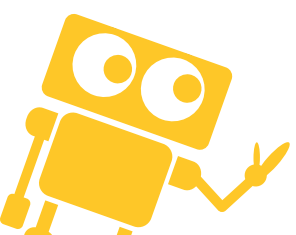
24
Points

Makey Makey

Talking Toy

Make a prototype of something you or someone you know would like to play with using Makey Makey, Scratch, and any other programs and materials you can think of. Will it talk? Will it interact with an image or trigger something in an online video game? You decide!

MackinMaker



I
Innovator

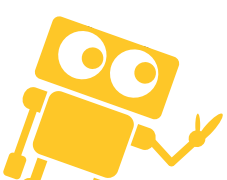
24
Points

Materials:

- Makey Makey
  Gator clips
- USB cable & computer with web access
- Cardboard and other assorted materials of your choice
- Foil & black markers, conductive tape, or conductive paint

Quick Start:

1. Gather assorted craft materials, paper, and markers.
2. Plan your toy. What elements will be conductive and what will they trigger?
3. Create your masterpiece.
4. Add conductive pads to your toy and hook them up to Makey Makey.
5. Plug your Makey Makey into the computer and go to Scratch.
6. Create a new project in Scratch with your outputs (sounds, sprite movement, etc.) mapped to various keyboard keys.
7. Show it off to others.



Hints and Tips:

- Brass fasteners (or brads) are conductive, easy to punch through paper/cardboard, and work great for Makey Makey triggering.

Extended Challenges

Art: Can you make a toy that is related to your favorite movie? What characters might you recreate and what would they say?

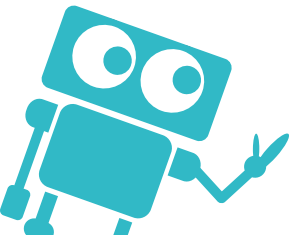
Science: Build an animal and use Scratch to program the right sounds. Can you create a habitat to go with it?

T
Tinker

1
Points

LEGO®
Bridging the Gap

Create a bridge built only with LEGO®s.



MackinMaker

T
Tinker

1
Points

Materials:

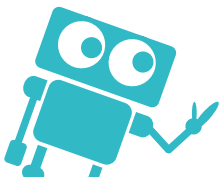
- LEGO® Large Creative Brick Box
- Paper and Pen/Pencil

Quick Start:

1. Gather some LEGO®s that are different shapes and sizes.
2. Think about how you will need to build this differently from other things you've built with LEGO®s.
3. Sketch out your ideas of how your bridge might look before building.

Hints and Tips:

- Look at pictures of famous bridges or bridges in your community. How can you build something similar using LEGO®s?.



Extended Challenges

Social Studies: Model your bridge after a famous bridge like the Brooklyn Bridge or the London Bridge. Are there any historical bridges that are still in use? How are they still standing? How old are they?

Science: What does it take to build a strong bridge? What kinds of bridges are there? Which are the strongest?

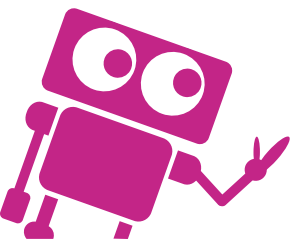
English/Language Arts: Write a story about your bridge and who might cross it.

S
Skill-Up

6
Points

LEGO®
AnimaLEGO

Build an animal of your choice.



MackinMaker

S
Skill-Up

6
Points

Materials:

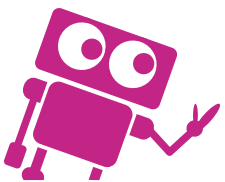
- LEGO® Large Creative Brick Box

Quick Start:

1. Gather some LEGO®s that are different shapes and sizes.
2. What animal will you build? Brainstorm some ideas before you start building!
3. Build the animal of your choice! !

Hints and Tips:

- For ideas on what animal to choose, look through books about animals and images of animals.
- For ideas on how to build your animal, look at images of the animal you



Extended Challenges

Science: Do some research on the animal you choose. Where does your animal live? Build a habitat for the animal.

Science: What does your animal eat, and what eats your animal? Build other animals in the food chain!

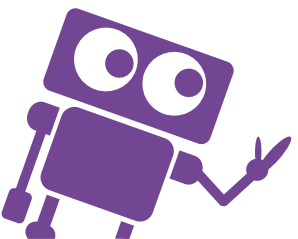
English/Language Arts: Choose an animal from a story you have read and build it.

D
Design

11
Points

LEGO®
The aMAZEing Challenge

Build a maze which can be tilted to get a marble from one end of the maze to the other.



MackinMaker

D
Skill-Up

11
Points

Materials:

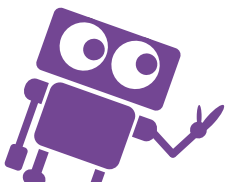
- LEGO® Large Creative Brick Box
- A marble

Quick Start:

1. Have you ever gone through a maze? What makes a maze fun? Think about what you like, and don't like, about mazes. Sketch out a plan for how you will build your maze.
2. Try to build a maze that is basic to start, and as you improve, build one that is harder to finish.!

Hints and Tips:

- Build two of the same mazes. Then, have two friends compete to see who can get their marbles through the maze first!
- As you get better, you can build more mazes with different routes, or create new maze challenges.

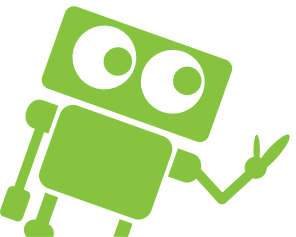


Extended Challenges

English/Language Arts: Make a maze that connects to a theme in a book, poem, or play you like. Make points in the maze relate to points in the book, poem, or play.
Social Studies: Make a maze that connects to a historical journey or time period. Make points in the maze relate to points in the journey or important moments from that time in history.
Science: Think about what worked and did not work well when building and going through your maze. How can you use the scientific method to improve your maze? Hypothesize and experiment with different maze designs.

G
Global

20
Points



LEGO®

Environment Help with LEGO®

Brainstorm ways to help the environment. Build a prototype of something that already exists, or something that you would like to invent, to preserve our world in some way.

MackinMaker

G
Global

20
Points

Materials:

- LEGO® Large Creative Brick Box
- Paper and a pencil

Quick Start:

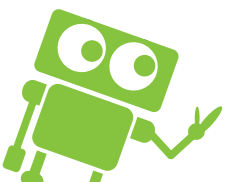
1. Gather some LEGO®s that are different shapes and sizes.
2. Brainstorm different ways we protect and preserve our environment or ways you would like to see us protect the environment. Will you build a new electric vehicle? A big wind turbine?
3. Build your prototype using only LEGO®s!

Hints and Tips:

- For ideas, look at books about the environment and climate change. Look at pictures of inventions we have already created. Do you have ideas for new inventions that would help protect the planet?

Extended Challenges

Social Studies: Can you prototype, or build a model of, anything that might help solve some problem within your school?
English/Language Arts: Choose a problem from a story you have read. Can you engineer a solution to the problem?

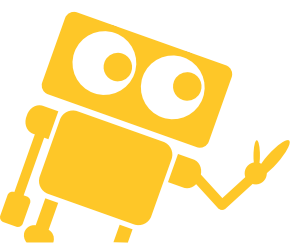


1
Innovator

21
Points

LEGO®
Living in a LEGO House

Build a house made only of LEGO®s.



MackinMaker

1
Innovator

21
Points

Materials:

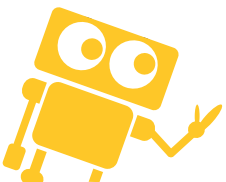
- LEGO® Large Creative Brick Box
- Paper and a pencil

Quick Start:

1. Gather some LEGO®s that are different shapes and sizes.
2. Sketch out your own unique LEGO® house. What will it look like? What special features will it have?
3. Build your house using only LEGO®s!

Hints and Tips:

- For ideas, look at pictures of houses. What are some basic features that most houses have? Start by building the basics.
- When you are ready, you can get creative with your house design. What could you add to your house? How could you make it unique?



Extended Challenges

Social Studies: Build a model of a historical building or type of house specific to a region. Examples might include landmark buildings, an igloo, sod house, or temple.
Science: Problem solve with different types of LEGO®s on different types of houses. What holds up the best? What is the strongest? What did not work well?
English/Language Arts: Choose a house or location from a book, poem, or play to build with LEGO®s. You could also write a story about a fictional family that lives in the house you created.

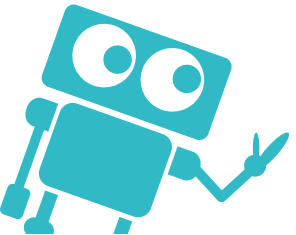
T
Tinker

3
Points

Wonder Workshop

Dash Party

Code a dance party for Dash. Don’t forget to add lights!



MackinMaker

T
Tinker

3
Points

Materials:

- Wonder Workshop Dash Robot
- iOS, Kindle, Chromebook, or Android Device with the app "Blockly for Dash + Dot" and/or "Path for Dash"

Quick Start:

1. Grab a Dash robot and a Dash-compatible device.
2. Use the app "Blockly" to code different dance moves within the Animation tab.
3. Add eye patterns and program lights in the Light tab.
4. Can you play music and program Dash to start dancing when it starts?

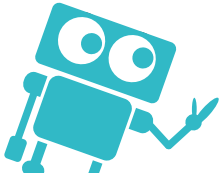
Hints and Tips:

- Within the Animation tab, you can use the block "Dance" or "Race" as a part of Dash's dance routine. Find additional "dance moves" in the Drive tab.
- Code Dash around obstacles that would impede the dance routine with the block "if obstacle in front" within the control tab.
- To get Dash to begin dancing only after hearing music, use the block "if Dash hear voice" within the Control tab.

Extended Challenges

Music: Code Dash to dance to different types of music throughout history (disco, polka, classical, etc.).

Physical Education: Dance with Dash. Can you practice a coordinated dance routine?



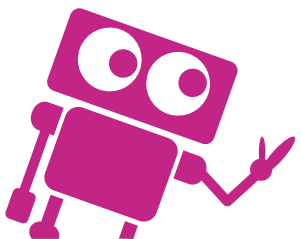
S
Skill-Up

9
Points

Wonder Workshop

Dash-ing Around the Obstacles

Place obstacles around your space, and then use the app “Blockly for Dash + Dot” or “Path for Dash” to code Dash around them.



MackinMaker

S
Skill-Up

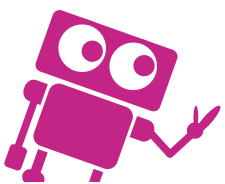
9
Points

Materials:

- Wonder Workshop Dash Robot
- iOS, Kindle, Chromebook, or Android Device with the app "Blockly for Dash + Dot" and/or "Path for Dash."
- Materials for the obstacle course

Quick Start:

1. Grab a Dash robot and a Dash-compatible device.
2. Use any materials you can find to set up obstacles.
3. Create a new program in either the app "Blockly for Dash + Dot" (block coding) or "Path for Dash" (draw coding).
4. Code Dash to avoid hitting the obstacles. Use trial and error to test your coding skills.



Hints and Tips:

- Good objects to use as obstacles might include books, building blocks, binders, or boxes of any size.
- Instead of coding the whole program at once, code a little at a time and then test to make sure the code is successful.
- Use the control "If Dash Obstacle in front" to help navigate Dash around the objects.

Extended Challenges

Computer Science: Completed your first obstacle course? Add more obstacles or change up your path for an added challenge!

English/Language Arts: Make or use obstacles that represent different events in a story of your choice. Code Dash to help tell the story.

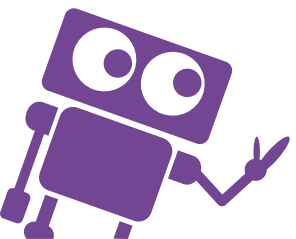
D
Design

12
Points

Wonder Workshop

Dressing Up Dash

Engineer a themed outfit or costume for Dash. How will you program Dash to match the costume you have created?



MackinMaker

D
Skill-Up

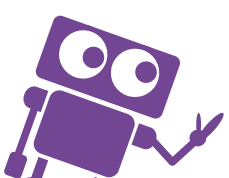
12
Points

Materials:

- Wonder Workshop Dash Robot
- iOS, Kindle, Chromebook, or Android Device with the app "Blockly for Dash + Dot" and/or "Path for Dash"
- Markers
- Paper
- LEGO®s and/or

Quick Start:

1. Grab a Dash robot and a Dash-compatible device.
2. Brainstorm design ideas. Will you pick a famous person from history? A character in one of your favorite stories? An animal?
3. Use additional supplies of your choice to engineer a costume for Dash.
4. Program Dash in an app of your choice to support the costume you have created. Can others correctly guess who/what Dash is dressed as?



Hints and Tips:

- The brick connectors might be helpful to use to design part of Dash's costume!
- Record anything you want Dash to say by clicking on the "My sounds" block in the Sounds tab

Extended Challenges

Music: Choose your favorite musician and create a costume that you think they would wear. Code dance moves and record facts about them that you can program Dash to repeat.
Social Studies: Research a famous leader from history. Create a costume based on the time they lived in, and record facts that you learned. Program Dash to teach others in your class.

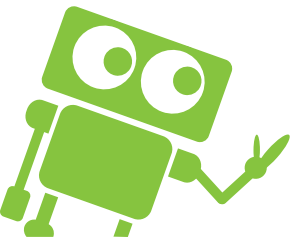
G
Global

17
Points

Wonder Workshop

Conversations with Dash

Program Dash to have a conversation with you! Code Dash to make eye contact with you while you talk too!



MackinMaker

G
Global

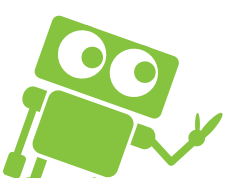
17
Points

Materials:

- Wonder Workshop Dash Robot
- iOS, Kindle, Chromebook, or Android Device with the app "Blockly for Dash + Dot" and/or "Path for Dash"

Quick Start:

1. Grab a Dash robot and a Dash-compatible device.
2. Use the app "Blockly" to code Dash to have a conversation with you.
3. Record responses that you want Dash to say by clicking on the "My sounds" block in the Sounds tab.
4. Will you tell a joke? Will you ask about the weather? Will Dash tell you a secret? Be creative with your conversation.



Hints and Tips:

- Use the "Look towards voice" block in the Voice tab to get Dash to look your way when you speak.
- Don't forget to use the block "Wait for Dash hear voice" in the Control tab to make sure Dash doesn't interrupt you!

Extended Challenges

World Language: Can you use Dash to practice a conversation in another language?

Social Studies: Pretend Dash is a famous person from history. What you would ask that person, and how would they respond? Code Dash to have this historical conversation.

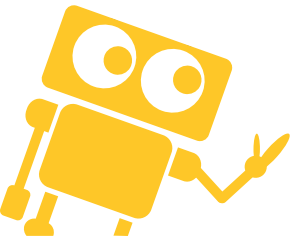
I
Innovator

25
Points

Wonder Workshop

Clean Up with Dash

Build a contraption that allows Dash to move something around. What can you code Dash to move?



MackinMaker

I
Innovator

25
Points

Materials:

- 3Wonder Workshop Dash Robot
- OS, Kindle, Chromebook, or Android Device with the app "Blockly for Dash + Dot" and/or "Path for Dash"
- Paper
- LEGO®s and/or additional materials of your choice to build on Dash

Quick Start:

1. Grab a Dash robot and a Dash-compatible device.
2. Use LEGO®s and/or other materials to build a device that allows Dash to move things around.
3. Don't forget to test your design! What can you code Dash to do?

Hints and Tips:

- The two brick connectors help you build off Dash. You attach them by snapping them into place on either side of Dash.
- Dash can make sudden movements, so the marker will need to be very secure. Brainstorm materials that might help to reinforce your contraption.
- Dash likes to look down a lot which can make writing more difficult. Use the "Look up" block in the Look tab to help control what Dash creates.

Extended Challenges

Science: Once you've had success moving one object, find a larger object to try to move. Does your contraption work? If not, keep building.

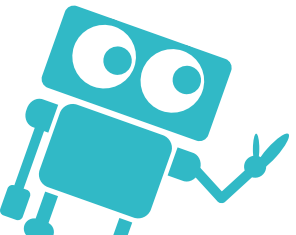
Science: Work on making Dash move objects to specific spots on the ground. Keep tweaking the code until you get it right.

T
Tinker

4
Points

Chibitronics
LED Bookmark

Create a bookmark that lights up.



MackinMaker

T
Tinker

4
Points

Materials:

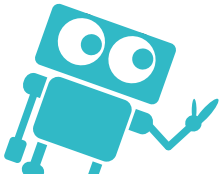
- Chibitronics Chibi Lights LED Circuit Stickers STEM Starter Kit
- Construction paper, tape, scissors, markers and optional hole punch and string (for tassel)

Quick Start:

1. Cut a bookmark out of construction paper.
2. Create a simple one LED circuit.
3. Draw out your circuit on the bookmark.
4. Lay down circuit tape to make a path to the coin cell battery (leave a gap for the sticker LED).
5. Add the battery, decorate, and add a hole and tassel if you want!

Hints and Tips:

- The Chibitronics site has great video resources to help you, so make sure you watch those at: **https://chibitronics.com/how-to-page/**.
- LEDs have a positive and negative side, look on the sticker for the + and – symbols. Also remember that the top of the coin cell battery is positive, the bottom is negative.
- If your light isn't working, try flipping your battery over to see if your LED light is in reverse.
- If your light is still not shining, make sure your LED has a strong connection and that your foil is flat.
- Make sure your circuit tape is flat, that the connections to all of the components are secure, and that there are no cracks in your circuit tape.



Extended Challenges

Art: Make a bookmark inspired by your favorite artist, painting, or style. How can you incorporate the function of this bookmark with your unique artistic style?

English/Language Arts: Create a bookmark representing a specific genre of books (mystery, historical fiction, sci fi, etc.). Add in quotes from your favorite book, or pick a poem to write on your bookmark. For an extra challenge, try to light up a Haiku poem that you wrote.

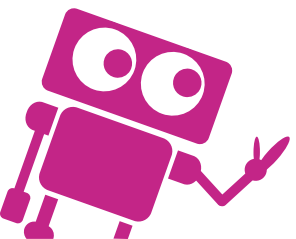
S
Skill-Up

8
Points

Chibitronics

ChibiBot

Design and create a robot that lights up. Can you add multiple lights to it?



MackinMaker

S
Skill-Up

8
Points

Materials:

- Chibitronics Chibi Lights LED Circuit Stickers STEM Starter Kit
- Construction paper, tape, scissors, markers other craft materials (optional)

Quick Start:

- Watch or read the Chibitronics, parallel circuit tutorial to learn the basics at: **https://chibitronics.com/parallel-circuit-tutorial/**.

1. Assemble the materials you will need to make your robot and think about what you want to create. How can you add light to better communicate what is happening with the robot?
2. Plan out what you will draw it and how you want it to light up.
3. Draw out your robot and use coloring materials or construction paper to make it colorful and more unique.
4. Add the battery to test your circuit and add more features as time allows.

Hints and Tips:

- The sticky side of circuit tape is NOT conductive, so try not to rip and stick pieces together. Instead, use one continuous piece of circuit tape when possible–leaving gaps only for LED stickers.
- Using parallel circuits allows you to light up multiple LEDs at the same time. Think of your circuit like a ladder or train track where one side is positive and the other track or rail is negative. Making a path (or multiple paths like rungs) and adding an LED between the positive and negative rails will light them up. If you want more information, go to the Chibitronics website!
- If your light isn't working, try flipping your battery over to see if your LED light is in reverse.
- If your light is still not shining, make sure your LED has a strong connection and that your foil is flat.
- Make sure your circuit tape is flat, that the connections to all of the components are secure, and that there are no cracks in your circuit tape.

Extended Challenges

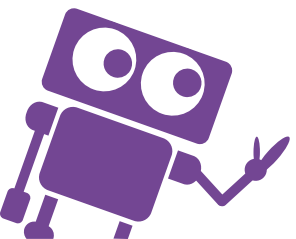
Science: Use this activity to explore parallel circuits and electricity flow. Once you master the basic circuit, see if you can learn how to add switches, alternate pathways, or sensors to trigger your LEDs.
English/Language Arts: Instead of a robot, choose a character from a story you have read. How can you depict them in a way to best show the character's traits using lights from Chibitronics?

D
Design

15
Points

Chibitronics
Switching It Up

Design an outdoor scene that includes a switch which turns on at least one star at night.



MackinMaker

D
Skill-Up

15
Points

Materials:

- Chibitronics Chibi Lights LED Circuit Stickers STEM Starter Kit
- Construction paper, tape, scissors, markers and miscellaneous craft supplies

Quick Start:

1. Gather your supplies.
2. Plan out your outdoor scene on paper.
3. Refer to the Chibitronics website for ideas on adding unique switches to your design.
4. Build, test, experiment, and redesign as needed to make it successful.

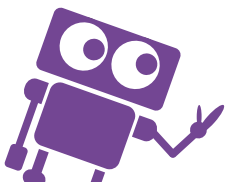
Hints and Tips:

- Innovation takes a lot of trying. So, if your design doesn't work the first time don't be sad, just keep trying, testing, trying and testing some more– engineers call this "iterating."
- If your light isn't working, try flipping your battery over to see if your LED light is in reverse.
- If your light is still not shining, make sure your LED has a strong connection and that your foil is flat.
- Make sure your circuit tape is flat, that the connections to all of the components are secure, and that there are no cracks in your circuit tape.

Extended Challenges

Science: Study a constellation of your choice and include it in your design of the night sky.

Art: Embellish your nature design. Can you add any 3D elements to your design?



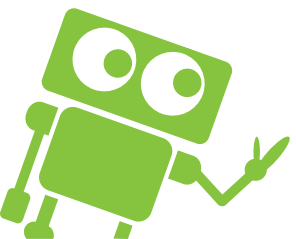
G
Global

18
Points

Chibitronics

Country Capitals

Research a country somewhere in the world or a state in the United States. Do your best to draw that country and design a circuit to make the capital city light up.



MackinMaker

G
Global

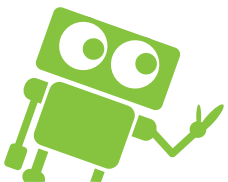
18
Points

Materials:

- Chibitronics Chibi Lights LED Circuit Stickers STEM Starter Kit
- Construction paper or poster board, tape, scissors, markers and other miscellaneous craft supplies

Quick Start:

1. Gather your supplies.
2. Choose a part of the world to research. Sketch the state or country you chose.
3. Add in your capital city circuit. Is there anything else you would like to add that you learned through your research? Refer to the Chibitronics website for ideas on adding any unique parts to your design.
4. Iterate, test, evaluate, and redesign as needed to make it successful.



Hints and Tips:

- Innovation takes a lot of trying. So, if your design doesn't work the first time don't be sad, just keep trying, testing, trying and testing some more –engineers call this "iterating."
- If your light isn't working, try flipping your battery over to see if your LED light is in reverse.
- If your light is still not shining, make sure your LED has a strong connection and that your foil is flat.
- Make sure your circuit tape is flat, that the connections to all of the components are secure, and that there are no cracks in your circuit tape.

Extended Challenges

Geography: Can you add a pressure switch into your design? Find information on how to make one in the Chibitronics Circuit Sticker Sketchbook.

English/Language Arts: Pick a story that you have recently read. Using Chibitronics, create a drawing that helps to represent that story.

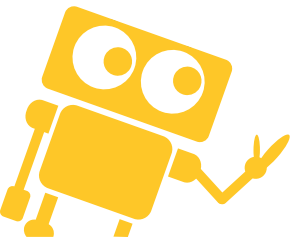
I
Innovator

23
Points

Chibitronics

Art Infusion

Invent a way to add lights to an artistic display of your choice. Light up flowers? Or a shadow box? Whatever it is, light up your art to give it that extra flashy pop.



MackinMaker

I
Innovator

23
Points

Materials:

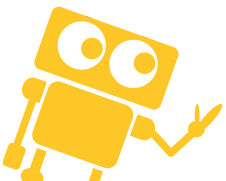
- Chibitronics Chibi Lights LED Circuit Stickers STEM Starter Kit
- Construction paper or poster board, tape, scissors, markers and other miscellaneous craft supplies

Quick Start:

1. Collect your materials.
2. Pick an artistic theme.
3. Review the paper circuit basics (especially if you haven't used them before).
4. Plan your art and how you'll infuse it with Chibitronics.
5. Build, test, iterate, and then share with the world!

Hints and Tips:

- *Alternate Circuit Tape:* Instead of using circuit tape, try conductive fabric tape instead. Though more expensive, it is easier to work with and is more forgiving than circuit tape.
- If your light isn't working, try flipping your battery over to see if your LED light is in reverse.
- If your light is still not shining, make sure your LED has a strong connection and that your foil is flat.
- Make sure your circuit tape is flat, that the connections to all of the components are secure, and that there are no cracks in your circuit tape



Extended Challenges

Art: Add in additional art extensions by trying to create a shadow box and a way to trace what is projected. Explore the principles of light and dark: how is it expressed in art?

Science: Continue to explore advanced circuit principles. Add in the properties of light waves, or explore the difference between incandescent, LED, florescent, or laser light.

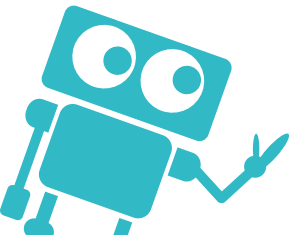
T
Tinker

2
Points

Makedo

Name Builder

Build your name from cardboard. For an additional challenge, can you make your name 3D so it stands on its own?



MackinMaker

T
Tinker

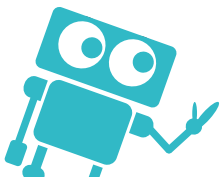
2
Points

Materials:

- Cardboard
- Makedo connectors and tools
- Markers, paper, glue, and/or other optional materials for decorating

Quick Start:

1. Collect scrap cardboard and a set of Makedo connectors and tools.
2. Draw out a quick idea of your design for your name. How will you connect the letters in your name? Will it be 3D or 2D?
3. Build your name. Add features to make it even more unique like color and other décor.



Hints and Tips:

- The punch tool helps to make holes in cardboard so that the screw fasteners can really bite in.
- Regular scissors can be challenging when cutting cardboard. Instead try to use tools designed to cut cardboard like the Makedo cardboard saws.

Extended Challenges

English/Language Arts: Choose a vocabulary word you are learning or have recently learned and make the word out of cardboard. How can you decorate your creation to help illustrate the meaning of the word?

Social Studies: Instead of your name, create the name of someone you recently learned about in history. Be prepared to share the impact this person had on the world with someone you know. Can you decorate the name to help tell the story of the person?

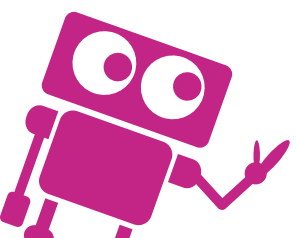
S
Skill-Up

7
Points

Makedo

Makedo Character

Design and build a character from a story you recently read. Can you create some scenery too?



MackinMaker

S
Skill-Up

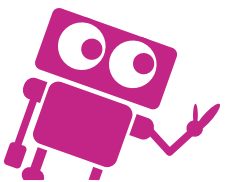
7
Points

Materials:

- Cardboard
- Makedo connectors and tools
- Markers, paper and tape for decorations

Quick Start:

1. Collect scrap cardboard and a set of Makedo connectors and tools.
2. Draw out a quick sketch of your character and start building.
3. As you build, think about how the story described the character to help add to your design.
4. When you are finished, show a friend and tell them about the story.



Hints and Tips:

- Regular scissors can be challenging when cutting cardboard. Instead try to use tools designed to cut cardboard like the Makedo cardboard saws.
- Did you know that Makedo has a site with inspiration images and helpful tips? Head to the link below to check out what others are creating with Makedo. https://know.make.do/collections/everything

Extended Challenges

Social Studies: Pick a famous person from history to make.

English/Language Arts: Create scenery for the character and put on a play with your friends. Can you create costume changes with cardboard? Other characters?

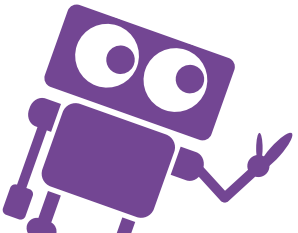
D
Design

13
Points

Makedo

Makedo Invention

Think of a toy you'd like to have, or a problem you'd like to invent a solution for. Build a prototype with Makedo and cardboard.



MackinMaker

D
Skill-Up

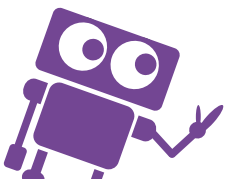
13
Points

Materials:

- Cardboard
- Makedo connectors and tools
- Markers, paper, tape, and any other materials you think you may need

Quick Start:

1. Collect scrap cardboard and a set of Makedo connectors and tools.
2. Brainstorm a toy you wish you had, or a problem you'd like to solve.
3. Draw a sketch of your design and start building.
4. Keep building, testing and iterating until you finish your prototype.
5. When you are finished, show a friend and tell them about your design.



Hints and Tips:

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- Did you know that Makedo has a site with inspiration images and helpful tips? Head to the link below to check out what others are creating with Makedo. https://know.make.do/collections/everything

Extended Challenges

Social Studies: Create an advertisement for your prototype. It can be an ad that might go in a newspaper, or maybe a commercial that might play during the Superbowl!

English/Language Arts: Write a story about your design. Who needed your solution? Why?

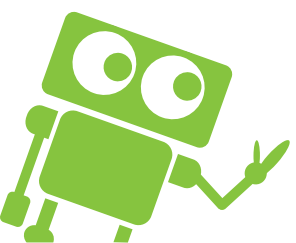
G
Global

16
Points

Makedo

Cardboard Town

Design and build a town with a friend. Include at least 2 structures. What buildings will you include?



MackinMaker

G
Global

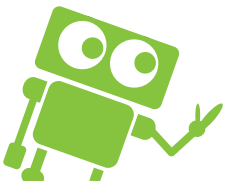
16
Points

Materials:

- Cardboard
- Makedo connectors and tools
- Markers, paper and tape for decorations

Quick Start:

1. Collect scrap cardboard and a set of Makedo connectors and tools.
2. Design-think and brainstorm how you will create an amazing town. What buildings are important where you live? How might you recreate them?
3. Gather materials and start to build.
4. What shapes will you need to make? Start with more basic pieces and add on to make a more intricate, detailed design.
5. Share your town with someone you know. What might they add to your little city?



Hints and Tips:

- Think about the buildings that you can find in a lot of cities and towns when you are brainstorming what to include.
- Regular scissors can be challenging when cutting cardboard. Instead try to use tools designed to cut cardboard like the Makedo cardboard saws.

Extended Challenges

Geography: Explore a famous city or town that you'd like to travel to. Research a famous building from that city and work to build it with a friend.

Science: What kinds of shapes make buildings and structures strong? Explore this and be sure to add use those shapes in your design.

Science: What might you include to make your town safer for the environment? Design structures with climate change in mind.

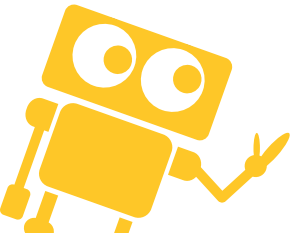
I
Innovator

22
Points

Makedo

Game Innovator

Brainstorm, invent, and build your own game. Will it be modeled after a favorite board game you play? Arcade game? Use what you know to innovate!



MackinMaker

I
Innovator

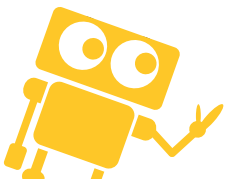
22
Points

Materials:

- Cardboard
- Makedo connectors and tools
- Markers, paper and tape

Quick Start:

1. Collect cardboard pieces and a set of Makedo connectors and tools.
2. Think about your favorite games. What is fun to do? Decide on your own game design and start building.
3. What pieces need to be created? Break it down and work on one piece at a time.
4. Keep building, testing and iterating until you finish your game prototype.



Hints and Tips:

- Regular scissors can be challenging when cutting cardboard. Instead try to use tools designed to cut cardboard like the Makedo cardboard saws.
- Not sure where to start? Think about some of your favorite games and model yours after the parts you like best.
- Innovation takes a lot of trying. So, if your game prototype doesn't work out the first time, don't be upset. Just keep trying, testing, trying and testing some more–engineers call this, "iterating".

Extended Challenges

Math: How does someone score points or win your game? Create a scoring system.
English/Language Arts: Create and write your own directions and quick start to help others play your game.