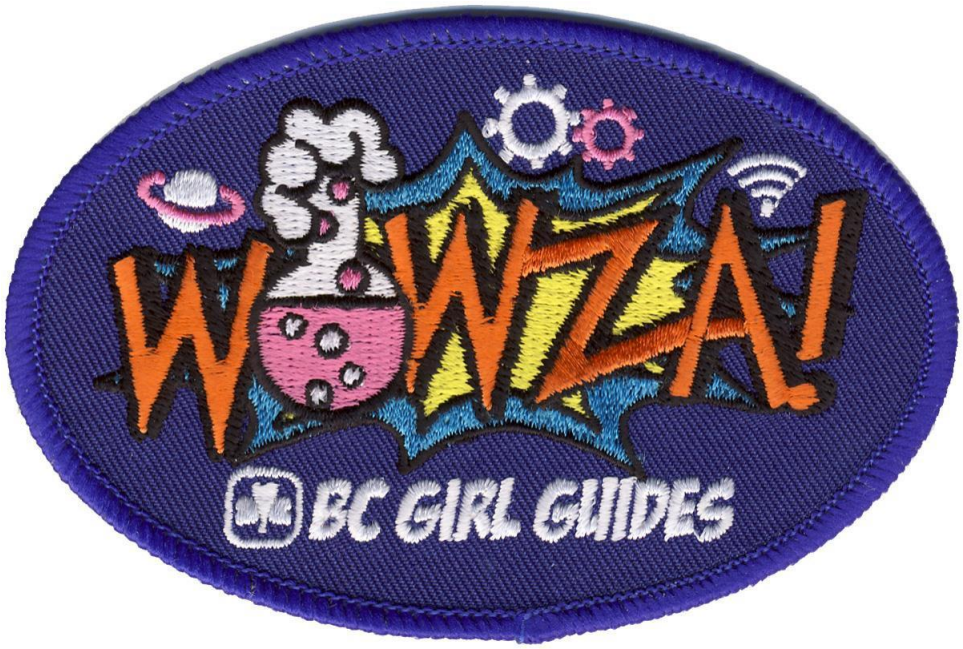
WOWZA TOOLKIT

SPARK/BROWNIE EVENTRESOURCE
FROM THE BC PROGRAM COMMITTEE



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FOREWORD

What could be more wonderful than having a room full of Sparks and Brownies totally excited about doing Science? Absolutely nothing! With this toolkit you can plan an exciting event that ignites the interests of both Sparks and Brownies for the world of science.

Inside you will find activities, games, and station ideas to plan a WOWZA event for your district or area. In some areas there may be too much distance to travel to have this as an area event, or there may be too many girls for one location. If this is the case, you could get together with a few districts to hold this event, or do it within your district.

The suggestions in the toolkit can always be modified or changed to meet the needs of the girls or the location. We are sure that as you begin to plan you will have many more fantastic ideas to add to the event beyond the ideas in this document, so make sure to keep track of your ideas so other people can use them in the future.

If you have any questions or comments, send them along to the BC Program Committee at bc-program@girlguides.ca

We look forward to having you bring science to your Sparks and Brownies in an event!

Please note that this is not a challenge. This crest is intended to be given out only at WOWZA science events, where multiple units from within a district or area join together for a larger event. If you are doing these activities just within your unit, please do not distribute the WOWZA crest, but look to complete your science (STEM) related program badges and challenges.

When you have completed the activities, complete the BC Challenge Crest, Pin, and Camp To Go Order Form which can also be found on the BC Girl Guides website (click on Girl Engagement > Program > Program Challenges). Before filling out the Order form, please read the BC Challenge Crest, Pin, and Camp To Go Information document in order to understand the pricing and payment for the various crests, pins and merchandise.

BC Program Committee

THE WHO, WHAT, WHERE, WHEN, WHY AND HOW OF A WOWZA SCIENCE EVENT

Who:

An event for Sparks and Brownies in your district or area.

What:

Science, science, science! The girls will have a chance to explore the areas of science you decide to make available and such great things as the Vancouver Aquarium van or local attractions can be made part of this opportunity for girls to do hands-on science.

When:

This event is best held on a weekend in a four to six-hour time frame. If you have less time you can make it a shorter event with less choices or shorter time frames for stations. Count on having a snack and deciding whether girls will bring a packed lunch or you will supply it as part of the program.

Where:

You need a large facility that can accommodate all of the Sparks and Brownies in your district or area that wish to come. Some considerations may be sinks for clean-up, open spaces for flying, racing, twirling things, power for visiting science providers (such as the Vancouver Aquarium) and enough area to hold 3 to 5 stations. Look at all halls, gyms and churches in your area and see what location will best meet your needs.

Why:

Often young girls do not get enough exposure to science and this event can afford an opportunity to explore in the safety of familiar friends and leaders and offer a glimpse into the many facets of the world of science.

How:

Send out an SG.1 and SG.2 to all Spark and Brownie units in the district or area. Give them at least a month to get their forms returned. Guiders attend with their unit to meet ratio. The organizing committee runs the stations, takes care of any science providers brought in, prepares the food and oversees all activities.

SAMPLE WOWZA SCIENCE EVENT SCHEDULE

Here is an example schedule for a 6-hour event you can use to help plan your event.

9:00 AM: Girls start to arrive. Have a gathering activity (see "A Bag Full of Paper Science") for the girls to work on while waiting for everyone to arrive. Make sure girls and leaders get nametags and are put into groups dependent upon the number of girls coming and the number of stations — try to keep girls in their units, though large units could be split into two groups as the girls will still have enough friends with them. Get one Guider from each unit to check in and receive a package that has the schedule of the day and what stations the unit will be going to during the round robin. When breaking each unit into groups, you can give each group a science name.

9:30 AM: Opening (bathrooms, fire exits, first aiders, what to do if there is an emergency).

9:40 AM to 3:00 PM: Round Robin, four stations that are an hour each - 9:40 to 10:40, 10:55 to 11:55, 12:45 to 1:45 and 2 PM to 3 PM. Give 15 minutes between the stations in the morning and afternoon to accommodate girls moving to the new station and being given an on-the-go snack that can be eaten at the station. Lunch would be 45 minutes long and starts at 11:55 AM. One of your stations should be the food station.

Come up with creative names for the stations, not just "station 1". One idea is to use the type of science to come up with the name stations (i.e. Mrs. Einstein's Chemistry, Blast off to Outer Space, Creepy Crawlies (for a bug and beastie station), Planes, Trains and Boats, etc.). Have groups that are split evenly between the stations.

In the toolkit you will find many different ideas to decide upon what science stations you wish to offer. At each station you will explore one type of science but may do as many as 4 or 5 quick activities or perhaps 2 or 3 longer ones. Stations can be made shorter than one hour and you can have more of them but this will be dependent upon any science provider brought in — for example, the Vancouver Aquarium van likes to have the girls for an hour.

3:00 PM: Gather girls all together, hand out crests.

3:15 PM: Closing and girls go home.

3:30 PM: Time to clean up.

STATION IDEAS

Listed below are a number of stations that could be part of your WOWZA event — pick and choose what will work for you, whether you stick to a theme or explore a variety (some are more generalized stations, some get down to more specifics or subsets of a branch of science):

Sound Science
Chemistry
Earth Science
Space (Astronomy)
Biology
Forensic Science (CSI)
Physics
Computer Science
Water Wise
Taste, Touch and Smell
Light Science
Forest and Field Life
Ecology
Geology
Birds, Bees and Bugs
Plants
Engineering
Food Science
Electricity
Robots
Force and Motion
Weather
Ocean Science
Animals in the Wild
The Human Body
Mathematic Fun
Paleontology (Dinosaurs)
Gravity and Magnetism

Science Outreach Programs That May Come to You

Vancouver Aquarium AquaVan: https://www.vanaqua.org/learn/outreach/aquavan
Science Made Fun Workshops: http://sciencemadefunbc.net/
Scientists and Innovators in the Schools: https://www.scienceworld.ca/sis
Ms. Infinity: http://www.scwist.ca/programs-and-events/msinfinity/
Astronomy Clubs: https://www.skynews.ca/resources/astronomy-clubs/#BritishColumbia
Wildlife/ Nature Clubs: https://www.naturekidsbc.ca/find-a-club/
Eco-center/ Ecology Society Personnel (local contacts)

Visiting a specific science related location becomes difficult given the timelines of an event, but could be done if the facility you are holding your event at is close to the attraction or the attraction itself can make accommodations for the other stations and girls.

If you have a facilitator come to you, it is extremely important that you make clear that:

- The girls are 5 to 8 years old, so activities must be relevant and fun to this age group.
- The activities must be **hands-on** for most of the session.

Your event theme can be as specific as you like, such as the Science of Eggs or the Science of Summer, as long as your team is able to come up with sufficient hands-on activities for the time allotted.

Whichever sciences you choose, it is important to remember that these be **hands-on and experimental activities**; colouring sheets, mazes, and word searches can accompany the learning, but should not be the focus of any station.

Note: The term “experiment” is used in the widest sense, that of “something that is done as a test: something that you do to see how well or how badly it works; a scientific test in which you perform a series of actions and carefully observe their effects in order to learn about something” (Merriam-Webster online dictionary).

SAMPLE STATION: THE SCIENCE OF SOUND

This station is an example of what could be done with the girls — this station was done at a provincial WOWZA event with 100 girls split up into four groups, with Guiders helping out as instructions were given.

Chicken Sounds

Create a sound similar to a chicken clucking.

Supplies

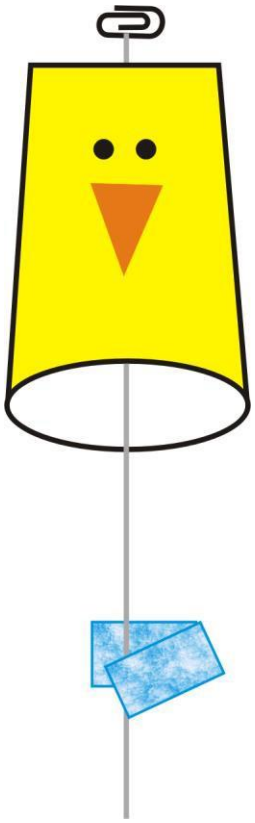
- ❑ 40 cm string (1 per girl)
- ❑ plastic drinking cups (1 per girl) – yellow cups add to the chicken theme
- ❑ a nail
- ❑ sponges
- ❑ scissors
- ❑ paperclips (1 per girl)
- ❑ water (and small bowls)
- ❑ permanent markers to decorate (if wished)

Before the event

1. Cut the 40 cm (18 in) lengths of string.
2. Punch a hole in the centre of the bottom of each cup with the nail.
3. Cut sponges into small pieces (about 5 cm x 10 cm each).
4. Dependent upon the help you have, you may choose to package all materials for each girl in a resealable bag or each group's materials together. Each girl needs: one piece of string, one cup, one piece of sponge, one paperclip.

At the event

1. Tie one end of the string to the centre of the paperclip.
2. Thread the other end of the string through the hole in the cup (from the outside towards the inside of the cup) and pull it through until the paperclip is against the bottom of the cup.
3. Tie the free end of the string around the small sponge.
4. Dampen the sponge with water. Water can be in small bowls for groups of girls.
5. Hold the cup upside down so that the string hangs down.
6. Squeeze the sponge around the string near the cup in short jerks. You should be able to hear a chicken clucking.
7. Optional: decorate the cup to look like a chicken by adding a chicken face and beak.



The vibrations created by the sponge jerking along the string are made audible by the cup which spreads and amplifies the sound. This is the same way pianos and music boxes are able to generate sound.

Balloon Conductor

Supplies

- ❑ balloon for each girl
- ❑ pencil for each team

Directions

1. Blow up a balloon.
2. Have the girls hold the balloon close to their ear while they tap lightly on the other side.

Even though the girls will only tap lightly on the balloon, their ears will hear the noise loudly. When the balloon is blown up, the air molecules inside the balloon were forced closer to each other. Since the air molecules inside the balloon are close together, they become a better conductor of sound waves.

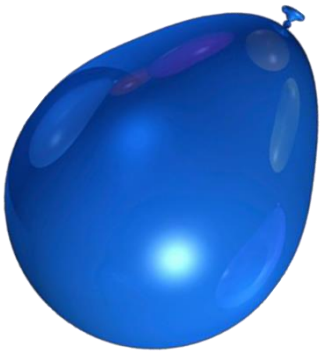
Vuvuzela Balloon

Supplies

- ❑ balloons
- ❑ hex nuts

Directions

1. Squeeze the hex nut through the mouth of the balloon. Adults may have to help, though the older girls will manage on their own. Make sure that the hex nut goes all the way into the balloon so that there is no danger of it being sucked out while blowing up the balloon.
2. Have the girls blow up their balloon, but tell them to be careful not to overinflate it, as it could easily burst.
3. Tie off the balloon.
4. Have the girls grip the balloon at the stem end as they would a bowling ball. The neck of the balloon will be in their palm and their fingers and thumb will extend down the sides of the balloon. This is easy to demonstrate to the girls.



5. While holding the balloon, palm down, swirl it in a circular motion. The hex nut may bounce around at first, but it will soon begin to roll around the inside of the balloon. The girls will begin to hear a humming, screaming sound.
6. Once the hex nut begins to spin, have the girls use their other hand to hold down the balloon. The hex nut may continue to spin for 10 seconds or more.

A vuvuzela is an instrument used in South Africa, most often used at soccer matches, and produces a long, loud monotone sound.

Guider resource: see this activity online at https://youtu.be/-dbuOh85oPA

Sound Sandwich

Supplies (per girl)

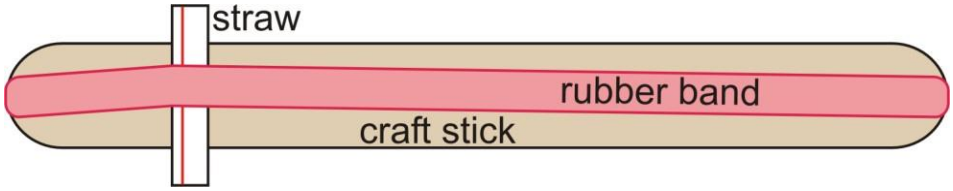
- ❑ 2 jumbo craft sticks
- ❑ 2 pieces of a straw
- ❑ wide rubber band (#64)
- ❑ 2 small, narrow rubber bands
- ❑ scissors

Before the event

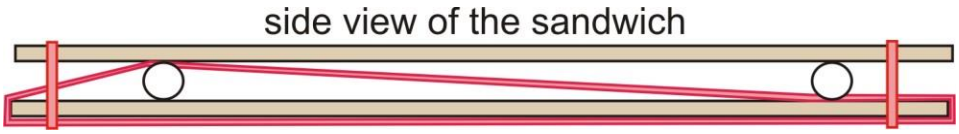
1. Cut two small pieces of straw, each about 2.5 cm to 4 cm in length — you will need these two pieces for each girl.
2. Dependent upon the help you have, you may choose to package all materials for each girl in a resealable bag or each group's materials together.

At the event

1. Place a wide rubber band lengthwise over one of the craft sticks.
2. Put one of the small straw pieces underneath the wide rubber band, about a third of the way down from the end of the stick. (Demonstrate where and how.)



3. Take the other craft stick and place it on top of the first one.
4. Wrap one of the small rubber bands around the end of the stick a few times, about 1 cm from the top, on the same side where you placed the piece of straw. Make sure the rubber band pinches the two craft sticks tightly together. Younger girls will require help with wrapping tightly enough.
5. Put a second small piece of straw in between the two craft sticks, on the opposite end, approximately a third of the way down from the top of the stick. This time, don't let them put the straw underneath the wide rubber band; have them place it on top of the rubber band, in the middle of the two sticks.
6. Wrap a small rubber band around the end of the craft stick, about 1 cm from the end. When they're done, the two ends should be pinched and there should be a small space between the two craft sticks created by the two pieces of the straws.



7. Have them put their mouth in the middle and blow! Tell them to remember to blow through the sticks, not through the straws.
8. Once they are successful, have them move the straws closer together. Does the sound change?

When they blow into the Sound Sandwich, they make the large band vibrate, and that vibration produces the sound. Long, larger objects vibrate slowly and produce a low-pitched sound, while shorter, less massive objects vibrate quickly and produce a high-pitched sound. When they moved the straws closer together, they shortened the part of the rubber bands that can vibrate, so the pitch is higher than the pitch of the original sound.

Water Whistle

Supplies

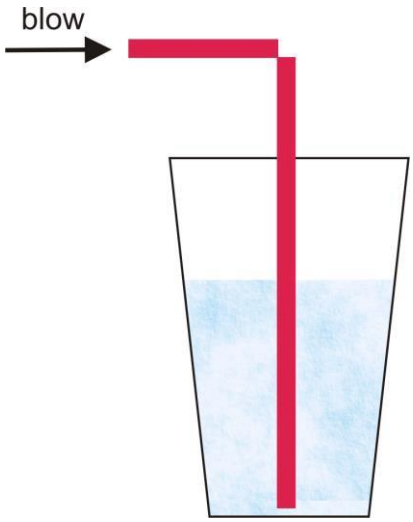
- ❑ straws
- ❑ scissors
- ❑ glasses of water

Before the event

Using scissors, cut partially through each straw about 1/3 of the way down the straw. Don't cut all the way through the straw, just leave a small piece uncut to keep the two straw sections attached and together.

At the event

1. At the cut, bend the straw into a right angle. Be careful not to break the straw segments free of each other.
2. Fill a cup or glass ¾ full with water. Slide the longer section of straw into the water.
3. Keeping the straw bent at a 90 degree angle, have the girls place their lips on the shorter end of the straw and blow with a light, constant breath. Do they hear anything? If they have trouble producing a whistling sound, have them try pinching the top of the long end of the straw.
4. Once they've got their whistle making a constant, steady sound, have them try raising or lowering the straw within the water. What happens to the pitch of the whistle when they do this?



Guider resource: see this activity online at https://youtu.be/oP2O9O7xOio

Sound Waves on an Eardrum

Supplies

- ❑ containers with large openings, such as bowls or pots
- ❑ cling plastic wrap
- ❑ rice
- ❑ metal cookie sheet or trays
- ❑ spoons

We can have the girls test out a model of the eardrum (also called the "tympanic membrane") and see how sound travels through the air.

Before the event

Stretch a piece of plastic wrap over a large bowl or pot (any container with a wide opening will work). Make sure the plastic wrap is stretched tightly over the container. This is best done by adults to get the plastic as tight as possible.

At the event

1. Tell the girls that the plastic on the bowl represents an eardrum.
2. Place about 20-30 grains of uncooked rice on the top of the plastic wrap.
3. Use the cookie tray as a noise maker by holding the cookie sheet close to the plastic wrap and hitting the cookie sheet with the spoon to create a "big bang" noise and watch the rice grains jump.

The "big bang" produces sound waves (changes in air pressure) that cause the plastic sheet to vibrate, which causes the rice grains to move. Sound waves vibrate the eardrum in much the same way.

Echolocation Demonstration

Teach the girls how bats, dolphins and other animals use echolocation to locate objects.

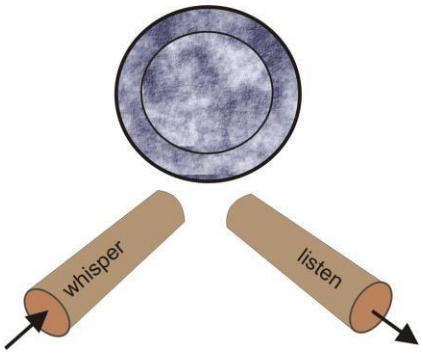
Bats and other animals emit high-pitched sounds that bounce off objects and return to them, helping them gather information, like the size and location of the object.

Supplies

- ❑ long cardboard tubes
- ❑ tape
- ❑ aluminum pie plates

Directions

1. On a table or large desk, tape down two long cardboard tubes at about a 45-degree angle apart, but not touching.
2. About 30 cm away, tape an aluminum pie plate on its side, facing the open ends of the tubes.
3. Have one girl whisper into one of the tubes as the other girl listens at the end of the other tube. The sound will bounce off the pie plate and travel back through the other tube so that the listening girl can hear it.



Echolocation Game

Play a game about echolocation to help the girls understand how it works.

Supplies

- ❑ blindfolds
- ❑ squeaky toy or child's whistle
- ❑ film canisters (or similar containers) with a few beads in each

Directions

1. Have one girl be the bat and four girls as insects.
2. Blindfold the "bat" and have her stand with the other girls forming a large circle around her.
3. The girl who is blindfolded then blows her whistle or squeaks her toy.
4. The four "insects" must shake their film canister rattle back at the girl.
5. The "bat" repeats the squeak and the "insects" rattle back until the bat locates one of the insects.

Tick-Tock Trick / Make a Stethoscope

Supplies

- ❑ 2 – 2.5 m plastic or rubber tubing
- ❑ 2 plastic funnels
- ❑ wind-up watch (one that ticks!)

Directions

1. Push the funnels onto both ends of the tubing.
2. Place the watch about 2-metres away.
3. Have one girl hold the funnel over the watch and put the other funnel to another girl's ear. She should be able to hear the watch ticking quite clearly.
4. Now try placing the funnel against one girl's chest and listening in the other funnel. Can she hear a heartbeat?

SAMPLE STATION: ENGINEERING

Find additional Engineering activities in the STEM Challenge: Engineering.

What does an Engineer do?

Introduce the engineering station with the following information:

Engineers are people who have gone to university and studied to learn about engineering. After elementary school you go to high school, and when you finish high school you can go to university.

An engineer learns a lot about math and science in university, and she can use it to design all sorts of things that we use in our daily life, like computers and video games, cars, boats and airplanes, all types of buildings, and many other things.

The work of engineers is all around you. When you drive on the road, phone your grandparents, or fly in an airplane when going on vacation, then you have experienced the work of engineers! Engineers make many things possible by using math and science.

There are lots of different types of engineers. Some types are:

Electronic Engineers: These engineers design computers, video games, remote control toys, televisions and lots of other electronic things.

Electrical Engineers: One thing that electrical engineers do is to make sure that we all have electricity coming safely to our homes.

Mechanical Engineers: Things that move are designed by mechanical engineers. Some things that they would design are cars and robots.

Structural/Civil Engineers: These are the building engineers. Any type of structure, such as a bridge or an office building, is designed by them.

Biomedical Engineers: These type of engineering design hospital equipment to help diagnose and heal people. One thing they would design are x-ray machines.

Chemical Engineers: You probably wouldn't expect that food is something that chemical engineers work with. They help design many types of products, like candy or fuels or make-up, and so much more!

Environmental Engineers: These engineers help us to keep our planet clean. One thing they do is look for ways to control pollution.

There are many other types of engineers, too.

Build a Sail Car

Source: STEM Challenge: Engineering, BC Program Committee

Supplies (per girl)

- ❑ 4 lifesavers
- ❑ 4 plastic drinking straws
- ❑ 3 sheets of paper
- ❑ 1 m of masking tape
- ❑ 2 paperclips
- ❑ scissors

Today, everyone is going to be an engineer. We begin as mechanical engineers.

Often, engineers are given limited supplies and are asked to make something. You have been hired by a "client" to make a vehicle to compete in a land sailing race.

Land sailing is when a vehicle with wheels is powered by the wind instead of by an engine. It works best in flat, windy areas.

You need to use the supplies given to build a sail car, then race it across the floor.

Directions

1. Use the listed materials to build a vehicle that you can propel with only your breath. You do not have to use all of the materials, but you cannot use anything extra.
2. Set your car on the floor. Use your breath to move it across the room. Does your design work? Can you think of any improvements?
3. Once you are happy with your design, challenge your friends to a sail car race.

String Telephone

Source: STEM Challenge: Technology, BC Program Committee

Supplies

- ❑ 2 paper cups
- ❑ a sharp pencil or needle or tack to poke holes with
- ❑ fine string or fishing line
- ❑ small paper clips

When you have finished building your sail car, you want to call your client on a telephone to tell them that it is ready. Telephones include many engineering principles. The type of engineer that would design a telephone is a telecommunications engineer.

Before there were cell phones or cordless phones, all phones were hooked up to wires to carry the sound of a person's voice. When we talk, our vocal cords make the air molecules vibrate. When the air molecules vibrate, the other molecules around them vibrate, which is how sound travels through air.

Try holding your hand on your throat while you talk and feel the vibrations. Inside our ears there are tiny hairs that transmit the information to our brain, and we interpret the vibrations as sound.

Directions

1. Poke a hole in the bottom of each cup.
2. Cut a piece of string about 20 metres long.
3. Thread one end of the string through one cup and tie it onto a paper clip so it won't pull through the hole. Repeat for the second cup.
4. As an extension, test out the designs of different phones. Use paper cups, Styrofoam cups, and plastic cups. Is there a difference in the sound waves created? Which material is better?

To use

You and a friend each hold onto a cup and move apart until the string is tight. Make sure that it doesn't touch anything. One person speaks into the cup while the other listens. Can you hear what's being said? Now the other person can try.

Explanation

Speaking into the cup creates sound waves, which change into vibrations at the bottom of the cup. Those vibrations travel along the string and into the bottom of the other cup where they are turned back into sound waves so your friend can hear what you are saying.

Landline phones have microphones that convert the sound waves into electric currents that are sent through the wires, and then converted back into sound waves by the earphone on the other end. Cell phones use radio waves to do the same thing. Radio waves are low energy and low frequency waves from the electromagnetic spectrum.

Marshmallow Structures

Source: STEM Challenge: Engineering, BC Program Committee

Supplies

- ❑ flat toothpicks
- ❑ mini marshmallows

When you called your client about the sail car design, they asked if your engineering company could build a tower, as well. Towers are something that a civil or structural engineer would design.

Structural engineers know all about shapes. They know about circles, squares, triangles and all other shapes. They also know what shapes are the strongest. Do you think a shape with more or less sides is strongest?

As we talked about with the sail car, engineers are often given only a few materials to build their design. In this case, you can use as much of the available materials as possible, but you have a limited amount of time. Your challenge is to build as tall a tower as possible in that amount of time without it falling over.

Directions

1. Set out boxes of toothpicks and mini-marshmallows.
2. Encourage girls to try and construct 3D shapes (structures) with these materials. Can they make a tall tower? Keep these materials to one side for sharing.

SAMPLE STATION: FORENSIC SCIENCE

Find additional Forensic Science activities in the CSI Challenge.

A famous detective/scientist a long time ago said that we can never be anywhere without leaving a little something of us behind or taking something of where we have been away with us. Locard was the head of the first crime lab ever built in France and this belief is known as Locard's Exchange Principle.

When we look for the clues of what was left behind, we are looking for what is known as trace evidence. The science of this is known as forensic science. You may know it as CSI! If we think of the world around us, we may think of fossils being found — they have left something behind.

Forensic Tools Kim's Game

To begin the station, play a round of Kim's Game to practice observation skills – it's very important for a scientist to be observant!

Directions

1. Lay the items on a flat space and cover them with the towel.
2. Explain to the girls that all of the items under the towel are somehow related to forensic science. Scientists need to be observant, so the girls will have 30 seconds to observe the items, and then they will try to remember as many items as possible.
3. When the girls are ready, remove the towel and allow them to study the objects for 30 seconds.
4. Cover the objects again and have the girls list them all. You can do this as a group and have a leader write down all that the girls remember. Talk about how each item could be used in forensic science.

Supplies

- ❑ a variety of items relating to forensic science – could include a fingerprint, lip print, footprint, magnifying glass, safety glasses, tweezers, rubber glove, evidence tag, Q-tips, fluffy makeup brush (for fingerprinting), crime scene tape, vials, small plastic evidence bag, etc.
- ❑ flat space to lay out the items on
- ❑ towel to cover the items with

Fingerprinting

One kind of trace evidence is fingerprints — does everyone know there are no two people who have the same fingerprints? They are unique to each person.

Girls have a chance to create fingerprints and compare them: using inkpads, paper and balloons that they can blow up to enlarge the detail.

Directions

1. Ask girls: do you know what fingerprints are? (Show photographs of fingerprints – you can find photos online.)
2. Take the #2 pencil and scribble a dark blot on the index card.
3. Run one finger over the blot, and smear so your finger is dark with pencil markings.
4. Take a piece of clear tape, and press the sticky side onto your finger.
5. Quickly peel off the tape.
6. Put the piece of tape onto the index card printed with your name.

Supplies

- ❑ clear tape
- ❑ index cards
- ❑ pencils - #2 are best
- ❑ inkpads (washable ink)
- ❑ balloons
- ❑ paper towels or wet wipes
- ❑ magnifying glass (optional)

7. See if other girls can match which finger you used for the fingerprint
8. To see patterns of fingerprints more clearly, have the girls press a finger onto the inkpad and then onto a balloon.
9. Blow the balloon up so that the fingerprint is made larger and the pattern easier to see.
10. Ask the girls to note if they have loops, whorls, arches or a combination. Also note any distinctive features.

Shoeprints

Supplies

- ❑ damp sand with a large outdoor area to spread it over
- ❑ tarp (for under the sand)
- ❑ a shoe
- ❑ Pam (cooking spray)
- ❑ cocoa powder
- ❑ copy paper
- ❑ paintbrush with soft bristles

Another type of trace evidence is shoe or footprints — we call it tracking when looking at animal prints, but humans can be identified by how they step or what type of shoes they wear.

Girls can get a chance to make prints in damp sand and experiment in seeing how running leaves a different print than walking, limping, etc. Forensic science will look at the path of travel, directions, spread between footprints, pressure on the print indicating leaning to the left or to the right.

You can let girls know that the size of the shoe correlates to the height of a person; that you can tell if a person walks pigeon-toed or even how much they approximately weigh by the depth of the shoeprint.

If you are not able to set up a sand pile for making prints, following is a simple but accurate method of taking a footwear impression from a shoe just like the detectives do when they're investigating. Line up some "suspects," i.e. old shoes, and see what kind of impression they make.

Directions

1. Find an old shoe to use for the experiment or, if using your shoe, have soap and water to clean off the spray afterwards.
2. Lightly spray the bottom of the shoe with cooking spray.
3. Press the shoe with the tread down onto the white paper, then lift it away.
4. Using the paintbrush, apply a small amount of cocoa powder to the wet area using a soft dabbing motion.
5. Blow away any excess powder and label your exhibit.
6. Look at your footwear impression closely in comparison to someone else's and note the differences.

If a roll of newsprint is available, the girls can create a path of footprints with many different shoes and then identify which girl made each print!

Lip Prints

There is also trace evidence left from saliva, sweat or tears—this can be found on clothing or a tissue or a drinking glass. Sometimes the saliva can be found paired up with a lip print, unique like a fingerprint but harder to compare as it is harder to get a good lip print at times.

Girls will get a chance to make lip prints with lipstick on coffee filters.

Supplies

- ❑ coffee filter
- ❑ inexpensive lipstick in a red or darker color
- ❑ Q-tips
- ❑ facial wipes or tissues

Directions

1. Give each girl a coffee filter and have them fold it over at least once.
2. Using a Q-tip, take some lipstick and help the girls apply it to their lips, not too thickly. Each girl will use their own Q-tip.
3. Have the girls then put the coffee filter between their lips and make an impression by pressing their lips together.
4. The girls can then wipe off their lips with tissue or repeat until they have a satisfactory lip print.

Cheiloscopy is the study of lip prints. Lip prints are unique and stay mostly unchanged during a person's lifetime. The five basic types of lip prints used by forensic scientists are:

1. Diamond Grooves
2. Long Vertical Grooves
3. Short Vertical Grooves
4. Rectangular Grooves
5. Branching Grooves

Find images of lip print types online:
https://www.google.ca/search?q=cheiloscopy+types&tbm=isch

Have older girls decide which type of grooves their lips have.

Bite Marks

Occasionally forensic scientists are able to get teeth impressions from a bite on an object — bite marks can be very unique and help identify a person.

Supplies

- ❑ Styrofoam plate cut into pieces
- ❑ cheddar cheese
- ❑ facial wipes or tissues

Directions

1. Using either a couple of Styrofoam pieces or a cheese such as cheddar (fairly firm), have the girls bite down and carefully remove the bitten object from their teeth.
2. Have the girls compare the bite marks of their object to other girls.
3. Are they able to point out missing teeth? Smaller or pointier teeth?

SAMPLE STATION: SPACE TO EARTH

This station is designed to have girls start with outer space and then move down to Earth.

Sun Plate

Start with the Sun — it's a star, and only one of many, but an important one to us because Earth revolves around it. Note that the supplies are to stay with the station for the full event.

Supplies

- ❑ aluminum pie plates
- ❑ sun shapes or circles to place in middle
- ❑ marbles

Directions

1. Give every girl a pie plate, a sun shape and a marble.
2. Have the girls roll their marble around edge of the pie plate — this represents the Earth orbiting the sun.
3. Explain how once the rotation has been established, the marble stays at the same distance from the sun at all times.

Flying Comets

Pieces of material travel close to the sun and go through a process where they become comets — these comets are pushed away from the sun and travel through space, some of them making it to Earth. Girls will make a comet.

Supplies

- ❑ crepe paper in different colours
- ❑ curling ribbon
- ❑ scissors
- ❑ tape
- ❑ Styrofoam balls
- ❑ aluminum foil
- ❑ string or yarn

Before the event

Dependent upon how many girls are attending, you may wish to have cut the lengths of crepe paper and ribbon as well as the squares of aluminum foil (which must be big enough to cover the size of Styrofoam balls) prior to the event.

At the event

1. Cut two different lengths of crepe paper strips, approximately 60 to 90 cm long, in any colour, and three or more different lengths of curling ribbon. If desired, curl one or two of the curling ribbons with scissors.
2. Have the girls gather all of the ribbons together at one end, then twist together tightly, and tape securely to a square of aluminum foil.
3. Wrap the foil (with ribbons attached) around a Styrofoam ball. You will completely cover the ball with the foil, and the ribbons will hang out from it.
4. Tie a piece of yarn or string to the ribbon bunch right underneath the ball. The flying string will become the power of solar winds or gravity.
5. Take the comets outside and make them fly!

Personal Constellations

Supplies

- ❑ pictures of constellations
- ❑ short story
- ❑ black cardstock or paper
- ❑ white chalk

As we fly through space we will fly past many groups of stars called constellations (have posters or printouts of constellations from online available for display).

Read a short story about why the stars are seen as pictures. Visit your local library or search online to find an appropriate story. One suggested book is “Our Stars” by Anne Rockwell.

Girls will then make constellation drawings on black paper with chalk.

Directions

1. Give the girls a piece of black construction paper or cardstock and chalk.
2. Ask the girls to create their own new constellation.

Revolve, Rotate

As we get closer to Earth we may encounter the moon. The moon revolves around the Earth while the Earth revolves around the Sun.

Game Directions

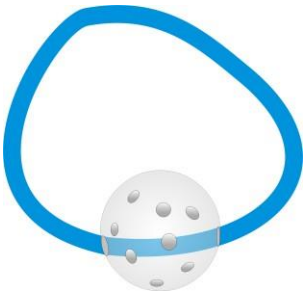
1. Choose one girl to be the moon and another girl to be the Earth. All of the remaining girls huddle close together to be the sun.
2. The Earth girl walks around the Sun girls, representing the Earth’s orbit around the sun, just as the marble orbited the sun in the Sun Plate activity.
3. Now add in the moon girl – she goes in circles around the Earth girl! She must stay with the Earth girl at all times, running around the Earth as the Earth goes around the Sun.

After a few rotations around the Sun, gather the girls to explain the idea of revolving versus rotating using one of the following models. It is your choice as to which model the girls will make.

Option 1: Ball Model Directions

Supplies

- ❑ pipe cleaners any colour (2 per girl)
- ❑ plastic golf balls (the kind with the holes in them - 1 each)



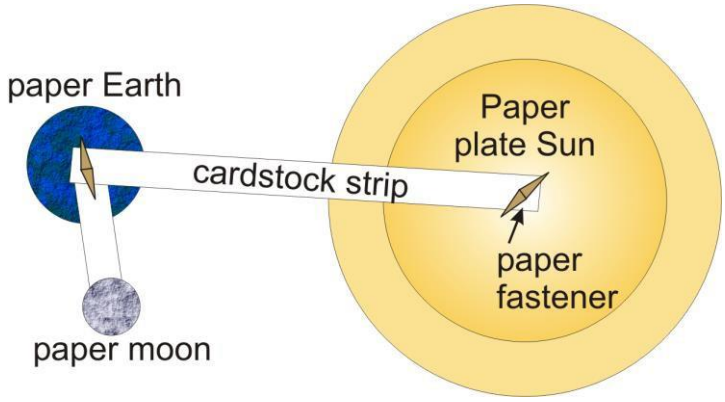
1. Have the girls pick two pipe cleaners and join them end to end to make one long pipe cleaner.
2. Thread the plastic golf ball onto the pipe cleaner and then join the two ends of the pipe cleaner together so they form a circle.
3. Show the girls how the ball can turn (rotating) on the pipe cleaner at the same time as it can move around the circle (revolving).

Option 2: Paper Model Directions

1. Cut out the circles representing the Earth and moon. (You could print clipart Earth and moon circles in preparation for this activity.)
2. Cut a long strip and a shorter strip from cardstock. (See diagram).
3. If desired, colour the paper plate yellow.
4. Punch a hole at the end of each strip and in the middle of the paper plate and Earth circle.
5. Glue the moon to one end of the shorter strip.
6. Fasten the remaining pieces together using brass fasteners.

Supplies

- ❑ paper plate (for Sun)
- ❑ white cardstock strips
- ❑ cardstock circles (for Earth and moon) - preprinted or coloured
- ❑ hole punch
- ❑ markers or crayons
- ❑ paper fasteners
- ❑ scissors
- ❑ glue stick



Hidden Magnetism

As we get even closer to Earth, the pull of gravity and the magnetic attraction of the Earth pulls objects in — even when we can't see the attraction, it is there exerting its influence.

Girls will use magnets to pull paperclips through a maze on the file folders (these materials will stay with the station).

Supplies

- ❑ legal size file folders with mazes printed on
- ❑ magnets
- ❑ paperclips
- ❑ chopsticks or dowels
- ❑ tape or hot glue

Before the event

1. Using large file folders or poster board create a maze path that winds over the paper. You can make up your own, or find a simple maze online.
2. Test whatever magnets you are going to use to make sure they will pull a paper clip along from the other side of the paper (magnet on the bottom of the paper, paperclip on top of the maze).
3. Tape or glue the magnet to the stick so the girls have something to hold onto.

At the event

1. Each girl is given a "map" (maze), a magnet stick and a paperclip or two.
2. They are to successfully navigate their paperclip via the magnet though the map.
3. Remind them they cannot see the magnet when it is under the paper but it is working to pull the paperclip.

Poppin' Rockets

Source: Science Out of the Box, BC Program Committee

To travel through space, we will need a rocket!

Supplies (per girl)

- ❑ small plastic container, similar to a 35 mm film canister or pill bottle; do not use threaded or childproof caps
- ❑ water
- ❑ effervescing (fizzing) antacid tablet (the kind used to settle an upset stomach)
- ❑ toilet paper or tissue
- ❑ safety glasses

Directions

1. Begin by putting on your eye protection.
2. Fill the plastic container about halfway with water.
3. Take a single square of toilet paper, or a tissue, and place it over the top of the container. Make a little "nest" with the paper inside the top of the container, but don't push it too far down – it shouldn't get wet.
4. Carefully place the antacid tablet into the toilet paper nest. It should not drop down into the water.
5. Snap the cover onto the container – the edges of the toilet paper will be sticking out from the sides of the lid.
6. Tear the excess toilet paper away and dispose.
7. Go outside to launch your rocket, as this can be messy! Flip your rocket upside down, so that the lid is on the bottom. Place the rocket on your launch pad (sidewalk, driveway, etc.) and move away.
8. Stand back and wait. Your rocket will blast off!

SAMPLE STATION: CHEMISTRY

Check out this Oobleck

Source: Science Out of the Box, BC Program Committee

Supplies (per girl)

- ❑ ¼ cup cornstarch
- ❑ 3 ½ tsp water (add more if needed)
- ❑ a bowl
- ❑ food colouring (optional)

Directions

1. (Optional) Add food colouring to the water in the bowl.
2. Add cornstarch to water in a bowl. Mix with your hands. Do not use a spoon.
3. When you touch the mixture gently, it should feel like a liquid and your fingers will sink in. When you smack your hand down on it, it should resist like a solid. Play away!

Most substances exist on Earth as one of the three states of matter: solids, liquids or gases. But some substances are far more complicated! Oobleck is an example of this – it is not a solid, a liquid or gas! In fact, oobleck is a non-Newtonian fluid, which changes properties depending on the force you use. A large/strong force will give the oobleck the physical property of being solid; this is why when you smack the oobleck, it feels hard. But a small/weak force gives the oobleck the physical property of being liquid; this is why if you slowly, gently sink your hand in without force the fluid will feel like a liquid.

Rainbow M&M's

Source: Science Out of the Box, BC Program Committee

Supplies (per girl)

- ❑ picture of a rainbow
- ❑ coffee filters or paper towels
- ❑ M&M's, multiple colours
- ❑ water

Directions

1. Introduce the girls to Roy G. Biv – the acronym for the colours in a rainbow (Red-Orange-Yellow-Green-Blue-Indigo-Violet).
2. Flatten a coffee filter or paper towel on a table.
3. Place different coloured M&M's on the paper about 3 cm apart – arrange the colours according to the rainbow (Roy G. Biv: red-orange-yellow-green-blue)
4. Place a brown M&M separately on the coffee filter.
5. Drip water onto each M&M until the paper below is wet. Wait for about 2 minutes.
6. Pick up the M&M's and observe that the colours made a ring on the paper.
7. Compare the rings of the coloured M&M's to the ring under the brown M&M. Do you notice anything different about the outside edge of the brown ring?

Colour theory shows mixing of primary colours to make secondary colours. For Sparks and Brownies, ask them to notice that the red, yellow and blue rings use primary colours and have only one colour ring. Then point out that the orange and green rings have a yellow ring in addition to the orange and green/blue, respectively. Finally, point out the brown M&M develops three distinct colour rings: red, yellow and blue.

Balloon Blowing

Source: Science Out of the Box, BC Program Committee

This is a standard neutralization reaction.

Supplies (per girl)

- ❑ empty plastic pop bottle
- ❑ vinegar
- ❑ baking soda
- ❑ balloons
- ❑ 2 funnels
- ❑ measuring cups

Directions

1. Place the empty pop bottle on the counter.
2. Use a funnel to pour ½ cup vinegar into the bottle.
3. Blow up a balloon and let the air back out. Do this several times to "relax" the balloon.
4. Put the other funnel into the mouth of the balloon and scoop ¼ cup baking soda into the balloon. Allow the baking soda to settle into the bottom of the balloon.
5. Carefully stretch the open end of the balloon over the mouth of the bottle, being careful to leave the baking soda in the bottom of the balloon. Make sure the balloon is stretched to cover all the threads of the bottle.
6. Pick up the bottom, hanging end of the balloon and dump all of the baking soda into the bottle.
7. What happens?

The baking soda starts to fizz in the vinegar. A reaction occurs between the two chemicals and carbon dioxide is made. Carbon dioxide is a gas that takes up a lot more room than the solid and liquid, so it expands into the balloon.

Magical Milk

Source: STEM Challenge: Science, BC Program Committee

Supplies (per girl)

- ❑ pie plate or similar wide, shallow dish
- ❑ milk
- ❑ food colouring in two or more colours
- ❑ dish soap

Directions

1. Pour the milk into the pie plate so that it is about 1 cm deep.
2. Put a few drops of food colouring into the milk. Use two or more colours, and put them at different locations in the dish so that the colours stay separate for now.
3. Note: For a great effect, make several spots of each colour.
4. Add a small drop of dish soap in each of two or three different locations in the dish and watch what happens.
5. Investigate what would happen if you used milk with different fat contents (eg. skim milk, 2% milk, homogenized milk, buttermilk, etc.)

Dancing Cranberries

Supplies (per girl)

- ❑ clear glass
- ❑ clear carbonated drink such as 7up
- ❑ cranberries (fresh and dried)
- ❑ Craisins

Directions

1. Have the girls pour some 7-up into a clear glass.
2. Drop a few cranberries in. What happens?
3. Try craisins or raisins or grapes to see what happens.

The bubbles (carbon dioxide gas) in the pop stick to the rough or rounded edges of the cranberry. The bubbles bring them up to the top of the glass. Then they pop and release the CO_2 into the air, making the dried cranberries fall back down.

HANDOUT: A BAG FULL OF PAPER SCIENCE

This collection of items can all be put into a large paper bag with handles that each girl can keep with her to put her experiments in and to take things out to try at spare moments in time.

The preparation takes a fair amount of time, but most of it is cutting, drawing and photocopying.

Below for each activity you will see the preparation and the explanation the girl is given for each activity.

Supplies

- ❑ large paper grocery bags
- ❑ large Ziploc bags
- ❑ small Ziploc bags
- ❑ coloured paper as needed - if you use different colours, just change the instruction sheet to reflect this
- ❑ pencils
- ❑ tape
- ❑ tissue paper
- ❑ prepared index card
- ❑ paper clips
- ❑ punched paper flowers
- ❑ pennies or flat washers
- ❑ cardstock cut and punched
- ❑ tangram cutouts
- ❑ straws
- ❑ chopsticks or dowels
- ❑ cutout pictures
- ❑ whirlybird template
- ❑ white cardstock strips

Activity 1

Preparation

You will need to cut strips of light purple (lavender) paper lengthwise (to get 11-inch-long strips) and the strips should be about an inch wide.

Then, with a pencil draw an arrow on one end of the paper, as shown

Next, flip the paper over and draw another arrow (different end, other side of the paper)

Girl instructions: Look for the light purple (lavender) strip of paper — hold each end in your hand and twist one end over so that when you bring the two ends together so the arrows drawn on the paper are pointing to each other. Tape or hold together. Take your pencil and start at one arrow and draw a line down the middle of the strip of paper. What do you find out? Now cut along that line. What else is amazing?

This is a Mobius strip and is fascinating to have fun with.

Activity 2

Preparation

You will need to cut strips of yellow paper lengthwise (to get the 11-inch-long strips) and the strips should be about an inch wide.

Then, with a pencil draw an arrow on each end of the paper

Girl instructions: You have a yellow piece of paper—hold it like you did the purple piece but twist it TWICE and make the ends meet so the arrows are pointing to each other. Tape together. Do the same steps as with the purple strip. What do you find out?

This is a double Mobius strip.

Activity 3

Preparation

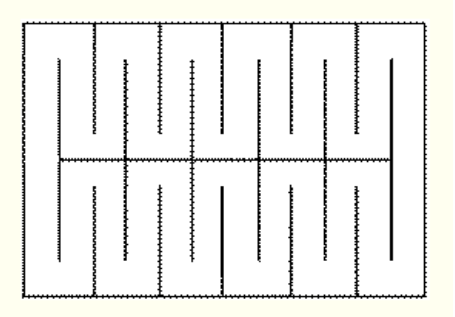
Cut green tissue paper into 6” x 8” squares. Each girl will have one square in her bag.

Girl instructions: You have a green piece of tissue paper. Take the piece of paper and fold it in half — leaving it folded in half, try folding in half again. Leaving it folded, try again and again, leaving the folds in each time and always folding in HALF. How many times can you fold it? Bet you can’t do past 8 times!! Go ahead and try!

It is almost impossible to fold a piece of paper more than 8 times if each time you are folding it in half. They have done so with paper as thin as tissue paper the size of a football field!

Activity 4

Preparation



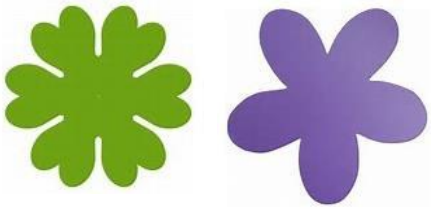
To the right is an example of how the lines must be drawn onto the index card. Folding the card hotdog-wise and then unfolding the card will help the girls with the cutting.

This one can be done with older girls by just giving instructions rather than drawing the lines. You can also photocopy cardstock with 2 on each piece and then cut them out.

Girl instructions: You have an index card with lines drawn on it. Do you think you can put your whole body through the middle of this index card? No?? Then fold the card in half “hot-dog” style (along the long edge), cut along the lines and carefully pull the card apart and try again!

Activity 5

Preparation



Using a large paper punch, cut out flower shapes (Examples shown).

Fold the flower petals inwards to the centre and hold them in place with a paperclip.

When the girls place the flower in water, this activity will illustrate how water is absorbed through materials.

Girl instructions: There is a folded piece of paper attached to a paper clip-take the paperclip off and place the piece of paper (folds up) in a bowl of water and watch the magic happen! Be patient!

Activity 6

Preparation

For this you need heavier cardstock cut into approximately 2” by 2” squares. Then you need to punch a hole a fraction smaller than the coin or washer you are using so that the coin will not pass through easily until the square is folded in half. Note: if pennies are not available, use a metal washer.

Girl instructions: There is a tiny piece of stiff pink paper in your bag and a metal washer — can you put the penny through the hole without ripping the paper? Try bending the circle in half and putting the washer through sideways!

Activity 7

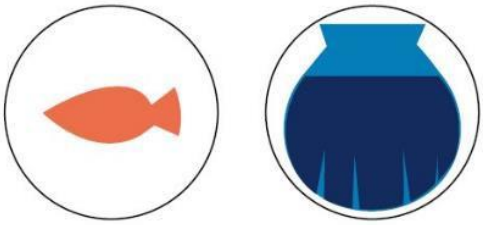
Preparation

For this activity you will need a tangram pattern and some simple animal patterns the girls can recreate. Create your tangram on patterned paper, cut out the shapes, and place them in a Ziploc bag.

Find a tangram template to print online:
https://www.google.ca/search?q=tangram+template&tbm=isch

Find tangram animal patters to include online:
https://www.google.ca/search?q=tangram+animals&tbm=isch

Girl instructions: You have a little bag with 7 pieces of patterned as a tangram and you need to put them together to make a s working on making animal shapes, too.



Activity 8

Preparation

Optical illusions known as thaumatropes are also known as flip-sticks when put onto a straw or stick versus using string. Search online for Thaumatrope or flip-stick to find a pattern to print. They can be in circles or rectangles and will need to be printed or copied. Stiff paper, such as cardstock, works best.

Thaumatrope online search: https://www.google.ca/search?q=printable+thaumatrope&tbm=isch

Include a pencil, straw or chopstick for each girl, as well.

Girl instructions: You have a piece of paper with two pictures on it. Cut them out and glue or tape or staple them back-to-back with a pencil or straw or chopstick in between. Hold the stick between your hands and rub your hands quickly so that the stick twirls in your hand — watch the picture! See what happens!

Activity 9

Preparation

Print the whirlybird template, cut apart (4 per page) and attach a paperclip to each one.

Girl instructions: Try making and flying a whirlybird — the funny shape drawn on the paper.

- Cut along the solid grey lines.
- Fold flap A forward and flap B back.
- Fold flaps C & D inwards along the dotted lines.
- Fold flap E up and attach the paperclip here – this adds weight to the base.
- Hold the whirlybird by the tail, high above your head and let go.
- If you change the length of the wings you can make the whirlybird go faster or slower.

Activity 10

Preparation

Cut white cardstock (file folders work!) so each girl receives one 1” x 10” piece and one 1” x 5” piece. Include a straw for each girl.

Girl instructions: Try this straw plane! You have two heavier strips of white paper - one long and one short. Make a circle with each one and tape each circle closed. Tape the straw to the inside of the circles placing the small circle at one end and the large circle at the other end. Then throw the plan and have fun!

ISN'T THE SCIENCE OF PAPER WONDERFUL?

1. Look for the light purple (lavender) strip of paper — hold each end in your hand and twist one end over so that when you bring the two ends together so the arrows drawn on the paper are pointing to each other. Tape or hold together. Take your pencil and start at one arrow and draw a line down the middle of the strip of paper. What do you find out? Now cut along that line. What else is amazing?

   This is a Mobius strip and is fascinating to have fun with.

2. You have a yellow piece of paper — hold it like you did the purple piece but twist it TWICE and make the ends meet so the arrows are pointing to each other. Tape together. Do the same steps as with the purple strip. What do you find out?

   This is a double Mobius strip.

3. You have a green piece of tissue paper. Take the piece of paper and fold it in half — leaving it folded in half, try folding in half again. Leaving it folded, try again and again, leaving the folds in each time and always folding in HALF. How many times can you fold it? Bet you can't do past 8 times!! Go ahead and try!

   It is almost impossible to fold a piece of paper more than 8 times if each time you are folding it in half. They have done so with paper as thin as tissue paper the size of a football field!

4. You have an index card with lines drawn on it. Do you think you can put your whole body through the middle of this index card? No?? Then fold the card in half "hot-dog" style (along the long edge), cut along the lines and carefully pull the card apart and try again!

5. There is a folded piece of paper attached to a paper clip-take the paperclip off and place the piece of paper (folds up) in a bowl of water and watch the magic happen! Be patient!

6. There is a tiny piece of stiff pink paper in your bag and a metal washer — can you put the penny through the hole without ripping the paper? Try bending the circle in half and putting the washer through sideways!

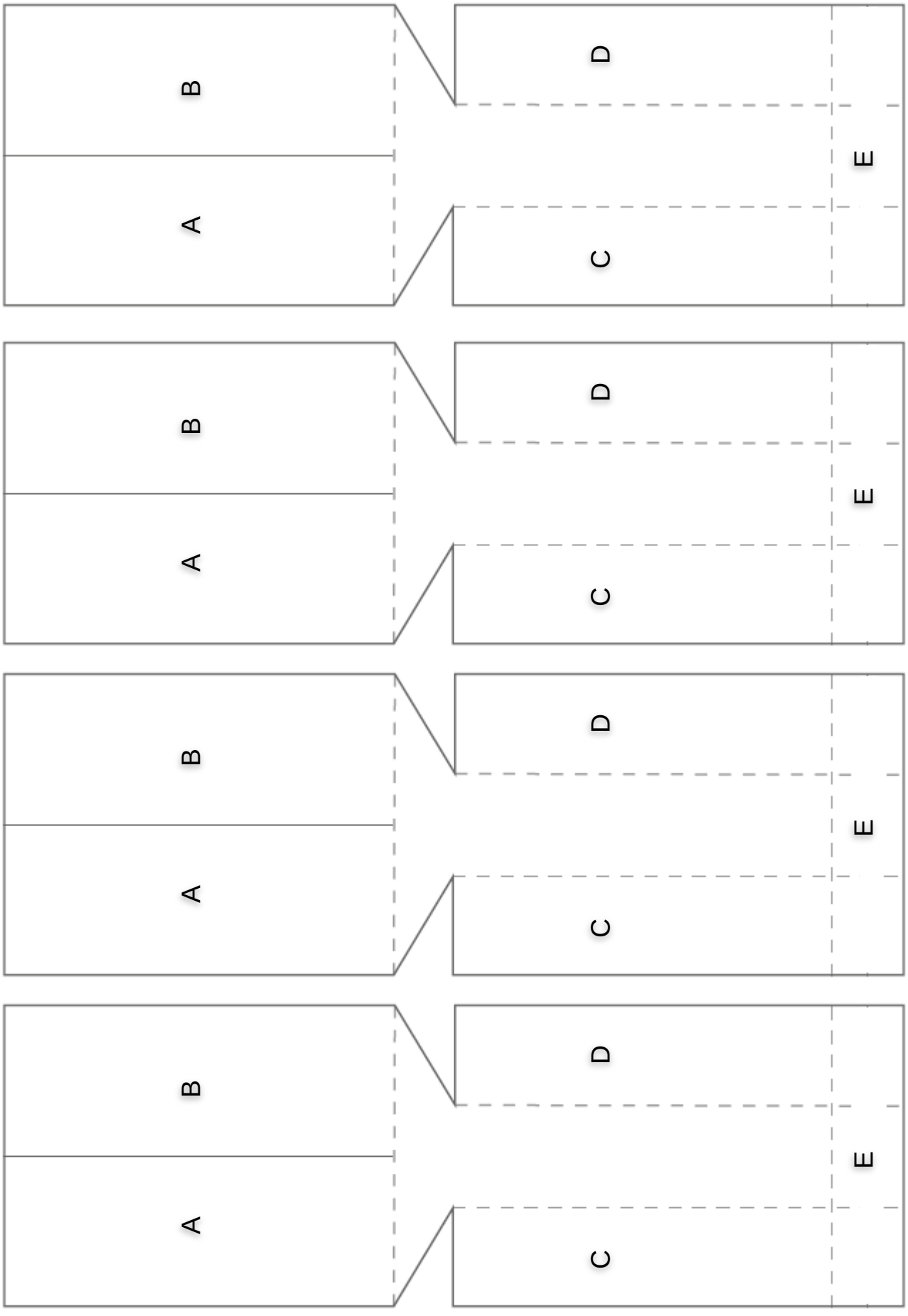
7. You have a little bag with 7 pieces of patterned paper in it — they are known as a tangram and you need to put them together to make a square. If you can do that, try working on making animal shapes, too.

8. You have a piece of paper with two pictures on it. Cut them out and glue or tape or staple them back-to-back with a pencil or straw or chopstick in between. Hold the stick between your hands and rub your hands quickly so that the stick twirls in your hand — watch the picture! See what happens!

9. Try making and flying a whirlybird — the funny shape drawn on the paper.
   - Cut along the solid grey lines.
   - Fold flap A forward and flap B back.
   - Fold flaps C & D inwards along the dotted lines.
   - Fold flap E up and attach the paperclip here – this adds weight to the base.
   - Hold the whirlybird by the tail, high above your head and let go.
   - If you change the length of the wings you can make the whirlybird go faster or slower.

10. Try this straw plane! You have two heavier strips of white paper - one long and one short. Make a circle with each one and tape each circle closed. Tape the straw to the inside of the circles placing the small circle at one end and the large circle at the other end. Then throw the plan and have fun!

Whirlybird Template



STATION IDEAS: USING BC PROGRAM RESOURCES

The BC Program Committee has several science-related resources. Here are some alternate station ideas using activities from these resources. Select the number of activities that works for your session time frame.

Human Biology Station

Science Out of the Box

- Taste Test
- Using Your Nose
- Amazing Eye Tricks
- Iron Fortified

STEM Challenge: Science

- Blind Spot!
- When the Coin Drops

CSI Challenge

- What's That Smell?
- What's That Texture?

Force and Motion Station

Science Out of the Box

- Rock versus Paper
- Bernoulli's Fun with Ping Pong Balls
- The Power of the Written Word
- Kissing Cans
- Rocketing Pinwheel
- Dancing Guide Dolls

STEM Challenge: Engineering

- Marshmallow Catapult

Ocean Science Station

Ocean Aware Challenge

- How Deep is the Ocean?
- Deep Sea Sprint
- Erode the Sugar Cube
- Ocean Acidification
- Sea Level Change
- Overfishing
- Hurricane in a Jar
- Ocean Animal Cards

Food Science Station

Science Out of the Box

- Iron Fortified
- Check Out this Oobleck
- Science in the Deep Freeze
- Rainbow M&Ms

STEM Challenge: Science

- Cabbage Juice pH Indicator
- Sparkling Lemonade
- Raw or Hard-boiled?
- Exploding Pop

SCIENCE STORIES

Add to your stations with science-related stories. These are just some suggestions.

How a Seed Grows by Helene J. Jordan

Meet Einstein by Mariela Kleiner

Rachel Carson and Her Book that Changed the World by Laurie Lawler

What's It Like to be a Fish by Wendy Pfeffer

What is Science? by Rebecca Kai Dotlich

Animals in Winter by Henrietta Bancroft and Richard G. Van Gelder

Dinosaur Bones by Aliki

Call Me Gene by N.C. Bailey and N.I. Neskeland

Forces Make Things Move by Kimberley Bradley

Me and My Place in Space by Joan Sweeney

If you Decide to go to the Moon by Faith McNultey

A Drop of Blood by Joyce Sidman

Freddy The Frogcaster by Janice Dean

Feel the Wind by Arthur Dorris

The Lorax by Dr. Seuss

The Great Kapok Tree by Lynne Cherry

SAMPLE INFORMATION SHEET

Spark and Brownie Science Day Camp
Featuring Vancouver Aquarium's AquaVan

Bring your Sparks and Brownies out for a fun day of Science!

Have them experience first-hand the wonders of the aquatic world with the Vancouver Aquarium team in their AquaVan and rotate through a series of fun, entertaining and science-based stations: the girls can concoct mixtures with "Dr. Alberta Einstein", build sail cars, go on geological treasure hunts and more, much more!

Registration will be in groups of 5 girls and 1 Guider. Groups of less than five will be placed with other girls to meet ratio requirements.

When: Saturday, April 20th, 2013

Where: Lake Country Boys and Girls Club, 3130 Berry Road, Winfield

Time: Arrival time is 9 am and pickup time will be approximately 4 pm

Cost: $15 per girl. Lunch and snacks will be provided

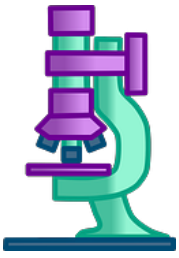
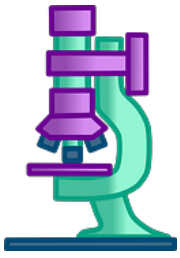
Registration numbers are limited so first come, first accepted (with completion of paperwork)

If you haven't done Science the Guiding way, you haven't had fun!

Come and see how much fun science can be!

PRINTABLE NAMETAGS

PROGRAM CONNECTIONS

The Girls First program is girl-driven and designed to be highly flexible and agile. We encourage you to visit the Digital Platform to best determine how this challenge fits into the Program Areas and Themes.

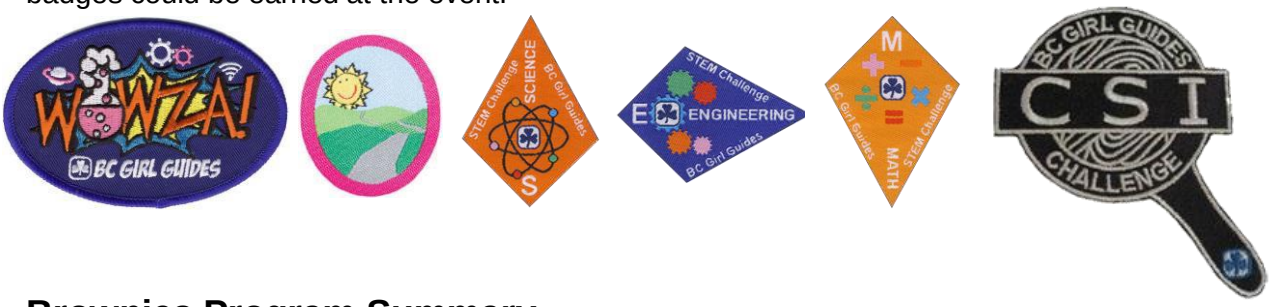
You may want to start exploring the following Program Areas:

- Experiment and Create
- Build Skills
- Into the Outdoors

This is not a comprehensive list, and remember that you can apply your activities to the Girls First program as you see fit.

Sparks Program Summary

By completing all of the activities listed here at a district or area event, in addition to the WOWZA crest, Sparks have completely earned the Exploring and Experimenting Keeper badge, the STEM Challenge: Science, the STEM Challenge: Engineering, the STEM Challenge: Math, and the CSI Challenge. Should you complete different stations from those listed here, other badges could be earned at the event.



Brownies Program Summary

By completing all of the activities listed here at a district or area event, in addition to the WOWZA crest, Brownies have completely earned the Key to STEM: SSSS stands for Sound, Surround, Soothe and Stimulate interest badge, the Key to STEM: Exploring Space interest badge, the STEM Challenge: Science, the STEM Challenge: Engineering, the STEM Challenge: Math, and the CSI Challenge. They have also completed a significant portion of the Key to STEM, but additional activities would need to be done with their unit to finalize that badge (Keeping in Touch and the Power of Power are the only sections not completed with this event plan). Should you complete different stations from those listed here, other badges could be earned at the event.