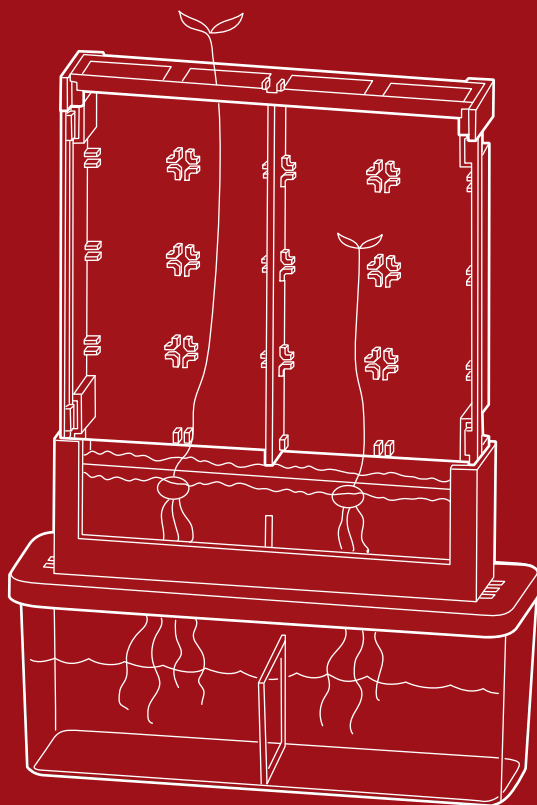




BEST CHOICE  
PRODUCTS



# INSTRUCTION MANUAL

Maze Gardening



**BEST CHOICE  
PRODUCTS**

---

As shoppers, we're always trying to find the perfect balance between quality & value. At BCP, we believe we've achieved that. Our diverse catalog of everyday essentials is tailored especially to our customers & guaranteed to hit that sweet spot of high quality & low price.

————— Always. —————

## **⚠ WARNING**

**CHOKING HAZARD** - Small parts.  
Not for children under 3 years old.

**6+**

**6 YEARS  
OLD AND UP**

### **! NOTICE**

Please retain these instructions for future reference.

- Read all instructions before beginning any experiment.
- Adult supervision and assistance is recommended.
- This product is intended for children of 6 years or older.
- Immediately clean or rinse any spills with soap water to prevent stains.
- Immediately flush with water if chemical or other substances contact your eyes.
- Keep out of reach of children and animals when not in use.
- If any parts are missing, broken, damaged, or worn, stop using this product until repairs are made and/or factory replacement parts are installed.
- Do not use this item in a way inconsistent with the manufacturer's instructions as this could void the product warranty.
- This product is intended for residential use only.

### **⚠ WARNING**

- This product contains small parts, which may result in a choking hazard.
- This product is intended for children 6 years and older.
- Do not allow use without adult supervision.
- Do not ingest the results of any experiment.
- Wash hands after carrying out each experiment.

## **TOOLS REQUIRED MAZE**

**DRIED BEAN SEEDS**



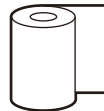
**NOT INCLUDED**

**SOIL/POTTING MIX**



**NOT INCLUDED**

**PAPER TOWELS**



**NOT INCLUDED**

**SMALL TRAY**



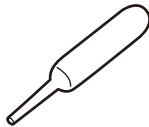
**NOT INCLUDED**

**VINEGAR**



**RECOMMENDED**

**DROPPER**



**PROVIDED**

**MAGNIFYING GLASS**

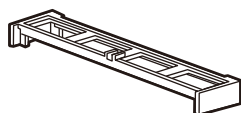


**PROVIDED**

## PARTS

**A**

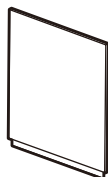
GROWTH CHAMBER  
TOP COVER



1 PC

**B**

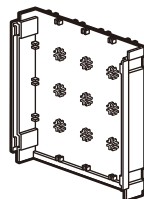
GROWTH CHAMBER  
FRONT COVER  
(TRANSPARENT)



1 PC

**C**

GROWTH CHAMBER  
WALL



1 PC

**D**

GROWTH CHAMBER  
PARTITIONS (LONG)



4 PCS

**E**

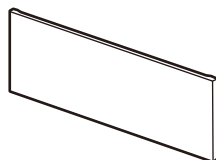
GROWTH CHAMBER  
PARTITIONS (SMALL)



6 PCS

**F**

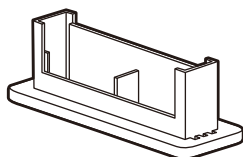
SOIL CONTAINER  
FRONT COVER  
(TRANSPARENT)



1 PC

**G**

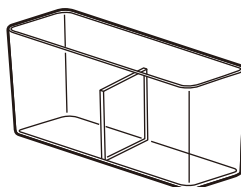
SOIL CONTAINER



1 PC

**H**

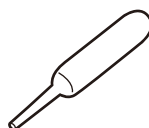
WATER POT



1 PC

**I**

DROPPER



1 PC

**J**

MAGNIFYING GLASS



1 PC

**K**

COVER CARDS

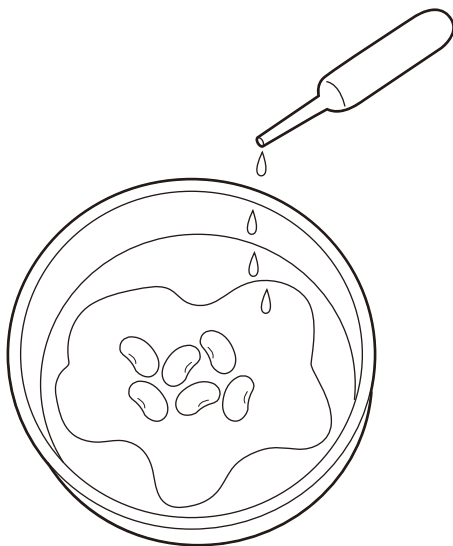


2 PCS

## BEFORE EXPERIMENTING

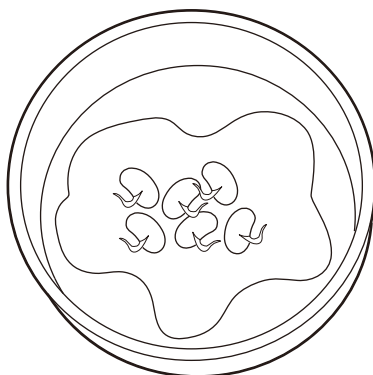
1

Cover the bottom of the small tray with a paper towel. Pour enough water to moisten the towel, then press the soy beans into the cloth.



2

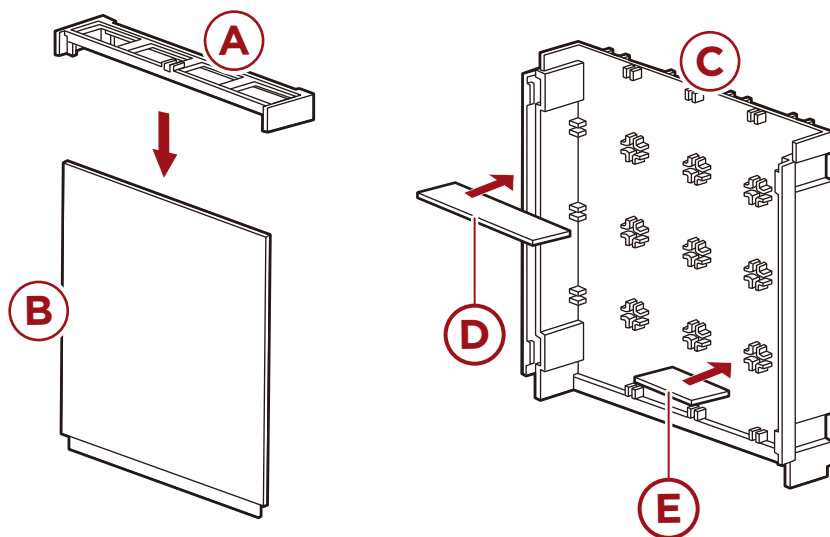
Place the tray in a warm place with indirect sunlight. Keep the paper towel damp, and allow 1-3 days for roots to sprout (germination).



## PRODUCT ASSEMBLY

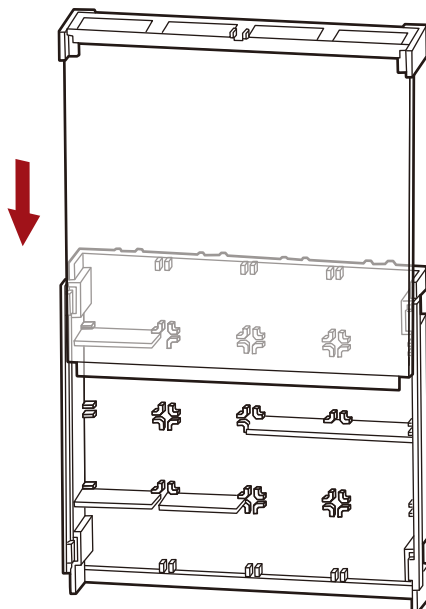
1

Attach the **part A top cover** to the **part B transparent front cover**, set aside. Locate the **part C chamber wall** and insert the **part D & E partitions** as desired.



2

Slide the front cover into the **part C chamber wall**, take care that the **part A top** connects to the **part C chamber wall**.



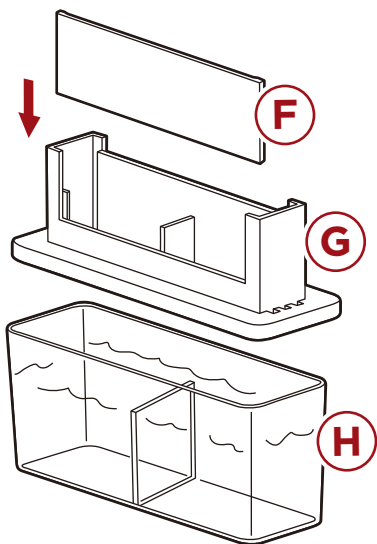
## PRODUCT ASSEMBLY

3

Locate the **part H water pot** and fill with water, set aside.

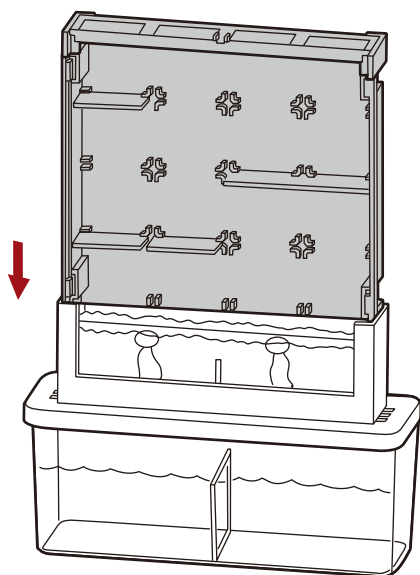
Attach the **part G soil container** to the **part H water pot**.

Slide the **part F soil container front** into the **part G soil container**, then add your preferred soil.



4

Gently push the germinated seeds into the soil, then slide the **part C growing chamber** into the **part G soil container** to act as a support for the sprouts as they grow.



## EXPERIMENT #1 (TRACKING GROWTH)

### Parts Required:

- F.** Soil Containment Front
- G.** Soil Container
- H.** Water Pot

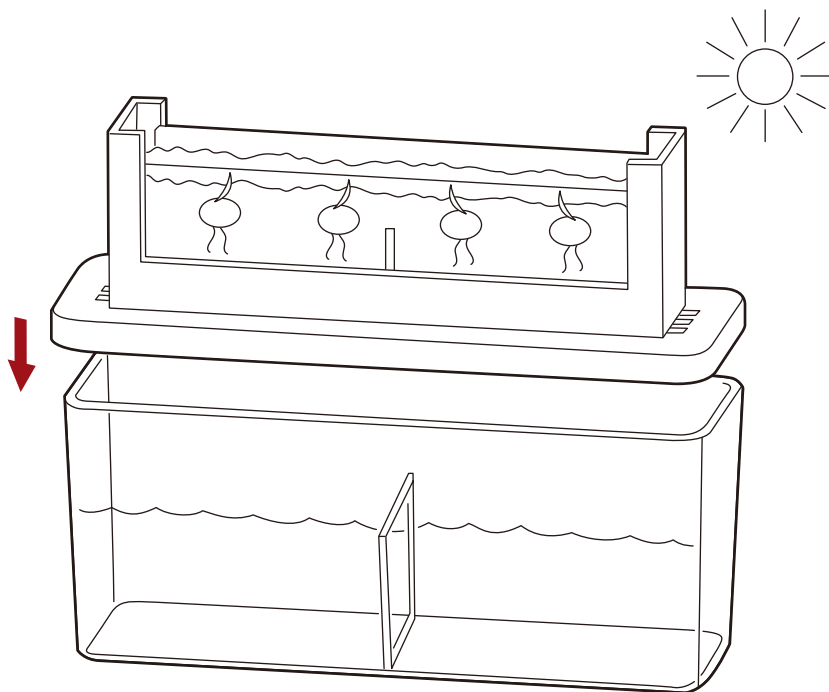
### Tools Required:

- Small Tray
- 4-6 Dried Soy Beans
- Paper Towels

## EXPERIMENT PROCEDURE

1

Place the assembled water and soil container (remove growing chamber) in a window where the plants will receive indirect sunlight. Ideal conditions are between 65 and 70 degrees Fahrenheit.



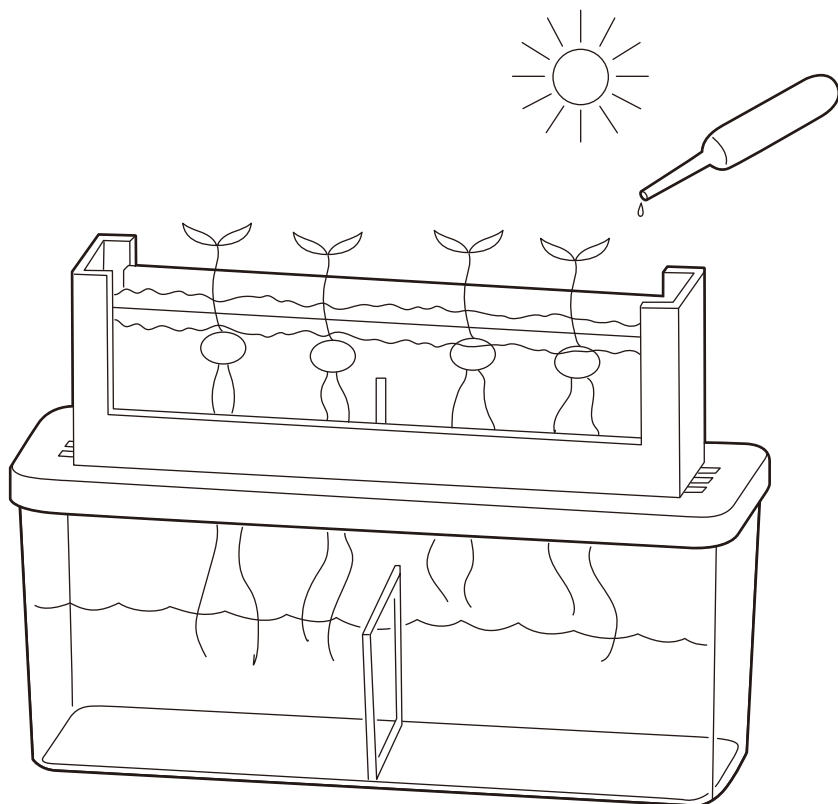


## EXPERIMENT PROCEDURE

2

As the plants grow, the leaves will grow toward the sunlight (phototropism) while the roots will grow toward the nutrients in the soil (geotropism).

Apply additional water using the dropper and track the growth of the roots and sprouts.



## EXPERIMENT #2 (PLANT MAZE)

### Parts Required:

- A.** Growth Chamber Top
- B.** Growth Chamber Front
- C.** Growth Chamber Wall
- D.** Partition Long
- E.** Partition Short
- K.** Cards (x2)

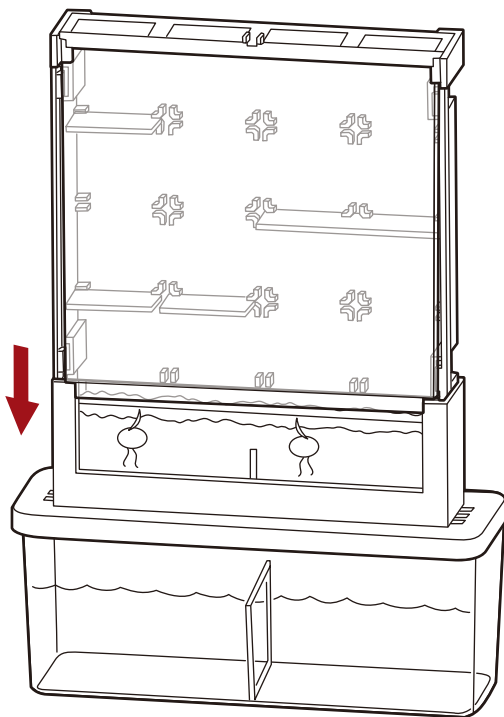
### Tools Required:

- Small Tray
- 4-6 Dried Soy Beans
- Soil
- Paper Towels

## EXPERIMENT PROCEDURE

1

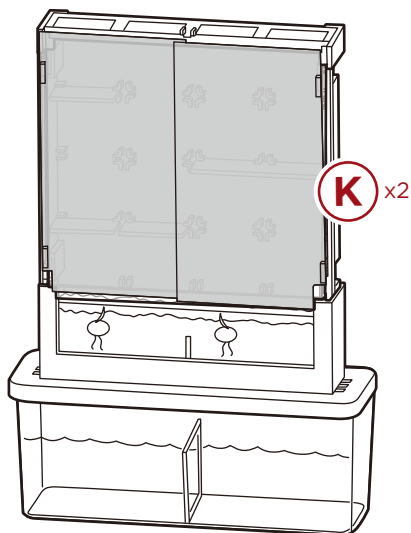
Place the growing chamber, with the partitions inserted, onto the prepared soil and water pot.



## EXPERIMENT PROCEDURE

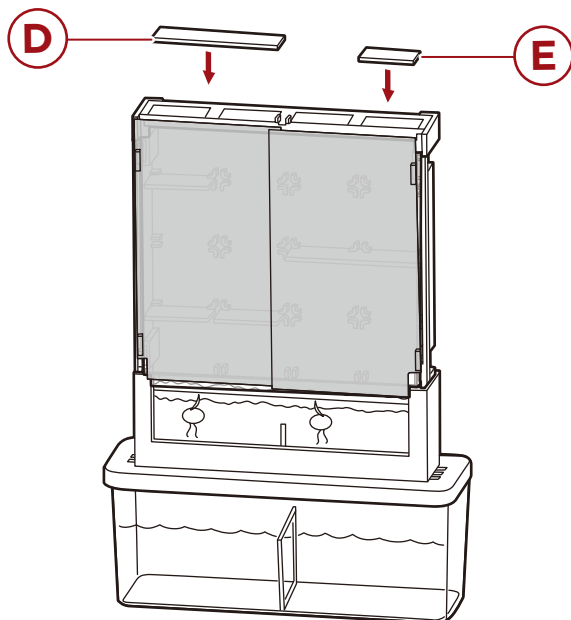
2

Slide two **part K cards** over the **part B growth chamber front**, make sure to overlap the cards to prevent any light from entering.



3

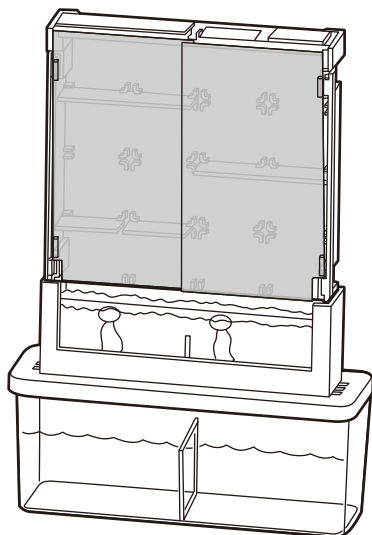
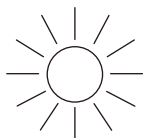
Use two **part D & E partitions** to block all but one of the holes of the **part A growth chamber top**.



## EXPERIMENT PROCEDURE

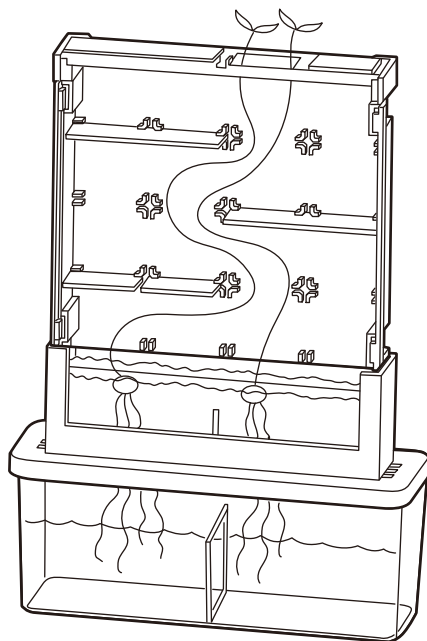
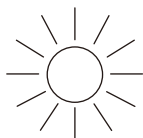
4

Place the assembled product in a window where the plants would receive indirect sunlight. Ideal conditions are between 65 and 70 degrees Fahrenheit.



5

Allow 2-3 days to pass, then lift the cards to observe the growth of the plants. Observe how the sprouts will navigate around the partitions to reach the light.



## EXPERIMENT #3 (BEAN RACE)

### Parts Required:

- A.** Growth Chamber Top
- B.** Growth Chamber Front
- C.** Growth Chamber Wall
- D.** Partition Long
- E.** Partition Short
- K.** Cards (x2)

### Tools Required:

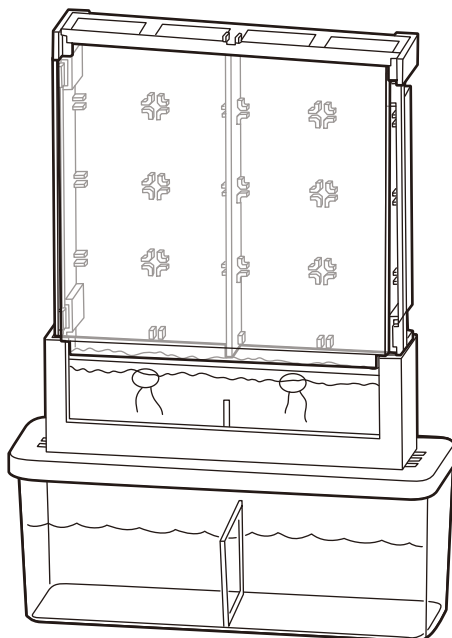
- Small Tray
- 4-6 Dried Soy Beans
- Soil
- Paper Towels

## EXPERIMENT PROCEDURE

1

Repeat steps 1-3 of product assembly.

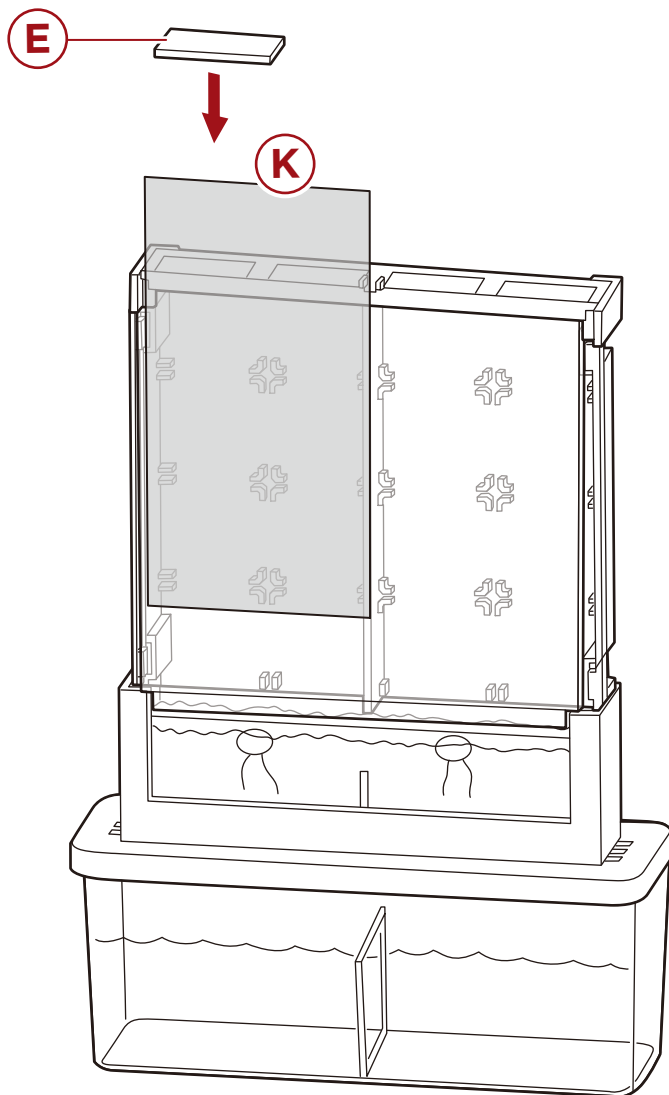
Remove the **part D & E partitions** from the **part C growth chamber**, then reset the **part B growth chamber front**.



## EXPERIMENT PROCEDURE

3

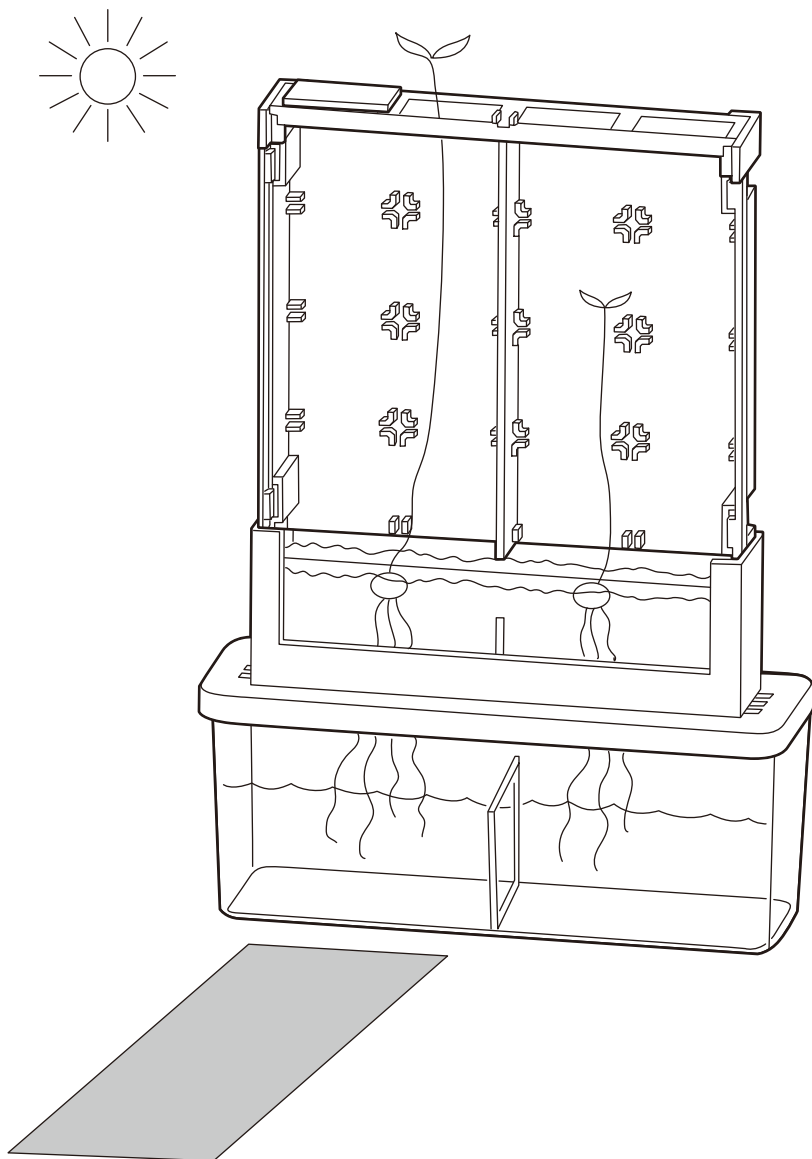
Slide one **part K card** onto one side of the growth chamber and cover one hole in the **part A top** with one **part E partition**.



## EXPERIMENT PROCEDURE

4

Allow 2-3 days, then check the progress of the plants. Observe how the contrast of light effects the growth of the plants.





# HELP CENTER



Question about your product? We're here to help. Visit us at:

[help.bestchoiceproducts.com](https://help.bestchoiceproducts.com)



Chat Support



Product Inquiry



Orders FAQ



Product Assembly



Returns & Refunds

## PRODUCT WARRANTY INFORMATION

All items can be returned for any reason within 60 days of the receipt and will receive a full refund as long as the item is returned in its original product packaging and all accessories from its original shipment are included. All returned items will receive a full refund back to the original payment method. All returned items will not be charged a re-stocking fee.

All returned items require an RA (Return Authorization) number, which can only be provided by a Best Choice Products Customer Service Representative when the return request is submitted. Items received without an RA may not be accepted or may increase your return processing time. Once an item has been received by Best Choice Products, refunds or replacements will be processed within 5 business days.

All returns must be shipped back to the Best Choice Products Return Center at the customer's expense. If the reason for return is a result of an error by Best Choice Products then Best Choice Products will provide a pre-paid shipping label via email. Boxes for return shipping will not be provided by Best Choice Products, and is the customer's responsibility to either use the original shipping boxes or purchase new boxes.

Pictures may be required for some returns to ensure an item is not damaged prior to its return. Items returned are not considered undamaged until they are received by Best Choice Products and verified as such. All damages to items are the customer's responsibility until the item has been received by and acknowledge by Best Choice Products as undamaged.

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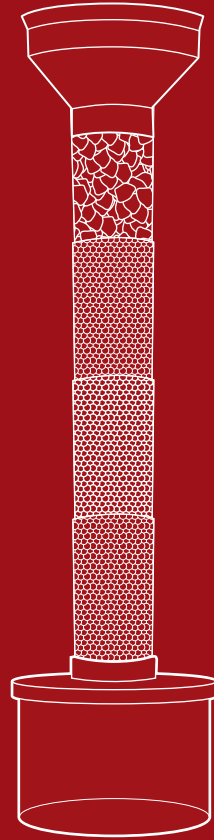
## WARNING

Manufacturer and seller expressly disclaim any and all liability for personal injury, property damage or loss, whether direct, indirect, or incidental, resulting from the incorrect attachment, improper use, inadequate maintenance, unapproved modification, or neglect of this product.





BEST CHOICE  
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# INSTRUCTION MANUAL

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Filtration Fun



**BEST CHOICE  
PRODUCTS**

---

As shoppers, we're always trying to find the perfect balance between quality & value. At BCP, we believe we've achieved that. Our diverse catalog of everyday essentials is tailored especially to our customers & guaranteed to hit that sweet spot of high quality & low price.

————— Always. —————



## WARNING

**CHOKING HAZARD** - Small parts.  
Not for children under 3 years old.



## WARNING

This set contains chemicals that may be harmful if misused. Read cautions on individual containers carefully. Not to be used by children except under adult supervision.



**6 YEARS  
OLD AND UP**



## NOTICE

Please retain these instructions for future reference.

- Read all instructions before beginning any experiment.
- Adult supervision and assistance is recommended.
- This product is intended for children of 6 years or older.
- Immediately clean or rinse any spills with soap water to prevent stains.
- Immediately flush with water if chemical or other substances contact your eyes.
- Keep out of reach of children and animals when not in use.
- If any parts are missing, broken, damaged, or worn, stop using this product until repairs are made and/or factory replacement parts are installed.
- Do not use this item in a way inconsistent with the manufacturer's instructions as this could void the product warranty.
- This product is intended for residential use only.



## WARNING

- This product contains small parts, which may result in a choking hazard.
- This product is intended for children 6 years and older.
- Do not allow use without adult supervision.
- Do not drink or consume any liquids or powders included.
- Do not place any substances on your face.
- Do not drink filtered water, even if it looks clean. Dispose of the filtered water after the experiment.
- Prepare your workplace and protect the surface with paper towels or use a washable surface.
- Wash hands thoroughly after carrying out each experiment.

## TOOLS REQUIRED

**SMALL TRAY**

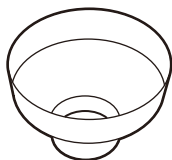


**NOT INCLUDED**

## PARTS

**A**

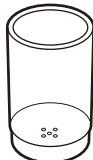
FILTRATION FUNNEL



1 PC

**B**

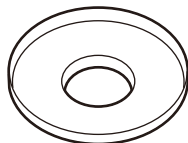
FILTRATION TUBE



4 PCS

**C**

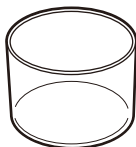
FILTRATION BASE



1 PC

**D**

FILTRATION CUP



1 PC

**E**

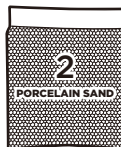
CRUSHED GRANITE



1 PC

**F**

PORCELAIN SAND



1 PC

**G**

ACTIVATED CARBON



1 PC

**H**

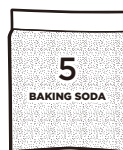
QUARTZ SAND



1 PC

**I**

BAKING SODA



1 PC

**J**

POTASSIUM ALUM



1 PC

**K**

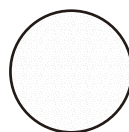
FILTRATION SPONGE



2 PCS

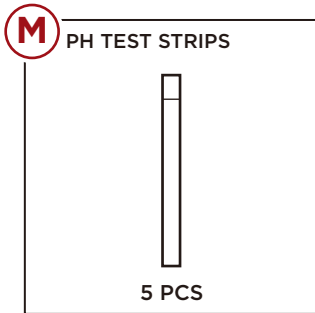
**L**

FILTRATION PAPER



6 PCS

## PARTS



## EXPERIMENT #1

### Parts Required:

- A.** Filtration Funnel
- B.** Filtration Tube (x4)
- C.** Filtration Base
- D.** Filtration Cup
- K.** Sponge (x3)
- L.** Filtration Paper

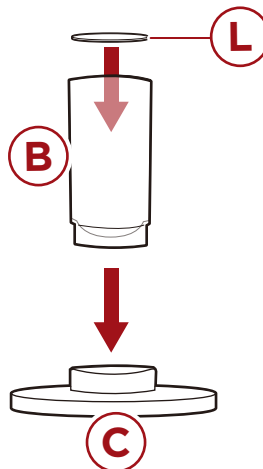
### Tools Required:

- Dirty Water

## EXPERIMENT PROCEDURE

1

Place one **part L filtration paper** in the bottom of one **part B filtration tube**, then attach the tube to the **part C filtration base**.

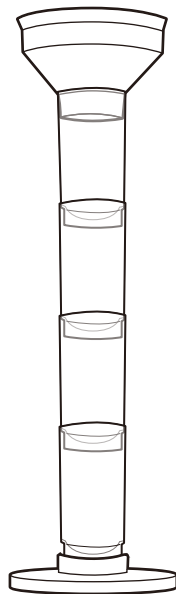
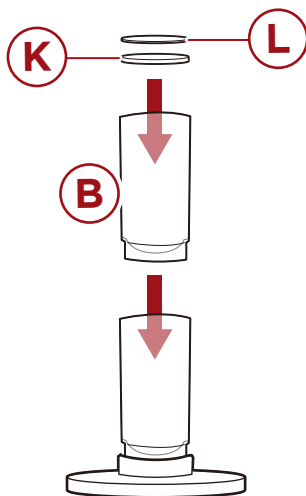


## EXPERIMENT PROCEDURE

2

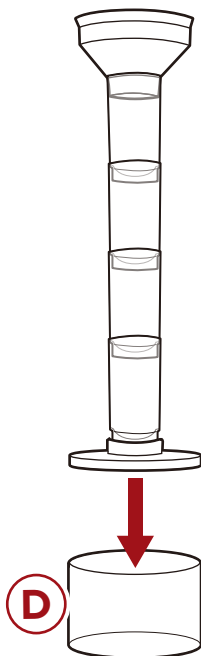
Insert a **part K sponge** into the bottom of one **part B filtration tube**, then place one **part L filtration paper** on the top. Press the tube into the filtration base assembly. Repeat until the remaining tubes are assembled as shown below.

Attach the **part A filtration funnel** to the top.



3

Place the filtration tube assembly on top of the **part D filtration cup**.



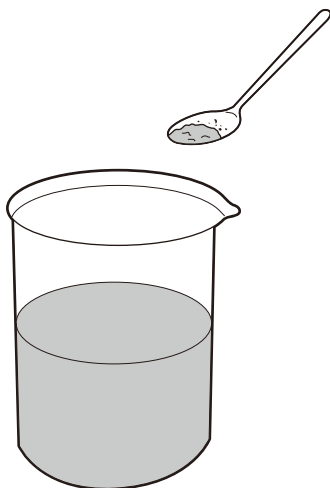
## EXPERIMENT PROCEDURE

4

Create some dirty water by mixing dirt and other particulates with clean water.



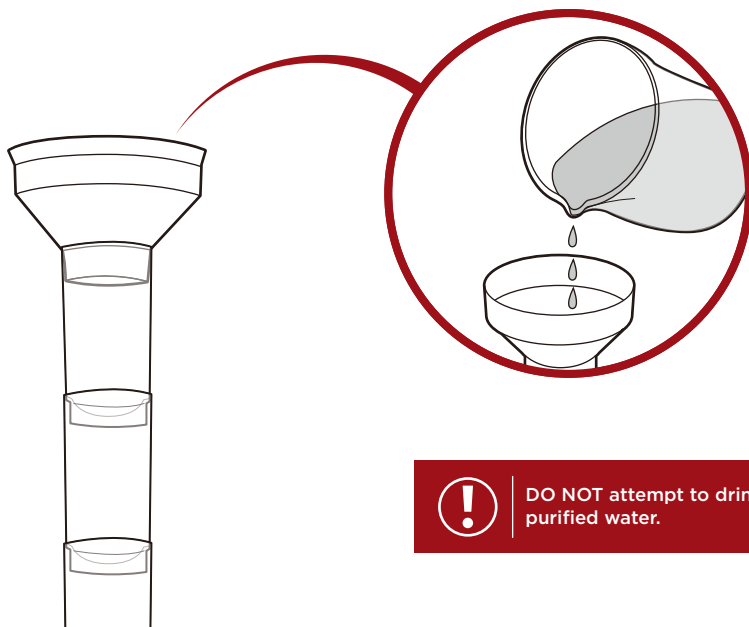
DO NOT use food or cleaning products to create your dirty water.



DIRTY WATER

5

Slowly pour the water into the **part A filtration funnel**. Observe as the water passes through the paper and sponges, separating the particulates from the water.



DO NOT attempt to drink the purified water.

## EXPERIMENT #2

### Parts Required:

- A.** Filtration Funnel
- B.** Filtration Tube (x4)
- C.** Filtration Base
- D.** Filtration Cup
- E.** Crushed Granite
- F.** Porcelain Sand
- G.** Activated Carbon
- H.** Quartz Sand
- K.** Sponge (x3)
- L.** Filtration Paper

### Tools Required:

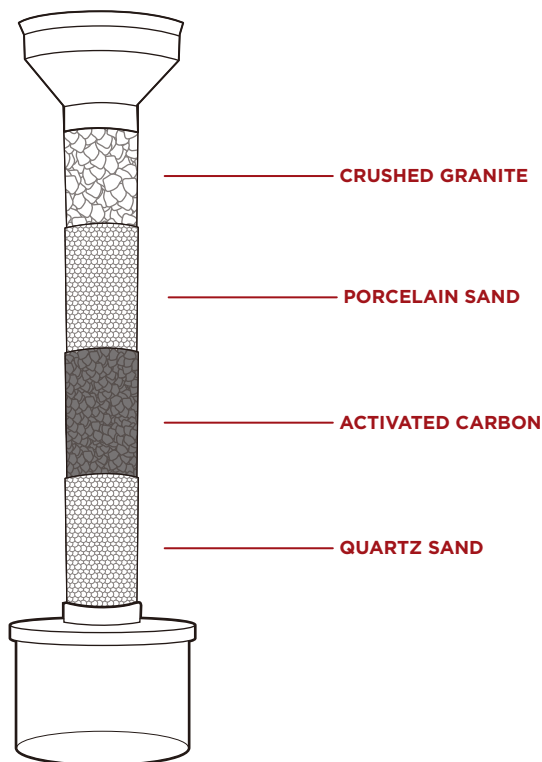
- Dirty Water

## EXPERIMENT PROCEDURE

1

Repeat steps 1-2 of Water Science Experiment #1, but add the **part E crushed granite**, **part F porcelain sand**, **part G activated carbon**, and **part H quartz sand** between the sheets of **part L filtration paper** as shown..

Place the filtration tube assembly on top of the **part D filtration cup**.

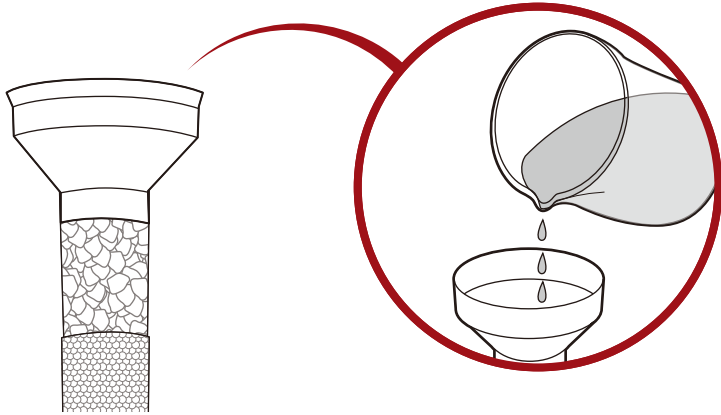




## EXPERIMENT PROCEDURE

2

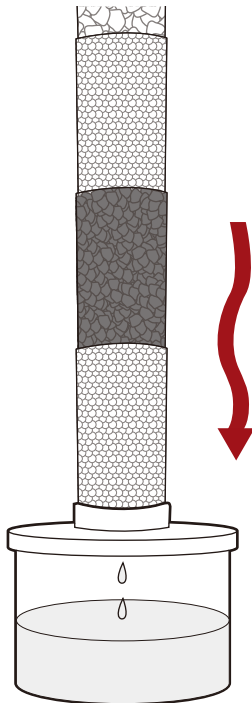
Create muddy water with clean dirt/soil and water, then pour the mixture into the **part A funnel**.



3

Notice how the water passes through the filters and particulates. Observe how it flows through the heavier particulates and slows on the smaller ones.

The larger the particulates are poorer filters while the smaller particulates capture more of the dirt in the water.



**CLEAN WATER**



**DO NOT attempt to drink the purified water.**

## EXPERIMENT #3

### Parts Required:

**J.** Potassium Alum

### Tools Required:

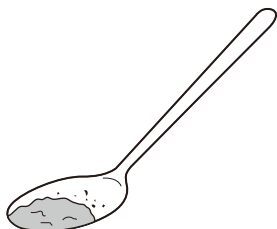
- Measure Cup
- Cups (x4)
- Measuring Spoon
- Rice-Washing Water (4 Cups)
- Stirring Stick
- Baking Soda

## EXPERIMENT PROCEDURE

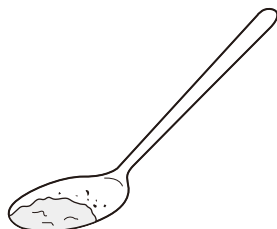
1

Fill two cups with 50ml of water, then add half a teaspoon of **part J potassium alum** to one cup, and one half teaspoon of baking soda to the other. Stir both cups with separate stirring sticks.

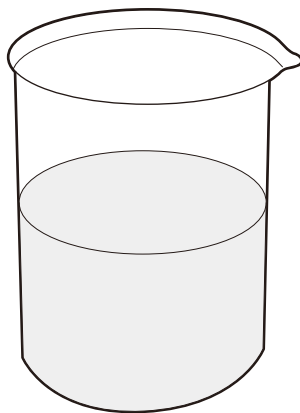
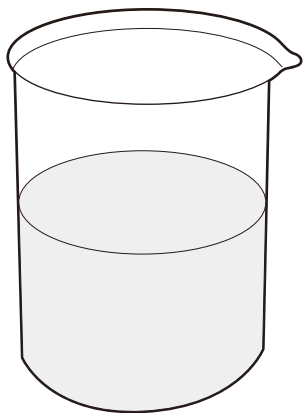
**NOTE:** Keep track of the sticks to avoid cross contamination.



**POTASSIUM ALUM**



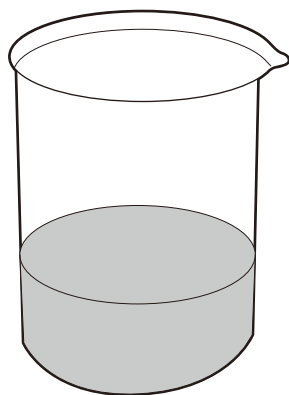
**BAKING SODA**



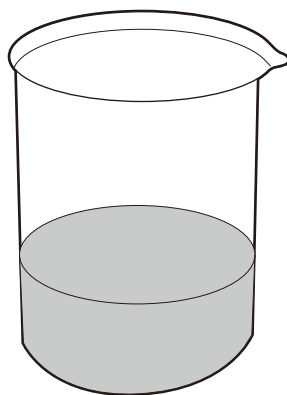
## EXPERIMENT PROCEDURE

2

Pour the rice water into two cups. Fill each glass to  $\frac{1}{3}$ rd its capacity.



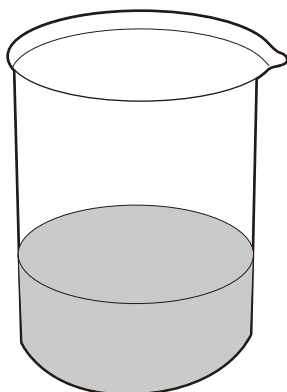
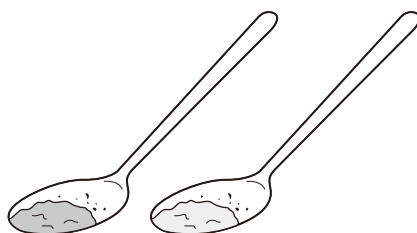
RICE WATER



RICE WATER

3

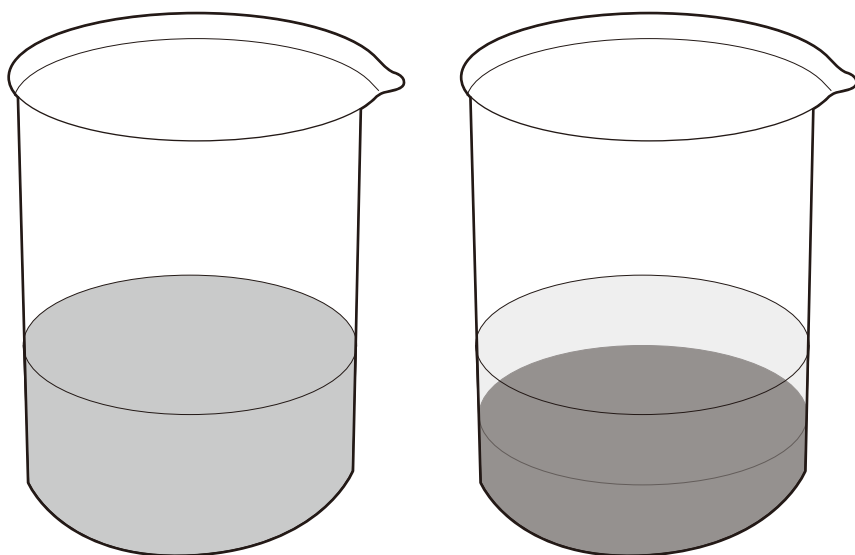
Add 5 teaspoons of **part J potassium alum** solution into each cup of rice water, then add 3 teaspoons of baking soda. Stir slowly then set aside the two glasses for two hours beside two more glasses of rice water.



## EXPERIMENT PROCEDURE

4

Observe the way the chemicals separate the rice starch from the water and settles at the bottom of the glass, while the rice water without chemicals remains cloudy.



## EXPERIMENT #4

### Parts Required:

**G.** Activated Carbon

### Tools Required:

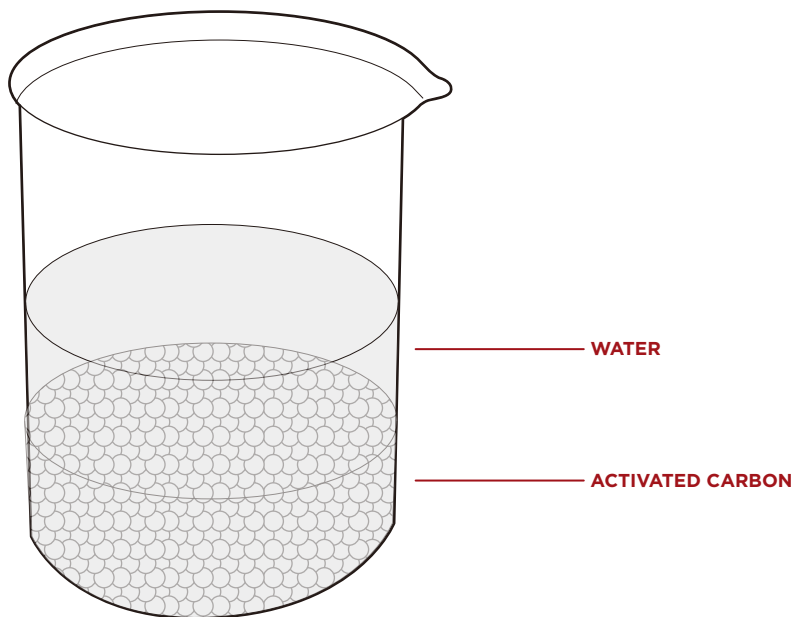
- Water
- Soy Sauce
- Plastic Bottle

## EXPERIMENT PROCEDURE

1

Wash the **part G activated carbon** in the water until the water runs clear.

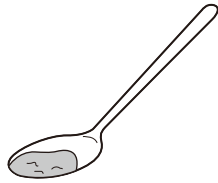
**NOTE:** Carbon is porous, if bubbles appear, it is because water is displacing air on the surface.



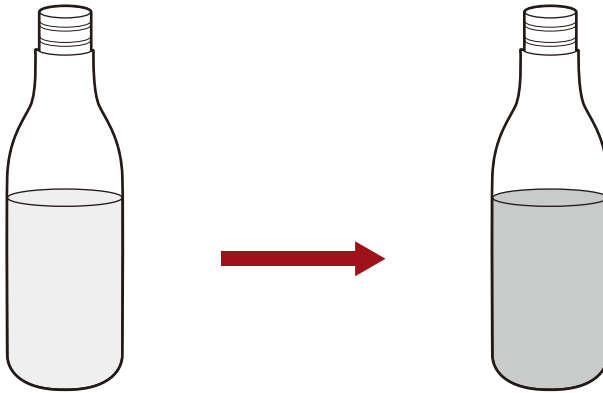
## EXPERIMENT PROCEDURE

2

Fill one of the plastic bottles with water to 1/3rd its capacity. Add a half teaspoon of soy sauce. Mix until the water resembles the color of tea.

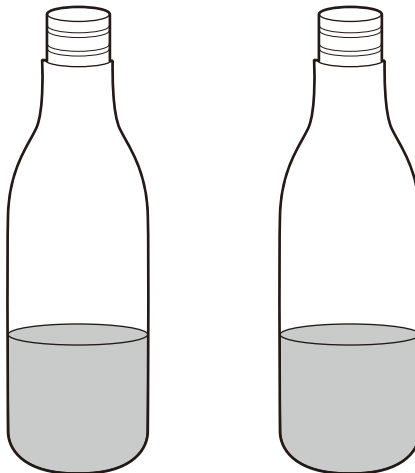


SOY SAUCE



3

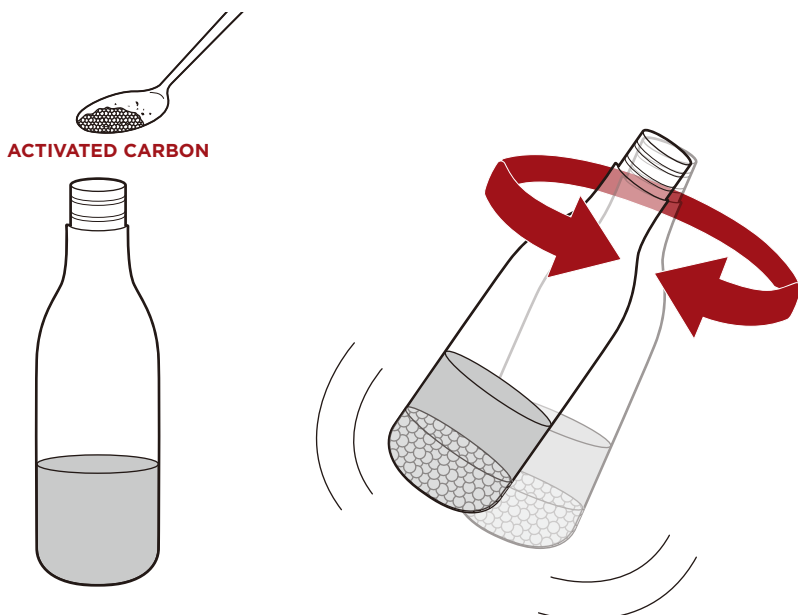
Pour one half of the soy sauce water into another plastic bottle.



## EXPERIMENT PROCEDURE

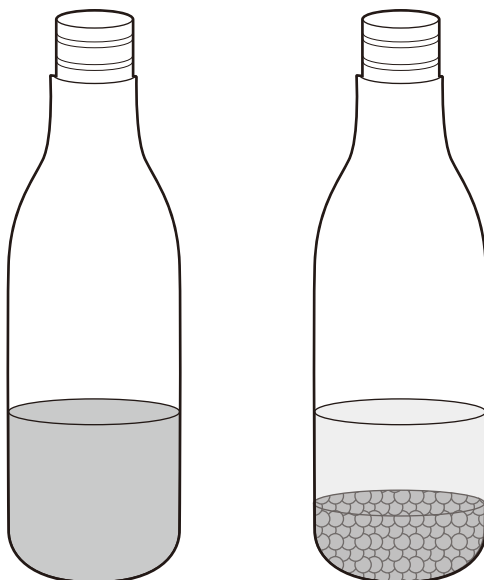
4

Scoop 3-4 teaspoons of washed **part G activated carbon** into one bottle of the diluted soy sauce water. Gently stir.



5

Place the two bottles of soy sauce water side by side and leave standing for 2-3 hours. Compare the color of the water in the two bottles and note how the activated carbon absorbs the soy sauce.





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Product Assembly



Returns & Refunds

## PRODUCT WARRANTY INFORMATION

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All returned items require an RA (Return Authorization) number, which can only be provided by a Best Choice Products Customer Service Representative when the return request is submitted. Items received without an RA may not be accepted or may increase your return processing time. Once an item has been received by Best Choice Products, refunds or replacements will be processed within 5 business days.

All returns must be shipped back to the Best Choice Products Return Center at the customer's expense. If the reason for return is a result of an error by Best Choice Products then Best Choice Products will provide a pre-paid shipping label via email. Boxes for return shipping will not be provided by Best Choice Products, and is the customer's responsibility to either use the original shipping boxes or purchase new boxes.

Pictures may be required for some returns to ensure an item is not damaged prior to its return. Items returned are not considered undamaged until they are received by Best Choice Products and verified as such. All damages to items are the customer's responsibility until the item has been received by and acknowledge by Best Choice Products as undamaged.

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## WARNING

Manufacturer and seller expressly disclaim any and all liability for personal injury, property damage or loss, whether direct, indirect, or incidental, resulting from the incorrect attachment, improper use, inadequate maintenance, unapproved modification, or neglect of this product.





BEST CHOICE  
PRODUCTS



# INSTRUCTION MANUAL

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Arachno-Bot



**BEST CHOICE  
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---

As shoppers, we're always trying to find the perfect balance between quality & value. At BCP, we believe we've achieved that. Our diverse catalog of everyday essentials is tailored especially to our customers & guaranteed to hit that sweet spot of high quality & low price.

————— Always. —————

## ! NOTICE

Please retain these instructions for future reference.

- Read all instructions before beginning any experiment.
- Adult supervision and assistance is recommended.
- This product is intended for children of 6 years or older.
- Keep out of reach of children and animals when not in use.
- If any parts are missing, broken, damaged, or worn, stop using this product until repairs are made and/or factory replacement parts are installed.
- Do not use this item in a way inconsistent with the manufacturer's instructions as this could void the product warranty.
- Do not leave this product exposed to excessive heat or sunlight.
- This product is intended for residential use only.

## ! WARNING

- This product contains small parts, which may result in a choking hazard.
- This product is intended for children 6 years and older.
- Do not allow use without adult supervision.
- Do not immerse product in water.

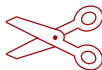
## WARNING REGARDING BATTERIES

- Do not mix alkaline, standard (carbon zinc) and rechargeable (nickel hydride) batteries.
- Do not mix old and new batteries.
- Non-rechargeable batteries should not be recharged.
- Exhausted batteries should be removed.
- The supply terminals should not be short-circuited.
- Do not put batteries next to or in a heat source (fire, electronic heating device, etc.).
- Do not hit batteries against hard objects.
- Do not submerge batteries in water.
- Do not allow use unless the battery cover is secured.
- Keep all batteries away from small children.
- Immediately and safely dispose of all used batteries.
- Batteries should be inserted with the correct polarity.

## TOOLS REQUIRED



DIAGONAL  
CUTTERS



SCISSORS

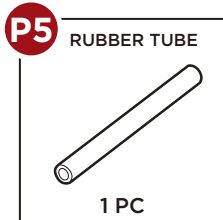
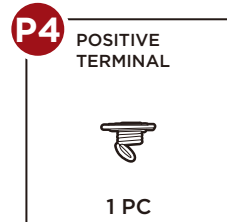
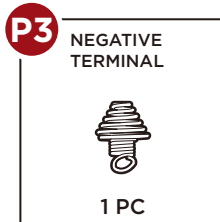
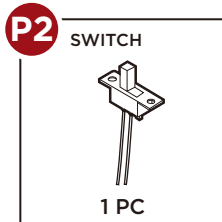
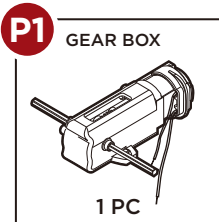


1 AA BATTERY

6+

6 YEARS  
OLD AND UP

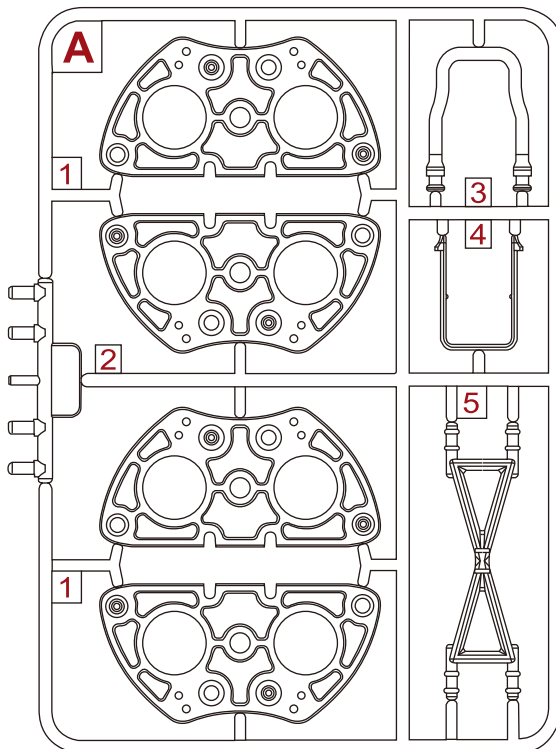
## MECHANICAL PARTS



## STRUCTURAL PARTS

### A. BODY STRUCTURE

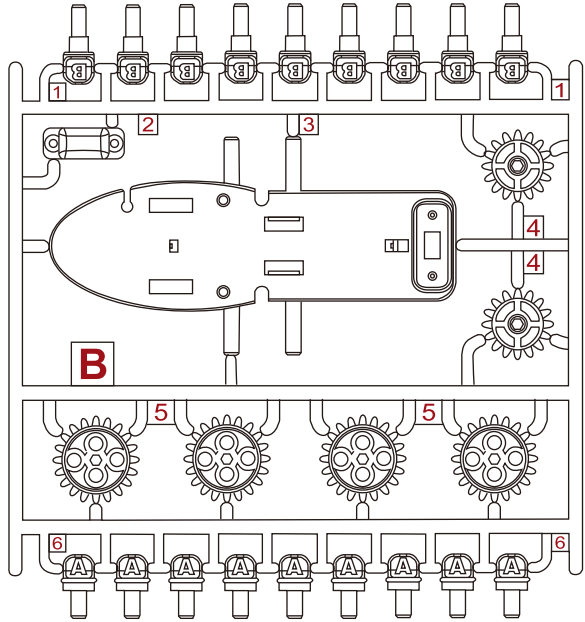
1. Spider Back (x2 Sets)
2. Gear Guide
3. Handle
4. Gear Box Bracket
5. Body Connector



## STRUCTURAL PARTS

### B. ARTICULATION STRUCTURE

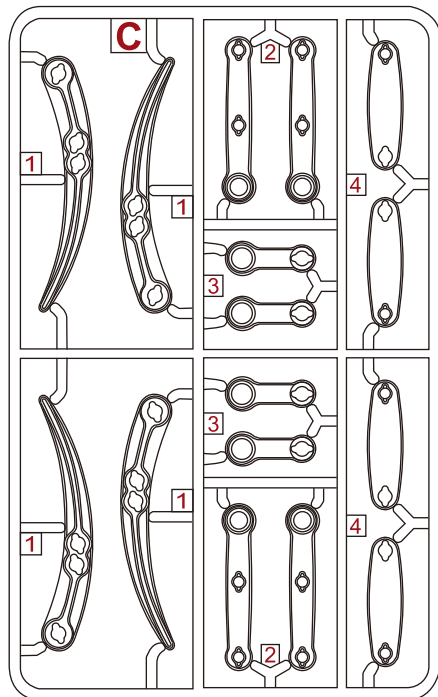
1. Connector Tab B (x9)
2. Switch Cover
3. Body Bottom
4. Gear I (x2)
5. Gear II (x4)
5. Connector Tab A (x9)



## STRUCTURAL PARTS

### C. LEG STRUCTURE

1. Leg Set (x2)
2. Lower Leg Outer Support Set (x2)
3. Lower Leg Inner Support Set (x2)
4. Upper Leg Support

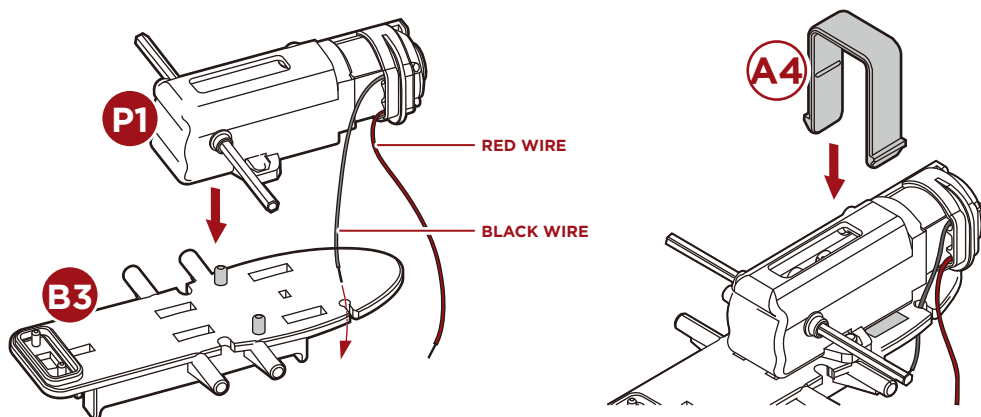


## PRODUCT ASSEMBLY

1

Attach the **part P1 gear box** to the **part B3 body bottom**, and thread the black wire through the notch on the body bottom side.

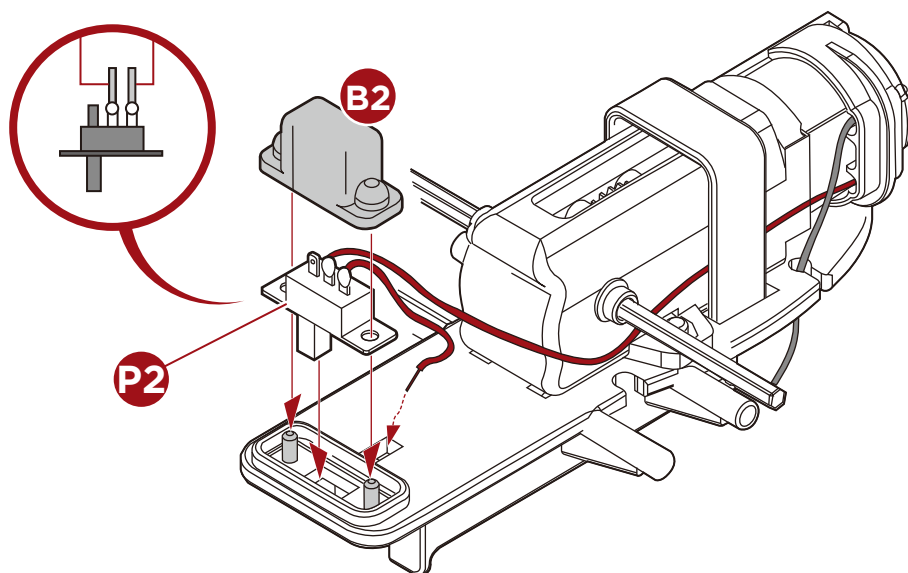
Secure the gearbox by connecting the **part A4 gearbox bracket** to the **part B3 body bottom**.



2

Thread the red wire under the **part A4 bracket** to the other side of the **part B3 body bottom**, then connect the wire to the **part P2 switch** as shown.

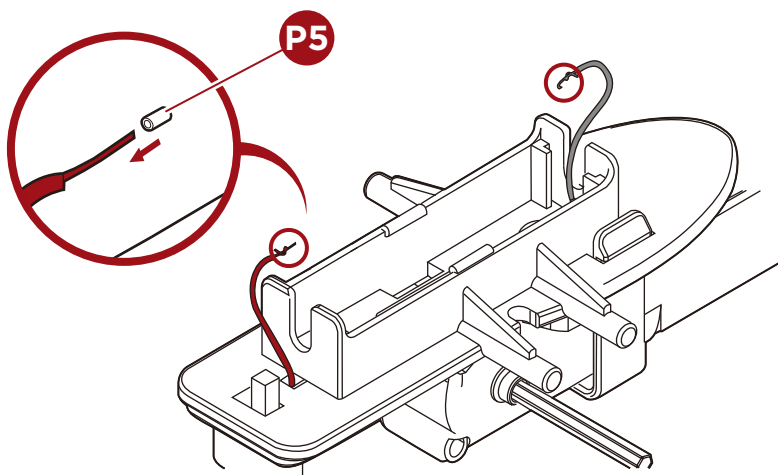
Cover the switch with the **part B2 switch cover**, then guide the red wire through the hole adjacent to the switch.



## PRODUCT ASSEMBLY

3

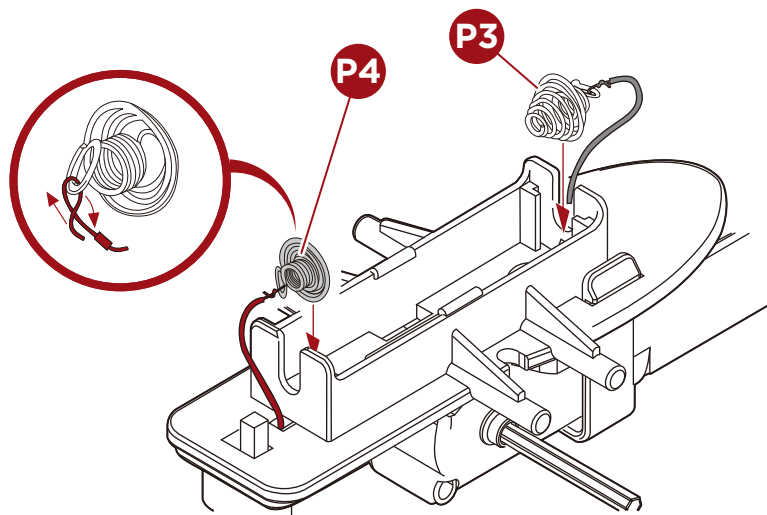
Flip the **part B3 body bottom** and locate the black and red wires. Locate the **part P5 tube** and cut two small lengths off (approx. 1cm), then place that length of tube onto the end of each wire.



4

Locate the **P3 & P4 terminals**, loop the red wire through the **part P4 positive terminal** and the black wire through the **part P3 negative terminal** as shown.

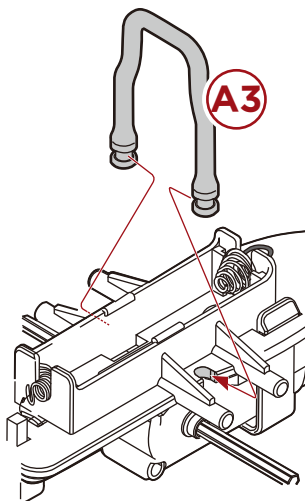
Slide the assembled terminals to the designated spaces in the battery chamber on the **part B3 body bottom**.



## PRODUCT ASSEMBLY

5

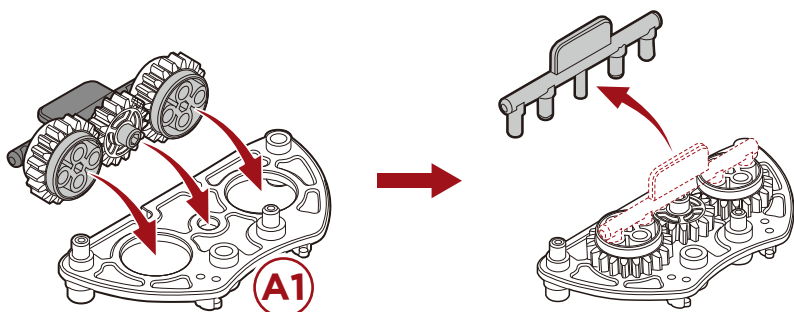
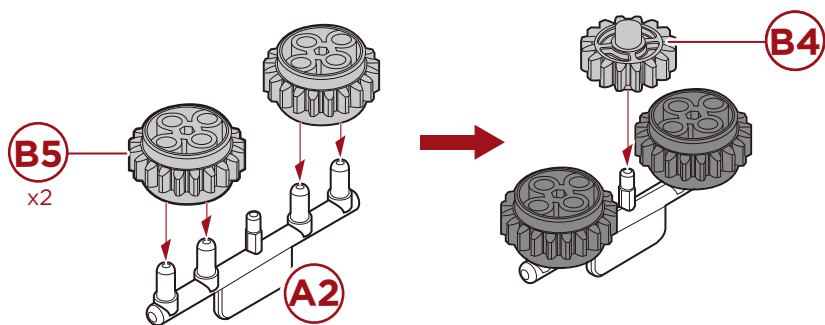
Locate the **part A3 handle** and attach it to the spaces on the sides of the battery chamber then set this assembly aside.



6

Locate the **part A2 gear guide** and arrange two **part B5** and one **part B4** gears onto the guide as shown.

Place the arranged gears onto one **part A1 spider** then press them off the **part A2 guide**, then press another **part A1 spider back** over the assembled gears to secure.

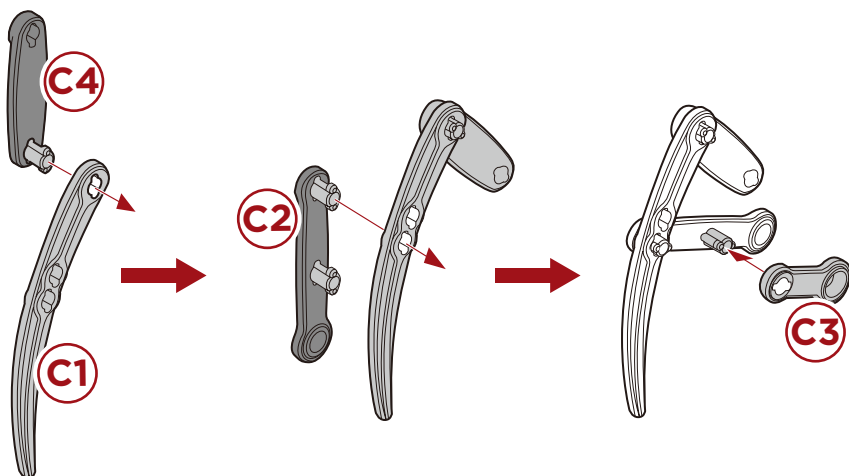
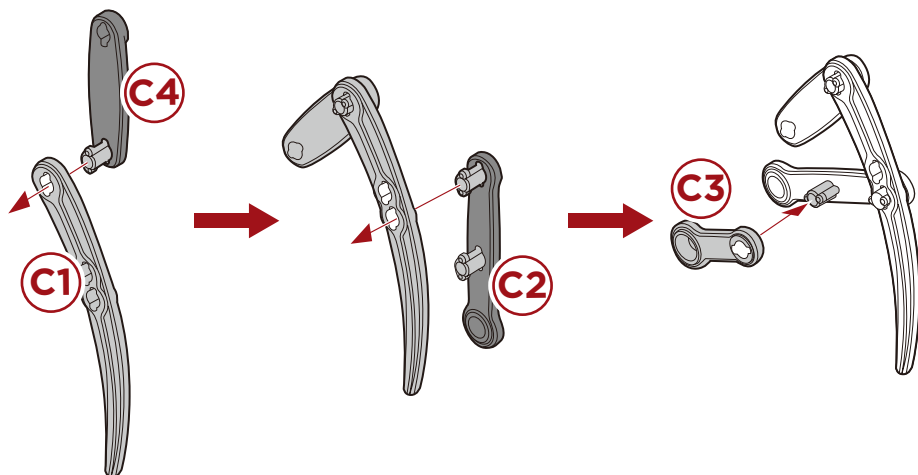




## PRODUCT ASSEMBLY

7

Attach one **part C4 upper leg support** to one **part C1 spider leg**.  
Attach one **part C2 lower leg outer support** to the lower hole in the **part C1 spider leg**.  
Attach one **part C3 lower leg inner support** to the **part C2 outer support**.  
Repeat on the opposite side to assemble a second leg.



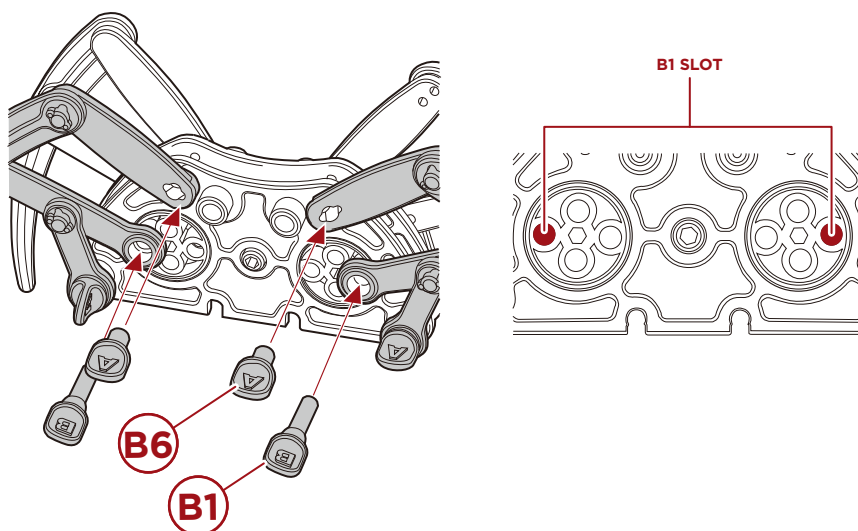
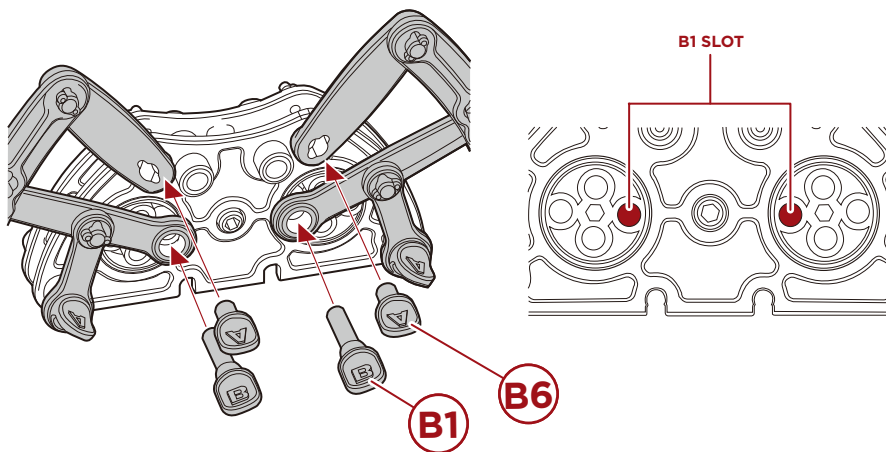
## PRODUCT ASSEMBLY

8

Attach the two leg assemblies to the **part A1 spider back** assembly as shown with two **part B6 connector tabs** and two **part B1 connector tabs** as shown

Once secure, repeat steps 7 & 8 to assemble two more legs, then attach them to the same spider back assembly as shown.

**NOTE:** Fasten screws loosely during assembly. Do not tighten screws until item is fully



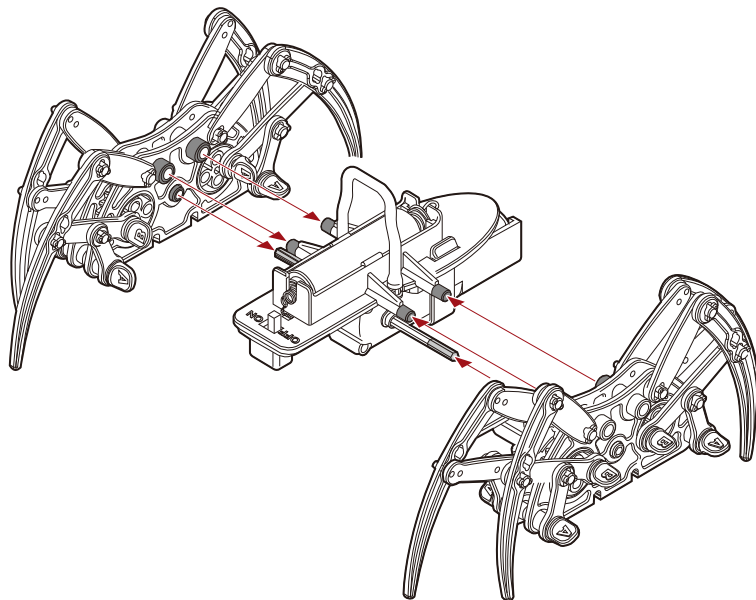
9

Repeat steps 6-8 to prepare a second spider leg set, then set the two assemblies aside.

## PRODUCT ASSEMBLY

10

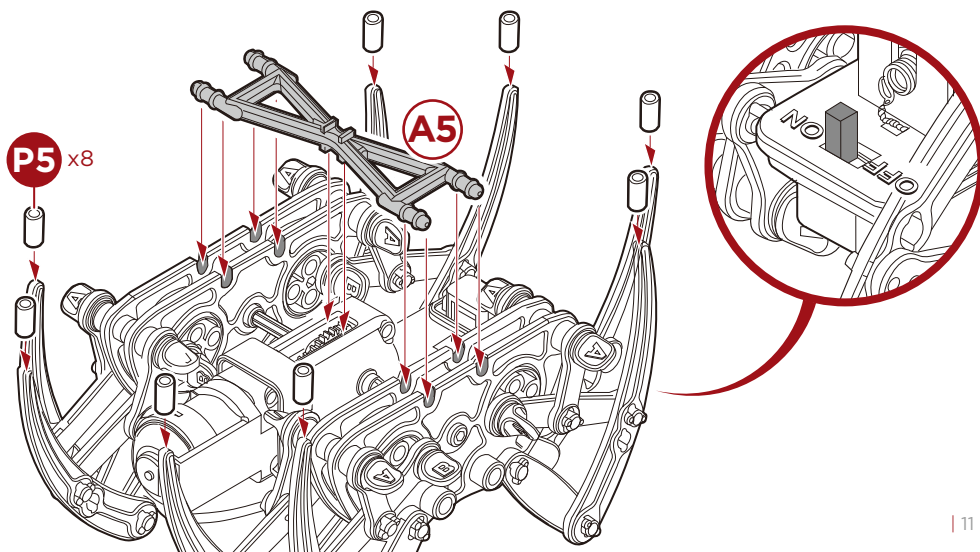
Insert one AA battery into the battery chamber on the **part B3 body bottom**.



11

Locate the **part P5 rubber tube** and cut eight equal pieces, then affix them to the tips of the spider legs.

Secure the two assemblies by attaching the **part A5 body connector**. Flip the switch on to activate the spider robot.





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Product Assembly



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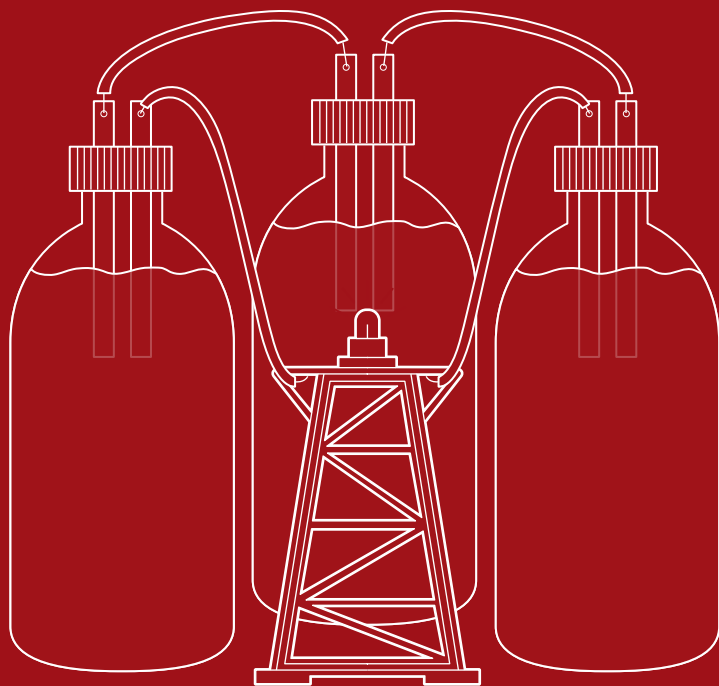
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BEST CHOICE  
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# INSTRUCTION MANUAL

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Eco Energy Center



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————— Always. —————

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- This product is intended for residential use only.



6 YEARS  
OLD AND UP

## WARNING

- This product contains small parts, which may result in a choking hazard.
- This product is intended for children 6 years and older.
- Do not allow use without adult supervision.
- Do not ingest the food or beverages used in these experiments.
- Do not connect any of the parts provided to batteries or wall sockets.
- Wash hands after carrying out each experiment.

## PARTS

**A**

SCREW CAP



2 PCS

**B**

PLASTIC CUPS



2 PCS

**C**

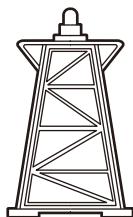
CONNECTION WIRES



4 PCS

**D**

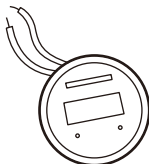
LED LIGHT TOWER



1 PC

**E**

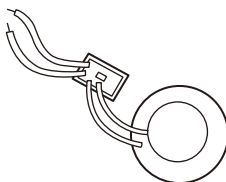
LCD CLOCK



1 PC

**F**

SOUND CHIP



1 PC

**G**

TRANSPARENT  
ADHESIVE STRIPS



1 PC

**H**

COPPER PLATES



4 PCS

**I**

ZINC PLATES



4 PC



## EXPERIMENT #1

### Parts Required:

- C.** Connection Wires (x4)
- E.** LCD Clock
- G.** Transparent Adhesive Strips
- H.** Copper Plates (x2)
- I.** Zinc Plates (x2)

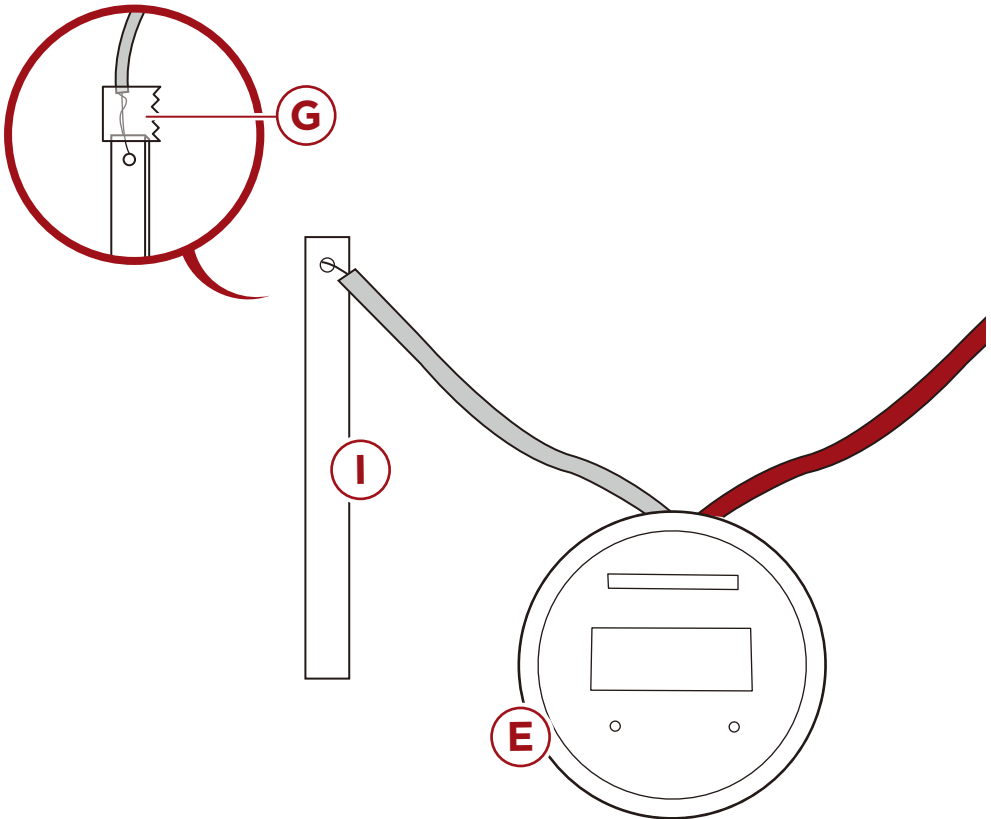
### Tools Required:

- 2 Potatoes (Or your preferred fruit)

## EXPERIMENT PROCEDURE

1

Connect the black (negative) wire from the **part E LCD clock** to one of the **part I zinc plates**; thread the exposed wire through plate's hole, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.

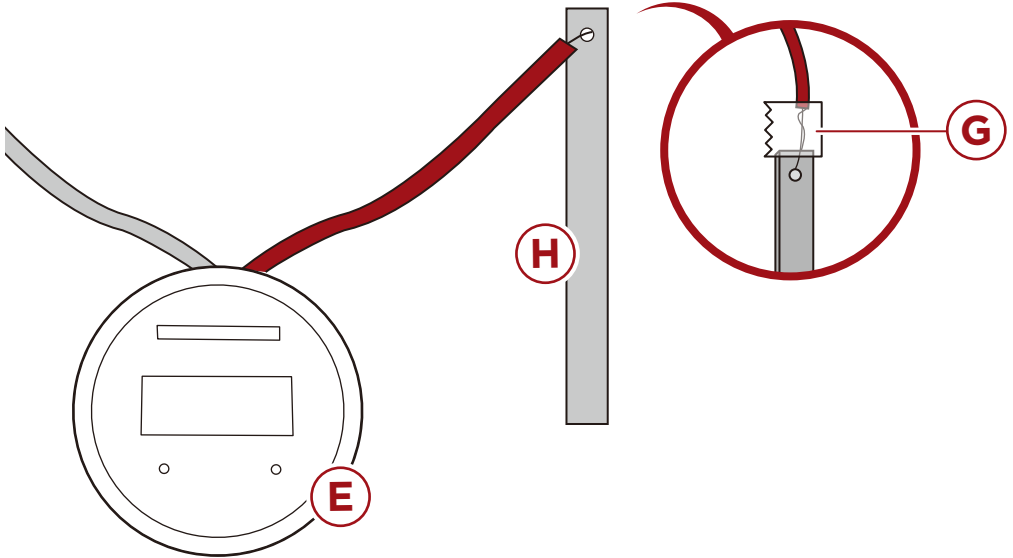


## EXPERIMENT PROCEDURE

2

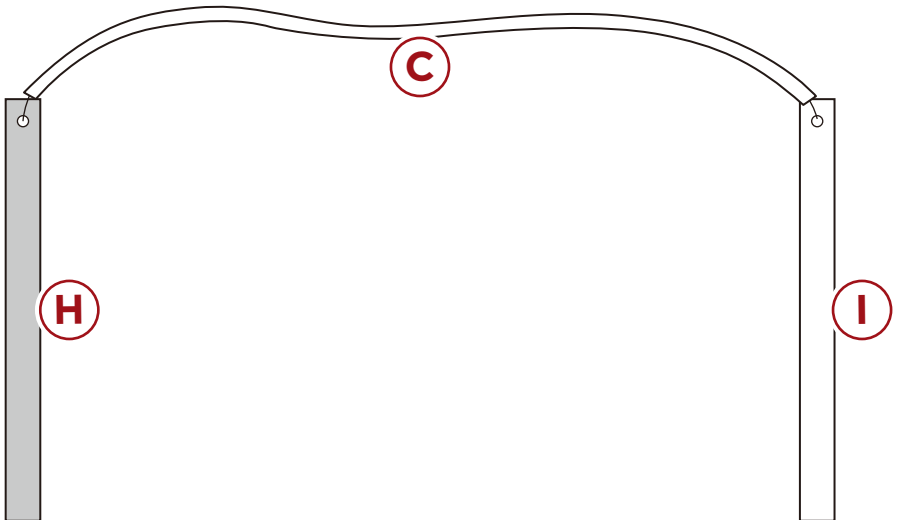
Connect red (positive) wire from the **part E LCD clock** to one of the **part H copper plates**; thread the exposed wire through plate's hole, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.

**NOTE:** Always connect the negative wire to the zinc (gray plate) and the positive wire to the copper (brown plate).



3

Use the previously described method to connect one **part I zinc plate** and one **part H copper plate** to either end of one **part C connection wire**.



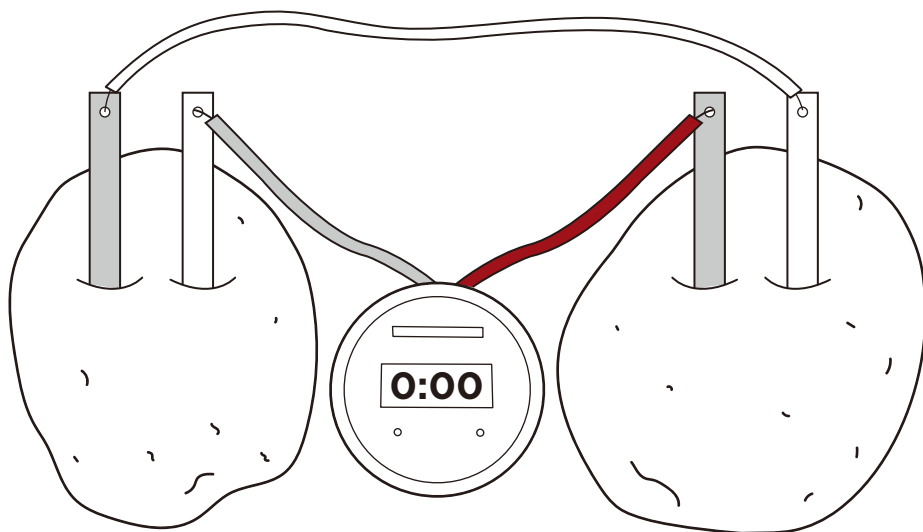
## EXPERIMENT PROCEDURE

4

Insert the wire and plate assemblies into the prepared fruits/vegetables as shown.

Observe as the two metals, stimulated by the electrolytes and liquid within the fruit/vegetable, act as positive and negative electrodes. The wires act as an exchange, creating an electrical current to feed power to the clock.

**NOTE:** After the experiment is complete, clean and thoroughly dry the metal plates to prevent rust or oxidation.



## EXPERIMENT #2

### Parts Required:

- C.** Connection Wires (x4)
- F.** Sound Chip
- G.** Transparent Adhesive Strips
- H.** Copper Plates (x2)
- I.** Zinc Plates (x2)

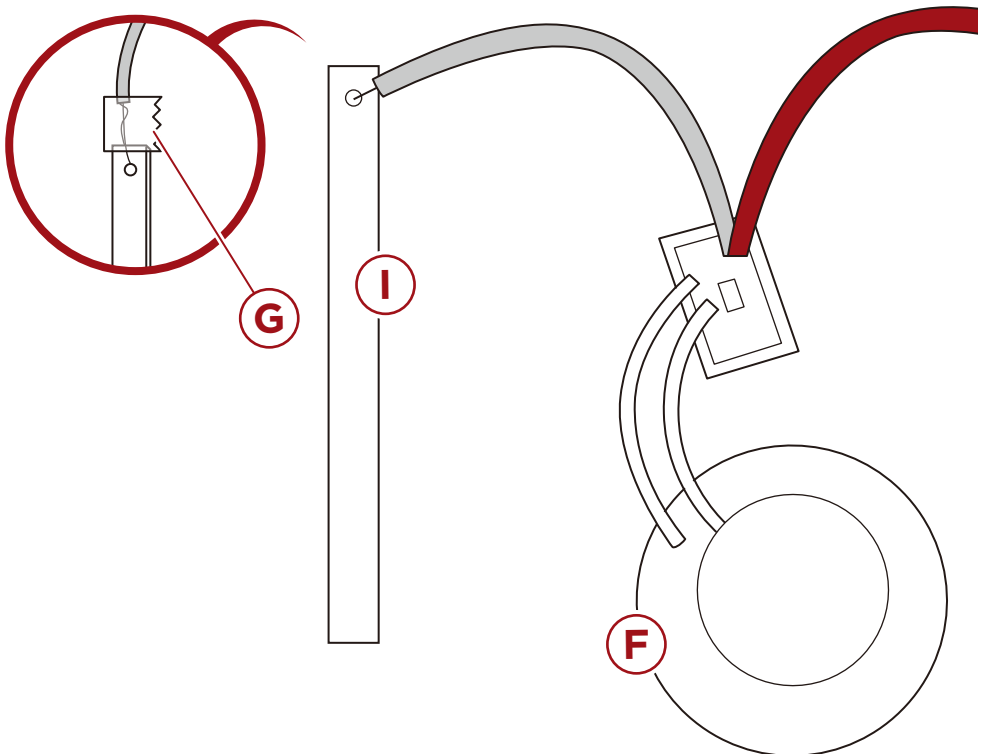
### Tools Required:

- 2 Small Potted Plants
- (Alt) 2 Cups of Garden Soil

## EXPERIMENT PROCEDURE

1

Connect the black (negative) wire from the **part F sound chip** to one of the **part I zinc plates**; thread the exposed wire through plate's hole, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.

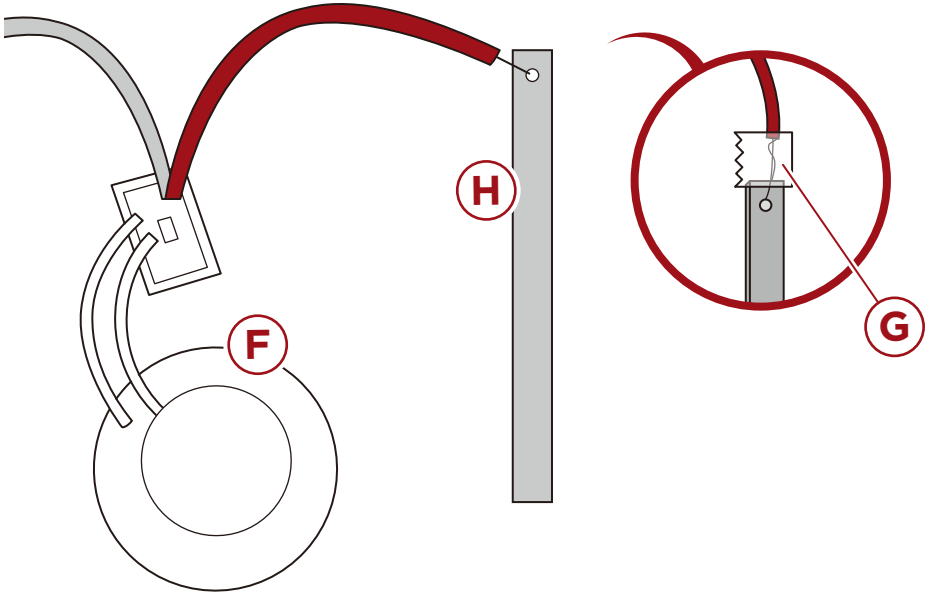


## EXPERIMENT PROCEDURE

2

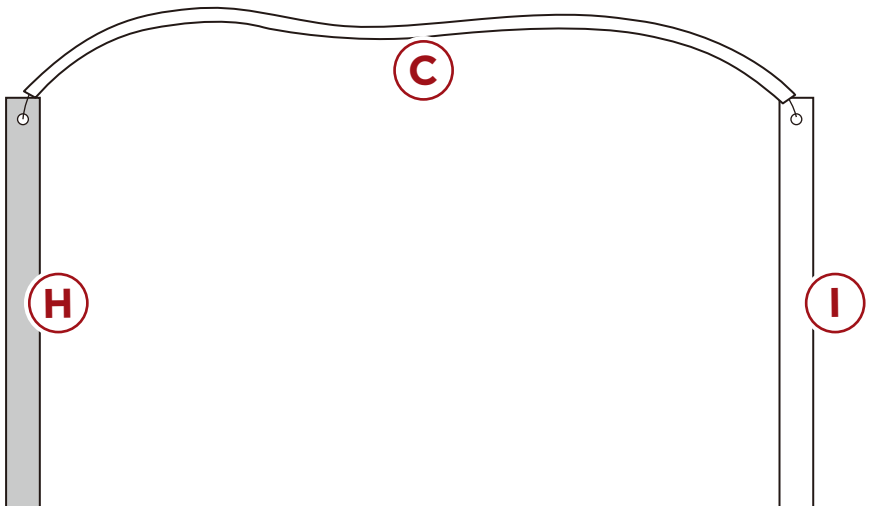
Connect red (positive) wire from the **part F sound chip** to one of the **part H copper plates**; thread the exposed wire through plate's hole, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.

**NOTE:** Always connect the negative wire to the zinc (gray plate) and the positive wire to the copper (brown plate).



3

Use the previously described method to connect one **part I zinc plate** and one **part H copper plate** to either end of one **part C connection wire**.



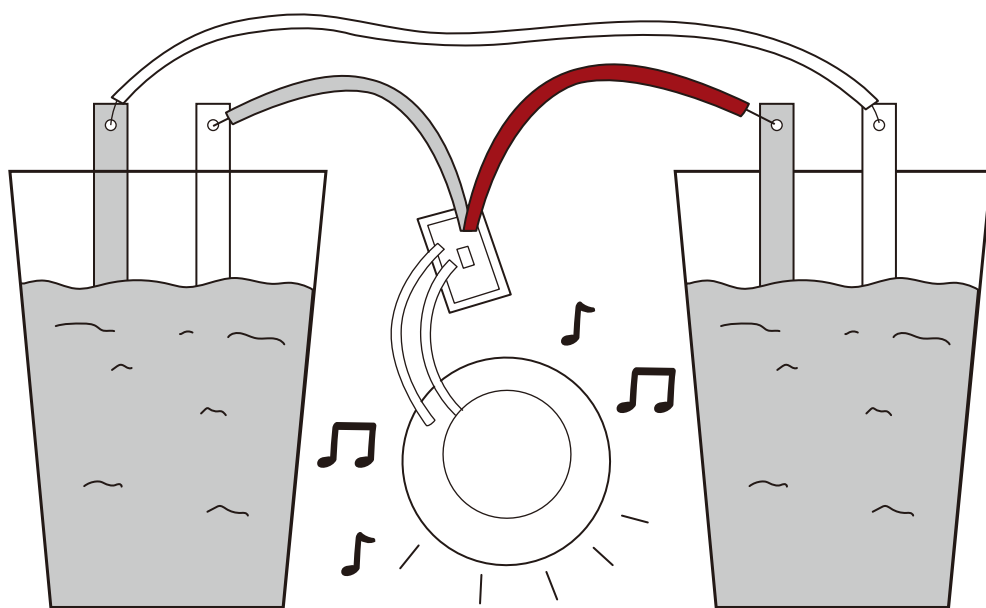
## EXPERIMENT PROCEDURE

4

Insert the wire and plate assemblies into the prepared plants/soil cups as shown. Make sure the soil is reasonably moist

Listen to the sound chip for any noises it creates. To amplify the sound, tape the chip to the bottom of a paper cup. The paper will vibrate and act as a resonance enhancer. Try using different resonance enhancers such as water, glass etc.

**NOTE:** After the experiment is complete, clean and thoroughly dry the metal plates to prevent rust or oxidation.



## EXPERIMENT #3

### Parts Required:

- A.** Screw Cap (x2) (Not Used If Plastic Cups Are)
- B.** Plastic Cups (x2v) (Alt Water Bottles)
- C.** Connection Wires (X4)
- D.** LED Light Tower
- G.** Transparent Adhesive Strips
- H.** Copper Plates (x3)
- I.** Zinc Plates (x3)

### Tools Required:

- 3 Small Plastic Water Bottles (Optional)

## EXPERIMENT PROCEDURE

1

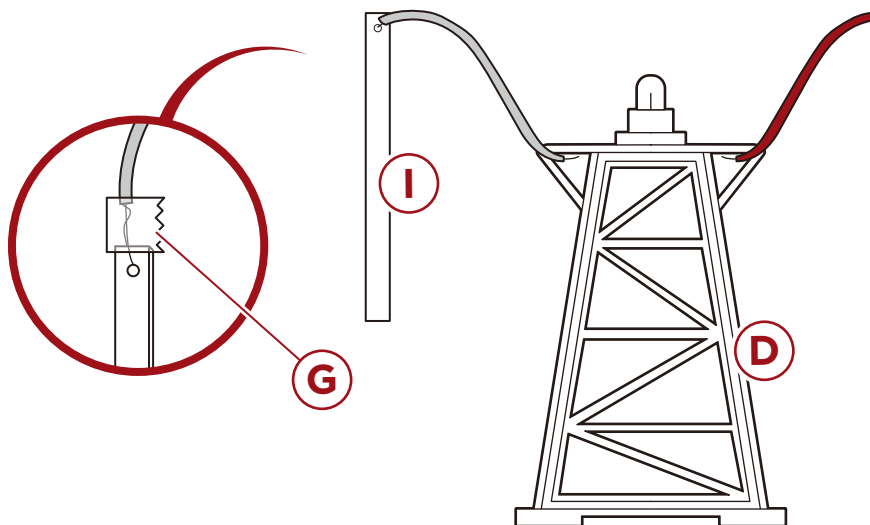
Fill three water bottles or three **part B plastic cups** with water. If bottles are used, place three **part A bottle caps**.



## EXPERIMENT PROCEDURE

2

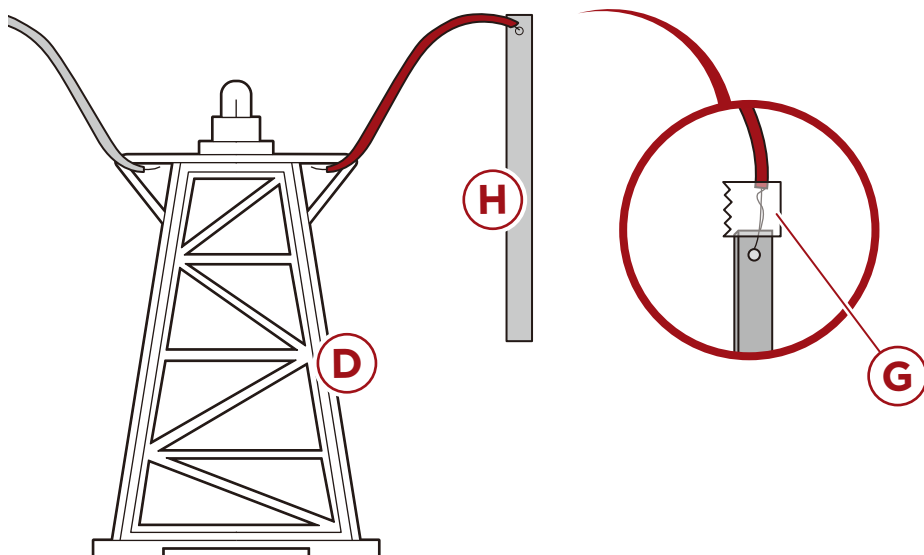
Connect the black (negative) wire from the **part D LED Light Tower** to one of the **part I zinc plates**; thread the exposed wire through plate's hole, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.



3

Connect red (positive) wire from the **part D LED Light Tower** to one of the **part H copper plates**; thread the exposed wire through plate's hole, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.

**NOTE:** Always connect the negative wire to the zinc (gray plate) and the positive wire to the copper (brown plate).

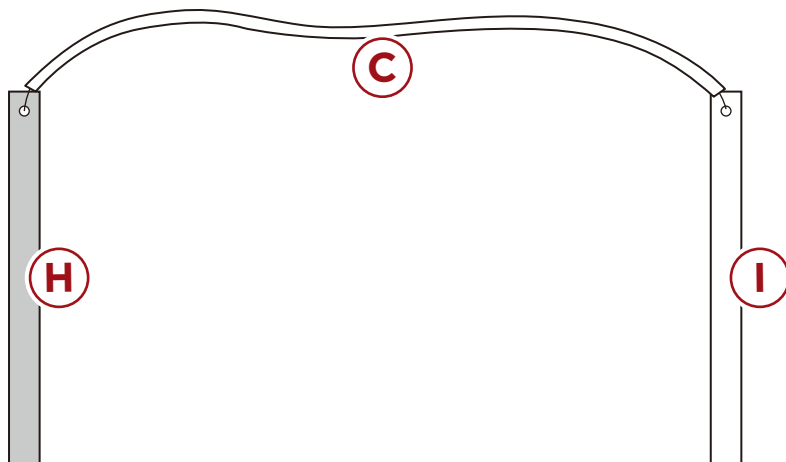




## EXPERIMENT PROCEDURE

4

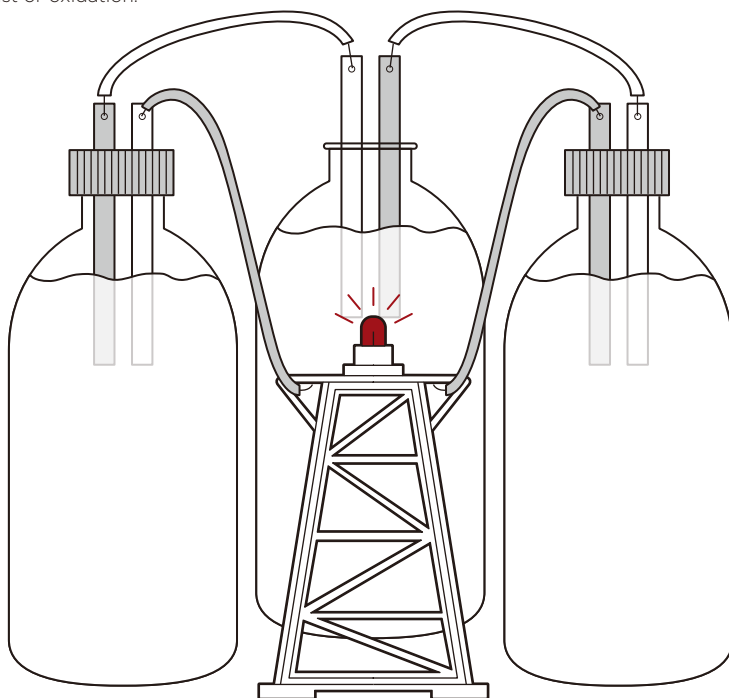
Use the previously described method to connect **one part I zinc plate** and one **part H copper plate** to either end of one **part C connection wire**. Repeat to create a second connection pair.



5

Insert the wire and plate assemblies into the **part A bottle caps** or **part B plastic cups** as shown. Notice how the light comes on. To alter the brightness add a catalyst to the water like vinegar or citric acid.

**NOTE:** After the experiment is complete, clean and thoroughly dry the metal plates to prevent rust or oxidation.



## EXPERIMENT #4

### Parts Required:

- B.** Plastic Cups
- C.** Connection Wires (X4)
- F.** Sound Chip
- G.** Transparent Adhesive Strips
- H.** Copper Plates (x2)
- I.** Zinc Plates (x2)

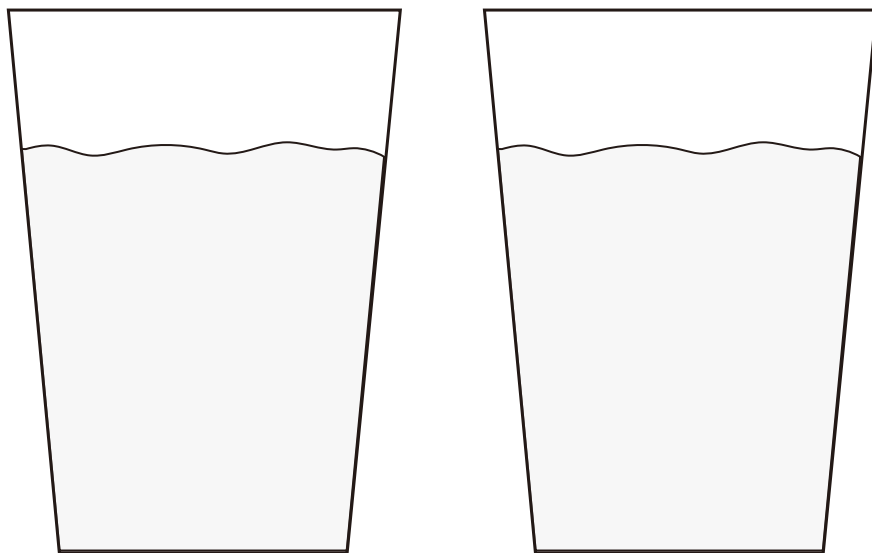
### Tools Required:

- 2 Bare Metal Paper Clips
- Vinegar

## EXPERIMENT PROCEDURE

1

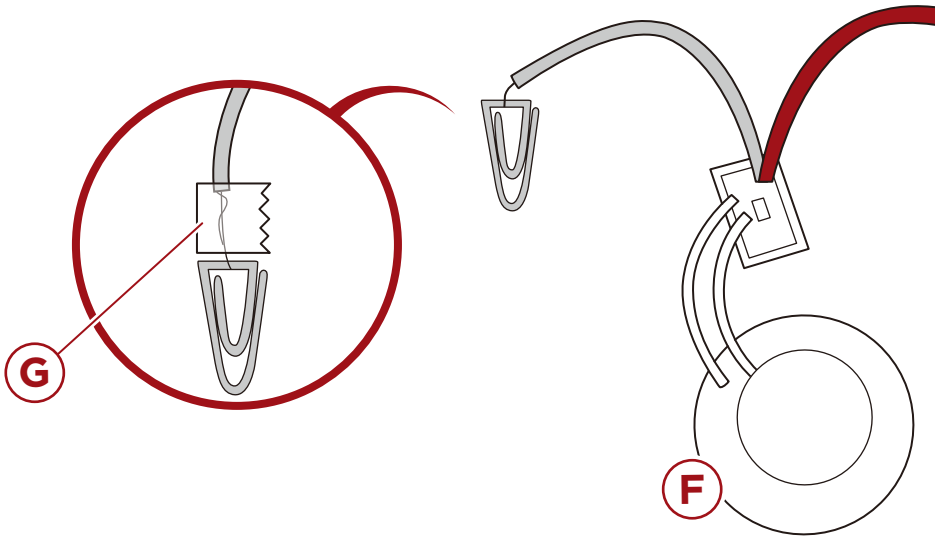
Fill the two **part B plastic cups** with water and vinegar.



## EXPERIMENT PROCEDURE

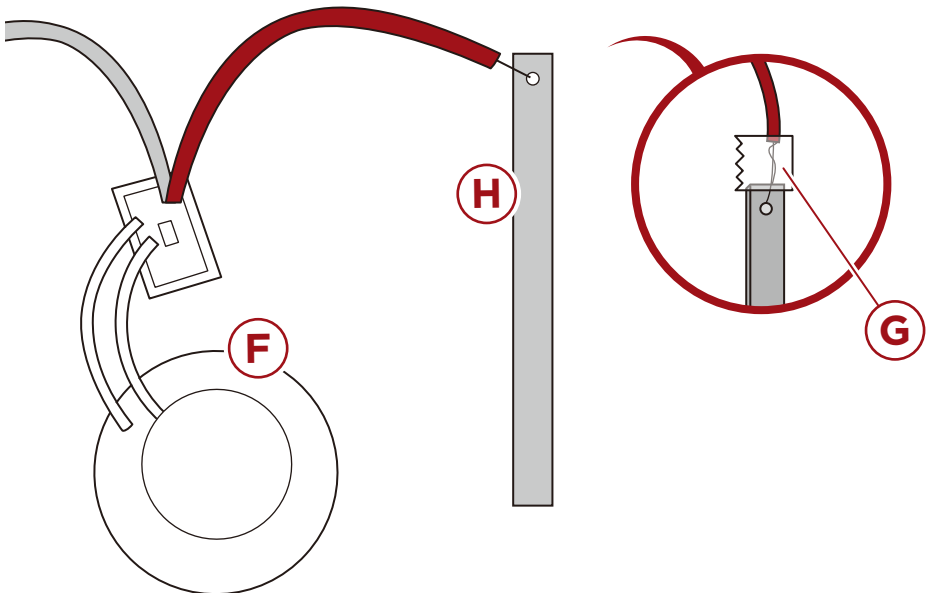
2

Connect the black (negative) wire from the **part F sound chip** to one of paper clips; thread the exposed wire through clip, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.



3

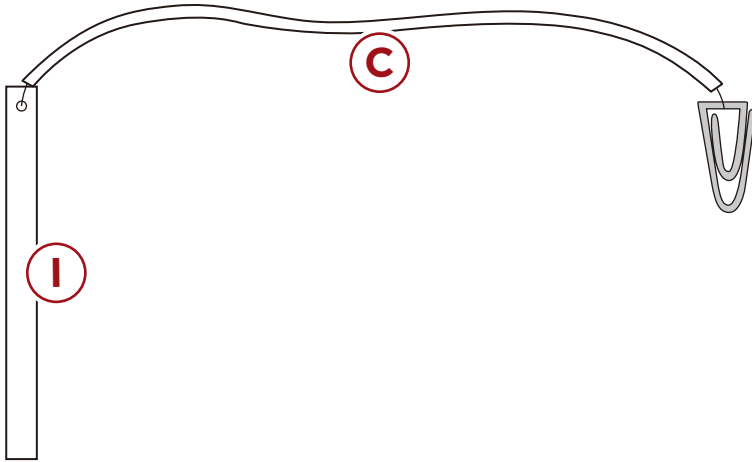
Connect red (positive) wire from the **part F sound chip** to one of the **part H copper plates**; thread the exposed wire through plate's hole, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.



## EXPERIMENT PROCEDURE

4

Use the previously described method to connect one **part I zinc plate** and a second paper clip to either end of one **part C connection wire**.

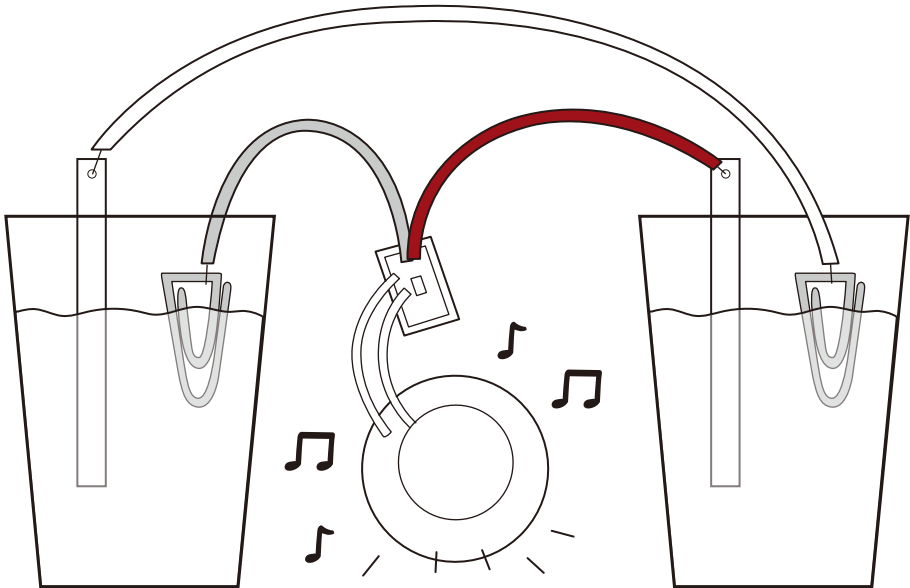


5

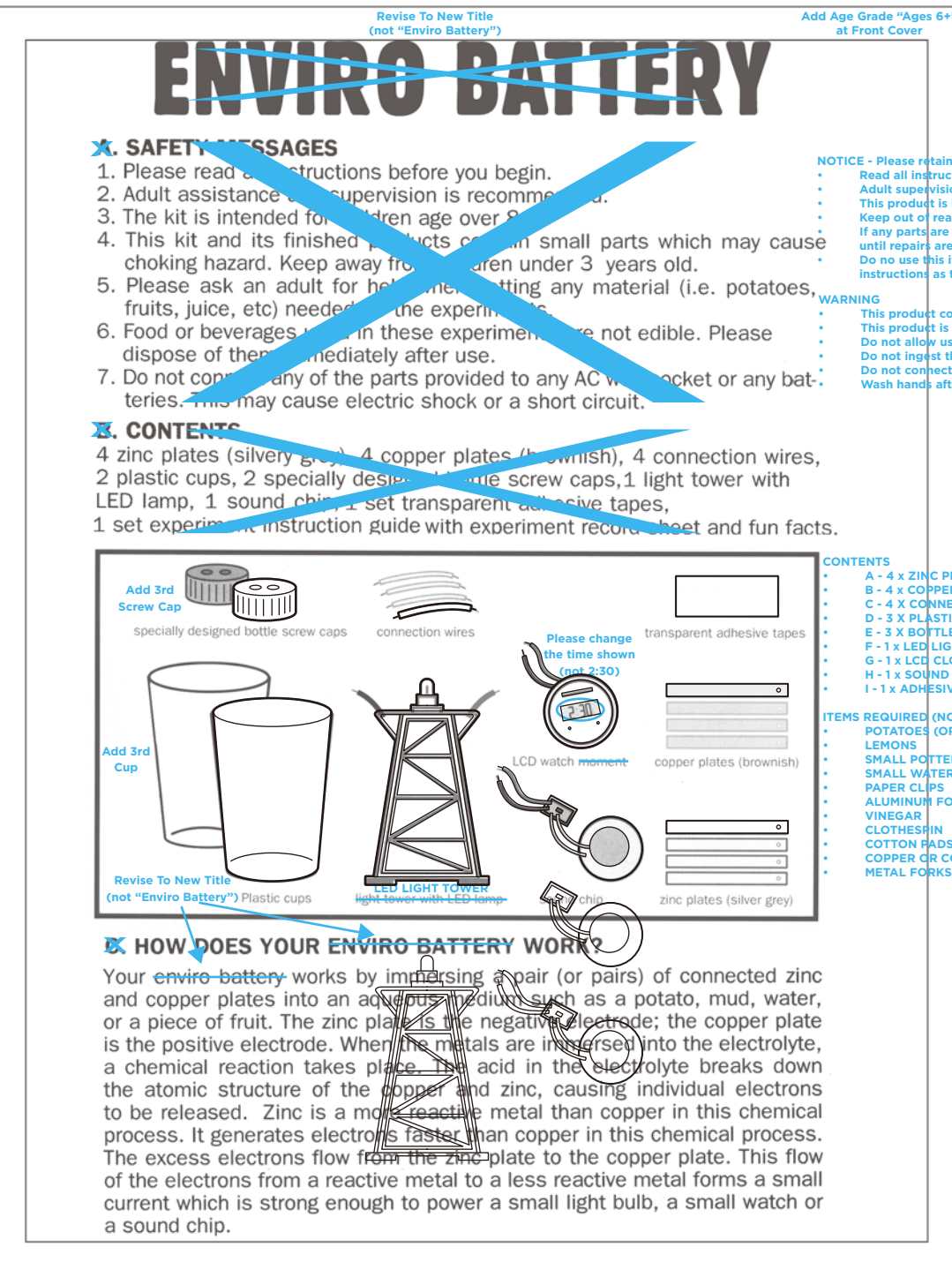
Insert the wire and plate assemblies into the prepared cups as shown.

Listen to the sound chip for any noises it creates. To amplify the sound, tape the chip to the bottom of a paper cup. The paper will vibrate and act as a resonance enhancer. Try using different resonance enhancers such as water, glass etc.

**NOTE:** After the experiment is complete, clean and thoroughly dry the metal plates to prevent rust or oxidation.





[illegible]

**E. MUSICAL MUD- MAKE A SOUND - CHIP SING**

The diagram shows two small plastic cups placed side-by-side. Each cup contains soil and has a plant seedling growing from it. Two wires connect the cups: one wire goes from the top of each cup down to a central electronic component labeled "Sound Chip". The other end of each wire connects to a metal plate submerged in water at the bottom of its respective cup. Arrows indicate electrical current flowing through the circuit.

**You'll need:** 2 small plastic cups; 2 plants or seeds; Connecting Wire  
**From the kit:** The electronic sound chip; 2 plates of copper-and zinc  
plates; adhesive tape; a connecting-wire-and-a paper-cup —————  
**From home:** 2 small potted plants or 2 cups of garden-soil

1. Make sure the pots or cups of soil are reasonably moist.
2. Connect the sound chip to a pair of copper plates using the same technique as in the mini clock (*i.e.* red wire to copper plate, black wire to zinc plate).
3. Make a connection pair with the other zinc and copper plate as in D3.
4. Insert the zinc and copper plates into the soil as shown in the diagram.

add some water

**Did the chip sing?**

If the experiment worked, you should hear a faint noise coming from the round metal plate of the sound chip. To amplify the sound, tap the base of the sound chip to the paper cup. The sound should now be louder. You should be able to hear a bird singing. Why? The paper cup resonates with the sound wave generated by the sound chip making it louder. Experiment using different "amplifiers" like a water glass, a tin can etc. You'll be amazed with the different sound effects they produce!

### 5. WATER MONDER: MAKE A BATTERY WITH WATER

**YOU'LL NEED:** [From the kit: 2 copper plates, 2 plastic cups, 2 electronic sound chips, 2 adhesive tapes and connecting wires. From home: 2 1.5-volt AA batteries, Connecting Wire, 2 different metals \(electrodes\) too.](#)

*(From the kit: 2 copper plates, 2 plastic cups, 2 electronic sound chips, 2 adhesive tapes and connecting wires. From home: 2 1.5-volt AA batteries, Connecting Wire, 2 different metals (electrodes) too.)*

1. Connect the LED light on the light tower to a pair of zinc and copper plates as done in the previous step.

2. Make a connection pair with the other zinc and copper plates.

3. Insert the zinc and copper plates into the water containers as shown in the diagram. Make sure the plates do not touch each other as this will cause a short circuit and the LED lamp will not light up.

*(Remark: If the bottles used for this experiment are not clean and dry, you may need to start the light tower again. The reason is that the light tower will not work if the water is too long and dirty. On the other hand, you may choose to change to other plastic bottles where the sound chip and LED chip can be placed together naturally after the initial set up.)*

### 6. CRAZY CUP PARTY: MAKE A PAPER CUP BATTERY

**YOU'LL NEED:** [From the kit: 2 copper plates, 2 plastic cups, 2 electronic sound chips, 2 adhesive tapes and connecting wires. From home: 2 1.5-volt AA batteries, Connecting Wire, 2 different metals \(electrodes\) too.](#)

1. Connect one end of the black wire to one of the copper plates.

2. Connect one end of the red wire to one of the copper plates.

3. Connect the other end of the red wire to one of the copper plates.

4. Insert the metals into a plastic cup filled with vinegar water. The sound chip is activated.

*(Remark: The black wire can be connected to the zinc plate and the red wire can be connected to the copper plate. The sound chip will be activated when the zinc plate and the copper plate are connected to the sound chip.)*

### 7. CRAZY CUP PARTY: MAKE A PAPER CUP BATTERY

**YOU'LL NEED:** [From the kit: 2 copper plates, 2 plastic cups, 2 electronic sound chips, 2 adhesive tapes and connecting wires. From home: 2 1.5-volt AA batteries, Connecting Wire, 2 different metals \(electrodes\) too.](#)

1. Connect one end of the black wire to one of the copper plates.

2. Connect one end of the red wire to one of the copper plates.

3. Connect the other end of the red wire to one of the copper plates.

4. Insert the metals into a plastic cup filled with vinegar water. The sound chip is activated.

*(Remark: The black wire can be connected to the zinc plate and the red wire can be connected to the copper plate. The sound chip will be activated when the zinc plate and the copper plate are connected to the sound chip.)*

### 8. CRAZY CUP PARTY: MAKE A PAPER CUP BATTERY

**YOU'LL NEED:** [From the kit: 2 copper plates, 2 plastic cups, 2 electronic sound chips, 2 adhesive tapes and connecting wires. From home: 2 1.5-volt AA batteries, Connecting Wire, 2 different metals \(electrodes\) too.](#)

1. Connect one end of the black wire to one of the copper plates.

2. Connect one end of the red wire to one of the copper plates.

3. Connect the other end of the red wire to one of the copper plates.

4. Insert the metals into a plastic cup filled with vinegar water. The sound chip is activated.

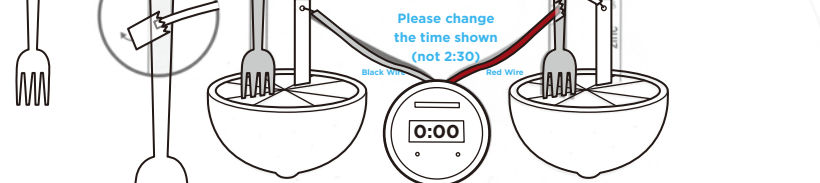
*(Remark: The black wire can be connected to the zinc plate and the red wire can be connected to the copper plate. The sound chip will be activated when the zinc plate and the copper plate are connected to the sound chip.)*

## 1. FREAKY FORK: MAKE A FORK BATTERY

**YOU'LL NEED**

From the kit: 2 zinc plates, LCD clock, adhesive tape and connection wire. From home: 2 lemons, 1 lemon - halved.

1. Connect one end of the red wire to the fork. Use a clothespin or adhesive tape to secure the connection.
2. Connect the black wire to the zinc plate.
3. Now get another fork and zinc plate, connect them with a wire to make a "connection pair".
4. To activate the clock, insert all metals into the lemon as shown in the diagram.



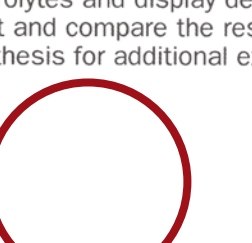
**How does it work?**

The fork acts like the positive electrode of the battery, like the copper plates in previous experiments. Most tableware utensils are plated with a metal which is less reactive than zinc. When both the utensils and zinc plates are inserted in the lemons, a reaction takes place. Electrons move from the zinc plates to the fork forming a current.

**✳️ ADDITIONAL EXPERIMENTS**

You can do more experiments by combining those provided in the kit with materials from home. Here are some of the materials you could try:

**Electrolyte:** Soda drink, salt water, fruit juice, different fruit etc. **Positive Electrode:** any kind of copper, copper plated metal and alloy, copper screw/nuts, copper key, copper coil, different kinds of brownish cast copper wire, spoon. **Negative Electrode:** iron, aluminium, any kind of zinc plated metal, common screw/nuts/washer/nail, iron wire. Mix and match the different metals, the electrolytes and display devices. Record each of your findings on the record sheet and compare the results. It's fun to analyse your results and develop hypothesis for additional experiments.



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## K. EXPERIMENT RECORD SHEET

1-6 are experiments from section D-J.

|    | Positive Electrode | Negative Electrode | Electrolyte     | Display Media | Number of connections | Comment |
|----|--------------------|--------------------|-----------------|---------------|-----------------------|---------|
| 1  | Copper Plate       | Zinc Plate         | Potato          | LCD Clock     | 2                     |         |
| 2  | Copper Plate       | Zinc Plate         | Mud             | Sound chip    | 2                     |         |
| 3  | Copper Plate       | Zinc Plate         | Water (Vinegar) | LED Lamp      | 2                     |         |
| 4  | Copper Plate       | Paper Clip         | Soda drink      | Sound Chip    | 2                     |         |
| 5  | Coin               | Aluminum Foil      | Vinegar         | Sound Chip    | 2                     |         |
| 6  | Fork               | Zinc Plate         | Lemon           | LCD Clock     | 2                     |         |
| 7  |                    |                    |                 |               |                       |         |
| 8  |                    |                    |                 |               |                       |         |
| 9  |                    |                    |                 |               |                       |         |
| 10 |                    |                    |                 |               |                       |         |
| 11 |                    |                    |                 |               |                       |         |
| 12 |                    |                    |                 |               |                       |         |
| 13 |                    |                    |                 |               |                       |         |
| 14 |                    |                    |                 |               |                       |         |
| 15 |                    |                    |                 |               |                       |         |
| 16 |                    |                    |                 |               |                       |         |
| 17 |                    |                    |                 |               |                       |         |
| 18 |                    |                    |                 |               |                       |         |
| 19 |                    |                    |                 |               |                       |         |
| 20 |                    |                    |                 |               |                       |         |

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## Fun Facts

• **"Vinegar Test"** - Did you know one of the first batteries was actually a stack of metal discs separated by cotton that was soaked in salt water? The coin experiment outlined in this kit is very similar. Although you used vinegar (it's more acidic instead of alkaline), the principle is exactly the same!

• **Gaston Planté** invented the first lead-acid battery in 1859, and Thomas Edison invented the first alkaline cell in 1906, less than 50 years after Edison came up with the light bulb. So, you can see how important batteries are to our modern life without batteries? No flashlights, no CD or MP3 players, no handheld games, or digital watches! But that's only the tip of the iceberg, there would be no hearing aids or digital thermometers, no remote toys, no cell phones, most calculators wouldn't work, and there would be a hand crank on your parent's car! What other items can you think of that require batteries?

• **How are batteries recharged?** Recharging a battery simply requires that you reverse the flow of electrons using an external energy source, such as electricity or solar panels. When the process is complete, the positive and negative elements of the battery are restored to their original state and can be used again. The only downside to recharging is that it takes time, and you can't lose its charge a little faster each time it is recharged. Scientists are looking for new types of batteries that don't harm the environment and that can be replenished without using electricity.

• **Why are store-bought batteries hazardous to the environment?** Stop and think about it. Do you have any idea? Well if you guessed that they are pollutants, you're absolutely correct! The chemicals used in batteries eventually come into the water by the casing and leak into the soil, eventually making its way into our water sources. Some of these chemicals, such as mercury, were considered so dangerous to the environment that they have been outlawed in certain countries! One of the most popular components in today's batteries is lead. Because of well-cell lead-acid batteries are manufactured each year for use in automobiles, motorcycles and boats! That's a lot of batteries, and a lot of pollutants! So until there is a better, environmentally friendly battery market, make sure you recycle and tell your friends to recycle too! Most city's have a drop-off program for old batteries. Call your local recycling center or call the city offices to get the information you need. Remember to think GREEN when you recycle!

## SETTING

Setting the  
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### K. FREAKY FORK: MAKE A FORK BATTERY

**YOU'LL NEED**

From the kit: 2 zinc plates, LCD clock, adhesive tape and connection wire. From home: 2 forks, 1 lemon - halved.

- Connect one end of the red wire to the fork. Use a **cloth**, or adhesive tape to secure the connection.
- Connect the black wire to the zinc plate.
- Now get another fork to the zinc plate, connect them with a wire to make a "connection pair".
- To activate the clock, insert all metals into the lemon as shown in the diagram.

**How does it work?**

The fork acts like the positive electrode of the battery, like the copper plates in previous experiments. Most tableware utensils are plated with a metal which is less reactive than zinc. When both the utensils and zinc plates are inserted in the lemon, a reaction takes place. Electrons move from the zinc plates to the fork forming a current.

**✱ ADDITIONAL EXPERIMENTS**

You can do more experiments by combining those provided in the kit with materials from home. Here are some of the materials you could try:

**Electrolyte:** Soda drink, salt water, fruit juice, different fruit etc. **Positive Electrode:** any kind of copper, copper plated metal and alloy, copper screw/nuts, copper key, copper foil, different kinds of brownish coins, copper wire, spoon.

**Negative Electrode:** iron, aluminum, any kind of zinc plated metal, common screw/nuts/washer/nail, iron wire. Mix and match the different metals, the electrolytes and display devices. Record each of your findings on the record sheet and compare the results. It's fun to analyze your results and develop hypothesis for additional experiments.

### K. EXPERIMENT RECORD SHEET

1-6 are experiments from section D-3.

|    | Positive Electrode | Negative Electrode | Electrolyte     | Display Media | Number of connections | Comment |
|----|--------------------|--------------------|-----------------|---------------|-----------------------|---------|
| 1  | Copper Plate       | Zinc Plate         | Potato          | LCD Clock     | 2                     |         |
| 2  | Copper Plate       | Zinc Plate         | Mud             | Sound chip    | 2                     |         |
| 3  | Copper Plate       | Zinc Plate         | Water (Vinegar) | LED Lamp      | 2                     |         |
| 4  | Copper Plate       | Paper Clip         | Soda drink      | Sound Chip    | 2                     |         |
| 5  | Coin               | Aluminum Foil      | Vinegar         | Sound Chip    | 2                     |         |
| 6  | Fork               | Zinc Plate         | Lemon           | LCD Clock     | 2                     |         |
| 7  |                    |                    |                 |               |                       |         |
| 8  |                    |                    |                 |               |                       |         |
| 9  |                    |                    |                 |               |                       |         |
| 10 |                    |                    |                 |               |                       |         |
| 11 |                    |                    |                 |               |                       |         |
| 12 |                    |                    |                 |               |                       |         |
| 13 |                    |                    |                 |               |                       |         |
| 14 |                    |                    |                 |               |                       |         |
| 15 |                    |                    |                 |               |                       |         |
| 16 |                    |                    |                 |               |                       |         |
| 17 |                    |                    |                 |               |                       |         |
| 18 |                    |                    |                 |               |                       |         |
| 19 |                    |                    |                 |               |                       |         |
| 20 |                    |                    |                 |               |                       |         |

**Fun Facts**

*"Votac Pile": Did you know that one of the first batteries was actually a stack of metal discs separated by cotton that was soaked in salt water? The experiment involved this kit in very similar. Although you used vinegar (the more acidic) instead of saltwater, the principle is exactly the same!*

Gaston Planté invented the first lead-acid battery in 1859, and Thomas Edison invented the first alkaline cell in 1914, less than 100 years ago! Can you imagine life without batteries? No flashlights, no CD or MP3 players, handheld games, or digital watches! But that's only the tip of the iceberg. There would be no hearing aids or digital thermometers, no remote toys, no cell phones, most calculators wouldn't work, and there would be a hard crack on your parent's car! What other items can you think of that require batteries?

*How are batteries recharged?* Recharging a battery simply requires that you reverse the flow of electrons using a separate energy source such as electricity or solar panels. When the process is complete, the positive and negative elements of the battery are restored to their original state and can be used again. The problem with recharging, however, is that the battery starts to lose its charge a little faster each time it is recharged. Scientists are looking for new types of batteries that don't harm the environment and that can be replenished without using electricity.

*Why are store-bought batteries hazardous to the environment?* Stop and think about it. Do you have any ideas? Well if you guessed that they are pollutants, you're absolutely correct! The chemicals used in batteries eventually corrode through the battery casing and leak into the soil, eventually making its way into our water sources. Some of these chemicals, such as mercury, were considered so dangerous to the environment that they have been outlawed in certain countries! One of the most popular components in today's batteries is lead. Billions of wet-cell lead-acid batteries are manufactured each year for use in automobiles, motorcycles and boats! That's a lot of batteries, and lots of pollutants! So until there is a better, environmentally friendly battery source, make sure you recycle and tell your friends to recycle too! Most cities have drop-off centers for batteries. If you don't know where to go, have a parent call the city offices to get the information you need. Remember to try GREEN SCIENCE!

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## M. SETTING THE WATCH

1. Setting the watch

Press A twice and the display will show the set month mode, then Press B to adjust the right month.

After the month is set, Press A to confirm, and the set day mode will be displayed, Press B to adjust to the right day.

After the day is set, Press A to confirm and the set hour mode will be displayed, Press B to adjust to the right hour.

After the hour is set, Press A to confirm and the set minute mode will be displayed, Press B to adjust to the right minute.

After the minute is set, Press A to confirm and the normal time will be displayed. You should see the two dots flashing between the hour and minute display.

The LCD watch may temporary lose its function at electrostatic discharge environment, but it resumes its normal function by resetting the device.



2. Viewing

By default, the clock display shows the current time.

To view the Date: Press B once. The clock display will resume showing the current time after 2 second.

To view the Seconds: Press B for twice. To resume to normal time, Press B again.

To view the Time and Date alternately, Press A once. To resume to normal time display, Press A 5 times to ship all set clock modes.

## N. TROUBLE SHOOTING

If your experiment produces a weak sound or light signal, try one of the following:

1. Give it time, the signal is sometimes weak at the beginning of the experiment, but gets stronger after a short while.
2. You can try adding another connection to strengthen the current. For example in experiment 1, instead of using two potatoes, you could add another one. However, you will need to make another connection pair with an extra pair of zinc and copper plates. The whole circuit has to be connected in correct sequence. The display devices provided are of different voltage. The sound chip has the lowest voltage, whereas the clock is in the middle and the LED lamp is the highest. You will find the sound chip can easily be activated in most conditions. (You could even try using one connection for the sound chip by using a half lemon). However, the LED lamp, depending on the acidity of the solution and the metal used, may require as many as 3 or 4 connections to make it light up brightly.

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**N. TROUBLE SHOOTING (CONTINUED)**

3. Examine the metal plates for rust (oxidization). Use sand paper to remove any rust.
4. Try putting the metal plates closer together (but not touching each other). Conduction will be better if the distance between the plates is shorter.
5. If there is no reaction whatsoever, check all the connection points. Make sure that the connection points are correctly and firmly placed. Also, check if the polarities are correct - negative (black wires) and positive (red wires) terminals are connected properly.
6. Check if the metal plates/wires are touching each other, this causes short circuits.



## EXPERIMENT #5

### Parts Required:

F. Sound Chip

### Tools Required:

- Vinegar
- Clothespin
- Aluminum Foil
- 2 Cotton Pads
- 2 Copper or Alloyed Coins

## EXPERIMENT PROCEDURE

1

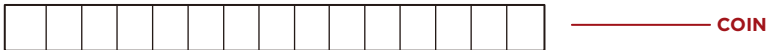
Cut the aluminum and cotton to the same size as the coins.



ALUMINUM



COTTON



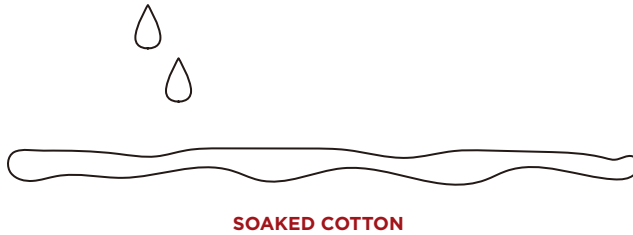
COIN

## EXPERIMENT PROCEDURE

2

Soak the cotton pads with vinegar and set them aside.

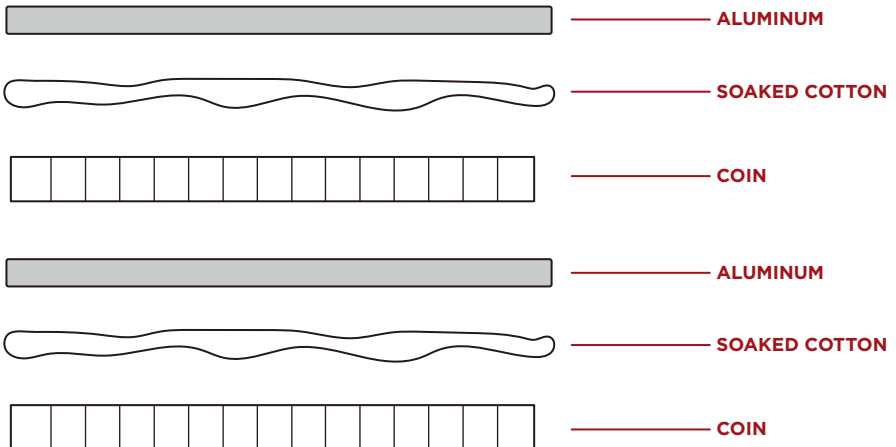
**NOTE:** Soak the pads to the point they are moist but not dripping.



3

Stack the three materials in the following order:

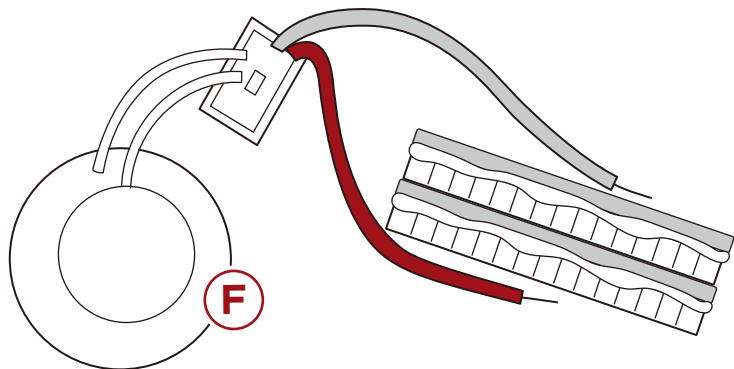
Aluminum > soaked cotton > coin > aluminum > soaked cotton > coin.



## EXPERIMENT PROCEDURE

4

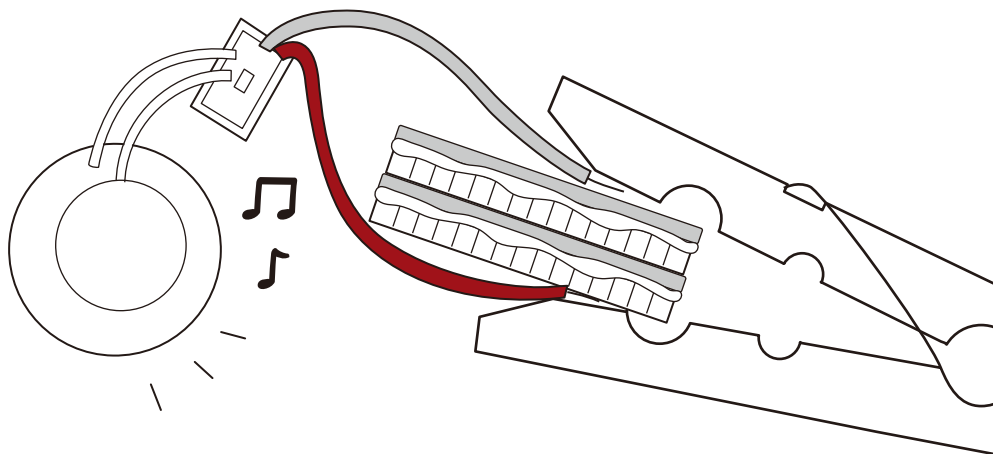
Place the red wire from the **part F sound chip** on the coin side of the stacked materials. Repeat with the black wire on the aluminum side of the stacked materials.



5

Clip the clothes peg to the wires on the top and bottom to hold them in place. Note that the sound will dampen as the vinegar evaporates.

**NOTE:** After the experiment is complete, clean and thoroughly dry the metal plates to prevent rust or oxidation.





## EXPERIMENT #6

### Parts Required:

- C.** Connection Wires
- E.** LCD Clock
- I.** Zinc Plates (x2)
- G.** Transparent Adhesive Strips

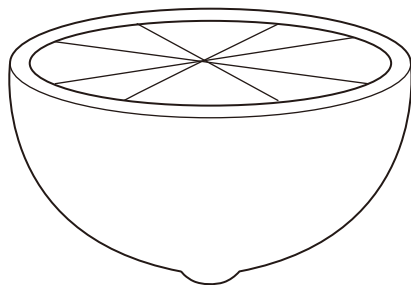
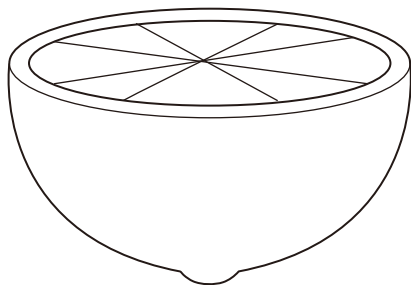
### Tools Required:

- Lemon (Cut in half)
- 2 Metal Forks

## EXPERIMENT PROCEDURE

1

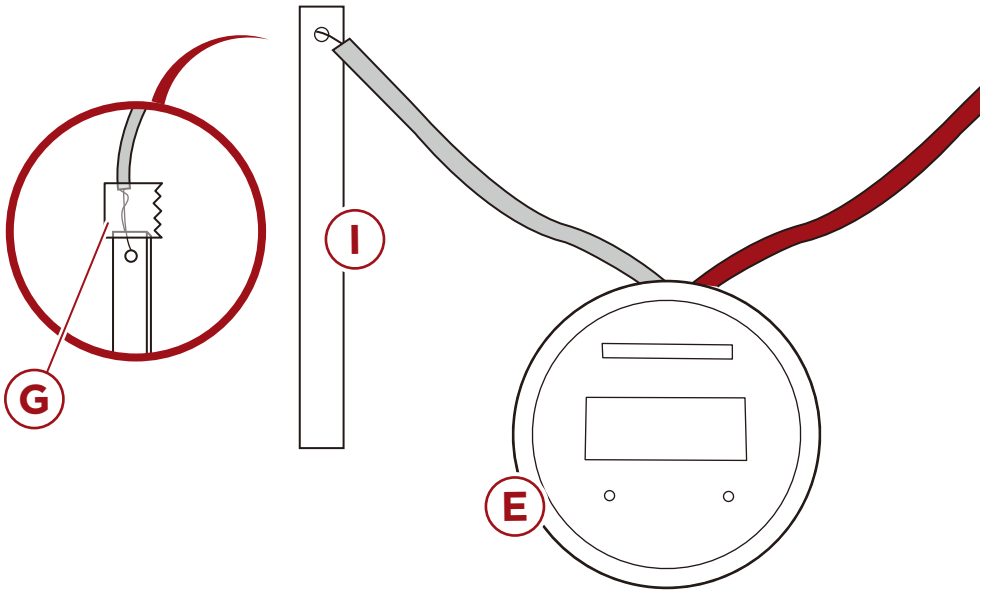
Cut the lemon in two equal halves.



## EXPERIMENT PROCEDURE

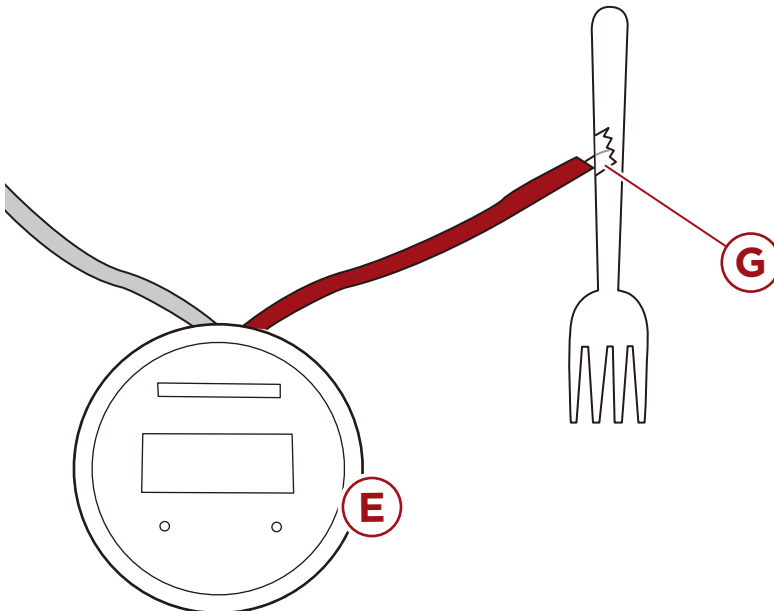
2

Connect the black (negative) wire from the **part E LCD clock** to one of the **part I zinc plates**; thread the exposed wire through clip, then twist the wire back on itself and secure with a **part G adhesive strip** if desired.



3

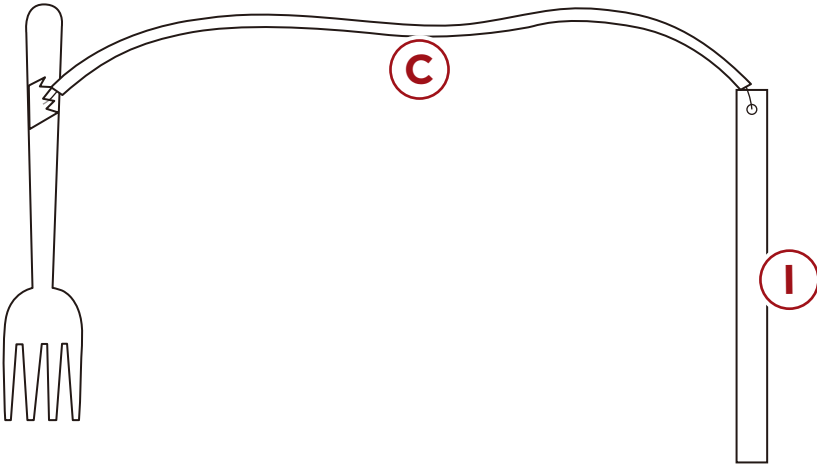
Connect red (positive) wire from the **part E LCD clock** to one of the fork; thread twist the wire back on itself and secure with a **part G adhesive strip** if desired.



## EXPERIMENT PROCEDURE

4

Use the previously described method to connect one **part I zinc plate** and a second fork to either end of one **part C connection wire**.

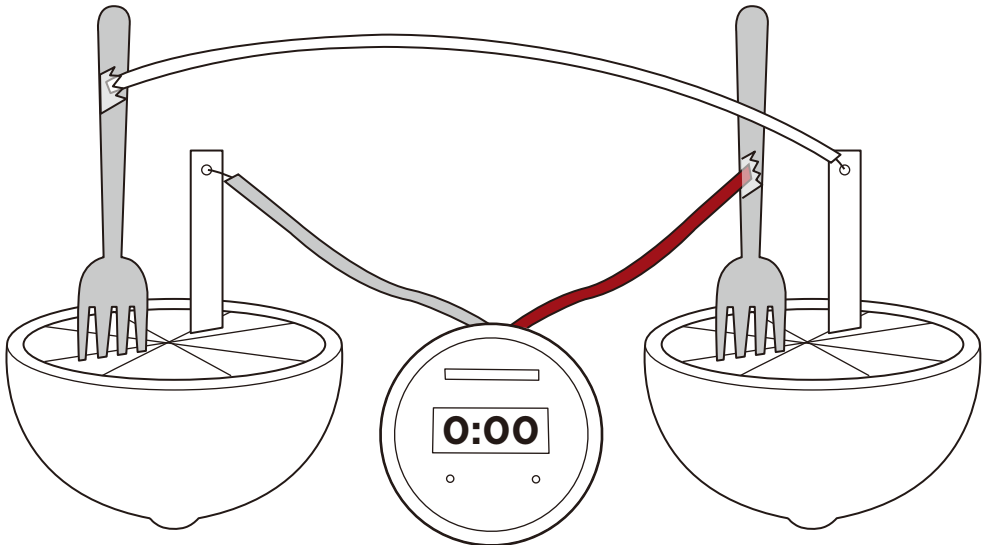


5

Insert the wire and plate assemblies into the prepared lemon halves.

Observe as the two metals, stimulated by the electrolytes and liquid within the fruit/vegetable, act as positive and negative electrodes. The wires act as an exchange, creating an electrical current to feed power to the clock.

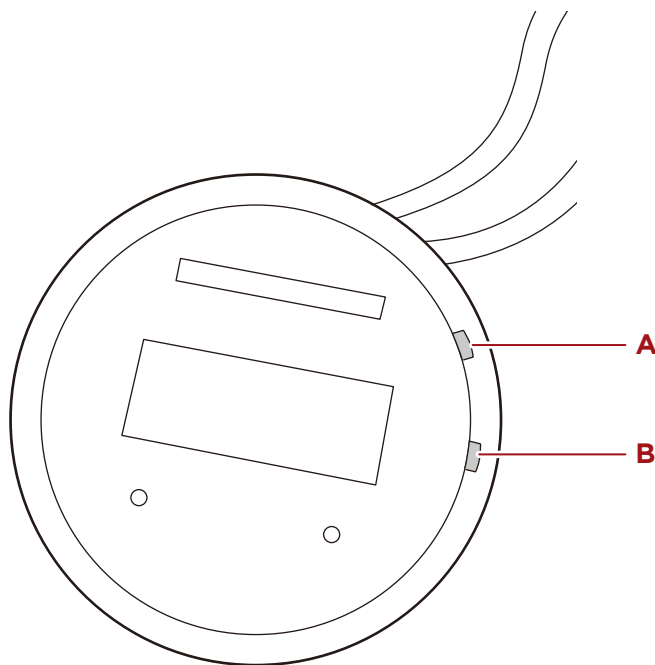
**NOTE:** After the experiment is complete, clean and thoroughly dry the metal plates to prevent rust or oxidation.



## SETTING THE WATCH

1. Press A twice and the display the "Month" mode. Press B to adjust to the correct month, press A again to confirm the month.
2. After the month is confirmed, the set "Day" mode will display. Press B to adjust to the correct day, press A again to confirm.
3. After the day is confirmed, the set "Hour" mode will display. Press B to adjust to the correct hour, press A again to confirm.
4. After the hour is confirmed, the set "Minute" mode will display. Press B to adjust to the correct minute, press A again to confirm.

After the minute is confirmed, standard time will display, indicated by flashing colon between hour and minute.



## VIEWING

**NOTE:** Viewing is only possible after the watch has been set.

- **By default, the clock will display the current time.**
- To view "Date": Press B once. The clock display will resume showing the current time after 2 seconds.
- To view "Second": Press B twice. To resume normal time, press B again.
- To view "Time" & "Date" Separately: Press A once. To resume to normal time display, press A 5 times to skip all set clock modes.

## TROUBLESHOOTING

If your experiment produces a weak sound or light signal, perform one of the following:

1. Allow at least 5 minutes for the reaction to take place.
2. Add an additional connection to increase the reactivity of the experiment.
3. Examine the metal plates for oxidation (rust). Use sandpaper to remove any visible rust.
4. Place the metal plates closer together (do not allow them to touch). Conductivity will increase at closer proximity.

**If there is no reaction at all, perform one of the following:**

1. Check all connection points. Make sure all connection points are both firmly placed and check that all polarities are correctly aligned.

Make sure the metal plates/wires are not touching each other, this may cause a short circuit.

## EXPERIMENT RECORD SHEET

|    | Positive Electrode | Negative Electrode | Electrotype | Display Media | Number of Connectors | Comment |
|----|--------------------|--------------------|-------------|---------------|----------------------|---------|
| 1  |                    |                    |             |               |                      |         |
| 2  |                    |                    |             |               |                      |         |
| 3  |                    |                    |             |               |                      |         |
| 4  |                    |                    |             |               |                      |         |
| 5  |                    |                    |             |               |                      |         |
| 6  |                    |                    |             |               |                      |         |
| 7  |                    |                    |             |               |                      |         |
| 8  |                    |                    |             |               |                      |         |
| 9  |                    |                    |             |               |                      |         |
| 10 |                    |                    |             |               |                      |         |
| 11 |                    |                    |             |               |                      |         |
| 12 |                    |                    |             |               |                      |         |
| 13 |                    |                    |             |               |                      |         |
| 14 |                    |                    |             |               |                      |         |
| 15 |                    |                    |             |               |                      |         |
| 16 |                    |                    |             |               |                      |         |
| 17 |                    |                    |             |               |                      |         |
| 18 |                    |                    |             |               |                      |         |
| 19 |                    |                    |             |               |                      |         |
| 20 |                    |                    |             |               |                      |         |



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Returns & Refunds

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All items can be returned for any reason within 60 days of the receipt and will receive a full refund as long as the item is returned in its original product packaging and all accessories from its original shipment are included. All returned items will receive a full refund back to the original payment method. All returned items will not be charged a re-stocking fee.

All returned items require an RA (Return Authorization) number, which can only be provided by a Best Choice Products Customer Service Representative when the return request is submitted. Items received without an RA may not be accepted or may increase your return processing time. Once an item has been received by Best Choice Products, refunds or replacements will be processed within 5 business days.

All returns must be shipped back to the Best Choice Products Return Center at the customer's expense. If the reason for return is a result of an error by Best Choice Products then Best Choice Products will provide a pre-paid shipping label via email. Boxes for return shipping will not be provided by Best Choice Products, and is the customer's responsibility to either use the original shipping boxes or purchase new boxes.

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