

2018-2019 STEM Patches

To order any 2018-2019 STEM/Outdoor Patches go to:

http://bit.ly/gsakpatchorder

*Availability of past patches is not guaranteed. Please contact the council at shop@girlscoutsalaska.org or 907-248-2250 to inquire about availability.





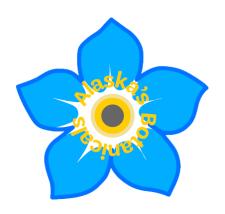














girl scouts The Fungus Among Us

Daisies and Brownies complete 3 activities, Juniors and up complete 4 to earn your Fungus Patch!

Not a Fun Guy- Find clues to identify a poisonous mushroom such as the Fly Agaric that is common in Alaska. Take this new knowledge to try to find it on a forested trail - always use a barrier from your hand if you need to touch a mushroom to identify it. Now that you have seen a poisonous mushroom, go to the store and get an edible mushroom to help your parent cook into a meal! Fly Agaric Resource: https://www.first-nature.com/fungi/amanita-muscaria.php

Mushroom Adventure – Find a mushroom identification book from your local library, download a mushroom ID app or print out the Mushroom Identification Sheet on the last page and bring it with you outside. Let's see how many different types of mushrooms you can find that are on this sheet! Take pictures of these mushrooms and write down what you noticed while looking at them. What would you name the mushroom if you were the one to discover it?

Mushroom Madness – Draw a detailed, colorful picture of a mushroom. Label the parts of it including: stalk, volva, ring, gills, cap and scales. Mushroom Anatomy Resource: http://www.jingagustin.com/TheMushroomProject/mushroom-anatomy/ A mushroom coloring page is located in this document as a resource.

Other Fungi – Mushrooms are not the only type of fungus out there! Learn about the other types of fungi and find examples of them in nature. Some may be attached to a

tree and some might even be in your fridge!

No Fungi = No Fun — Write a story, poem, song or even draw a picture of what a forest would look like if we did not have fungi around to decompose dead plants.

***More activities continued on next page**

Activities Continued

Spore Prints! - While out looking for mushrooms, bring gloves and a bag. Use the gloves to pick a mature mushroom (or 2) and place in bag. Follow the instructions on provided website to make prints of mushroom spores on white or black paper or if you have 2 mushrooms, try both colors of paper to see black and white spore patterns! Resource: http://mushroomexpert.com/spore_print.html

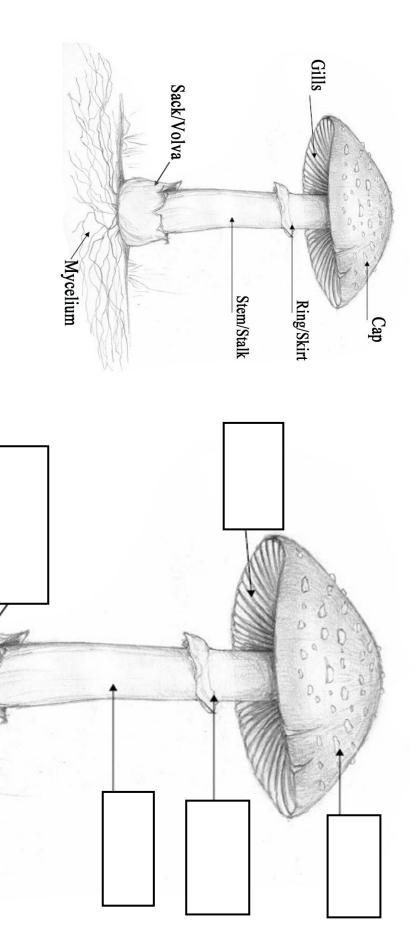
Fungus Garden: Grow your own fungus! Put a little cheese, a small slice of a fruit and vegetable and even some bread in a jar that can be tightly sealed to watch your own fungus garden grow. Document each day how it changes and what it looks like, noting the color, texture and size. Resource: http://

www.kidsciencechallenge.com/pdfs/2010activities/ Magical Microbes 2010 Fungus Garden.pdf

Yeast Balloon: Yeast are alive! To see this, start out by mixing a teaspoon of sugar with about a cup of warm (not hot!) water and pour into a small, clean plastic bottle. Clear is nice so you can see what's going on inside. Add a package of yeast (around 2 and 1/4 teaspoon). Stir gently. Take a balloon that you've stretched a bit and place it over the neck of the bottle. Leave the bottle in a warm place for 20 minutes or so. Make a prediction and see what happens!

Take Action! — Take all of your new knowledge of fungus and teach a family member or friend about them. Make sure fungus handling safety is a part of your information.

Resource for more Fungi Info: https://www.ducksters.com/science/biology/fungi.php



Mushroom Identification Sheet





Alaska's Landforms and Geography

Fill Out Form: https://girlscoutsalaska.wufoo.com/forms/stem-patch-of-the-month-order-form/

LANDFORMS & GEOGRAPHY

Choices-DO ONE:

- Make a list of all of the landforms and geographical regions you can think of in Alaska, use play dough to shape as many landforms as you can on the list you made. Landform Song Resource: https://youtu.be/iac6yrdmAbw
- Print the attached outline of Alaska and label it by drawing and writing the landforms/geographical regions of Alaska. What geographical region do you live in? Resource: https://www.researchgate.net/figure/Location-and-topography-of-mountain-ranges-and-other-geographical-features-cited fig2 228668828
- mountains, volcanoes and/or caves. Tape a ruler across one end of the container and a Styrofoam cup on top of that. Poke a small hole in the bottom of the cup and place the end of container with cup propped up with a books. Add water to the cup and observe how the sand changes over time as the water slowly drips out. Resource: <a href="http://learninglabresources.com/2014/01/erosion-and-learninglabresources.com/2014/01/ero

landforms-science-activity-with-a-freebie.html

STEP 2 LANDFORM ART

Choices—DO ONE:

- © Create an animal that has the following landform features: Island, Plain, Lake, River, Mountains, Valley, Bay and Peninsula. You can use the attached landform dinosaur as an outline or for inspiration. Make sure to color and label! Resource: Landform Dinosaur
- Write a story, poem or song about the landforms/ geography in Alaska and how they were formed. Resource: https://kidsgeo.com/geology-for-kids/landforms/
- Make salt dough and form it into the shape of Alaska by using the attached outline. Then, form the dough higher in spots where there are mountains and low where there are valleys. Paint your new map of Alaska!
 Resource: mamascouts.blogspot.com/2012/11/

STEP 3 GLACIERS AND RIVERS

STEP 4 MOUNTAINS AND VALLEYS

Choices-DO ONE:

- Visit a glacier and talk to a ranger there to learn more about glaciers and their effect on the land. Resource: https://www.nps.gov/dena/learn/nature/upload/
 Glaciers Kids 2014.pdf
- it: Make a poster including the birth (how the river was formed and approximate time period it was formed), a location and description of the river including the type of aquatic life in it and what the land is like around its route, a drawing of this river with all found information drawn around it and in it, and lastly research what could cause the death of a river and write a fictional story of the events leading up to the rivers death.
- Create your own glacier at home! Resource: https://www.lsu.edu/mns/files/exhibit/Antarctica8.pdf

Choices-DO ONE:

- Hike up or near a mountain to experience a landform hands on while along the way thinking about the different ways that mountain was shaped, notice how the environment changes as you go higher and higher.
- Learn about mountains and valleys though topographic maps. Create your own topographic map of a mountain you create using play dough. Resource: https://spaceplace.nasa.gov/topomap-clay/en/
- Think about a valley near you. There are valleys all over Alaska because there are mountains all over Alaska! Think about the shape of the valley near you. Draw what it looked like before that valley was formed!

STEP 5 TAKE ACTION!

Choices-DO ONE:

- come to be the way that it is Take a family member or friend to a landform and explain to them how that landform may have
- protect our public lands! works at one of these places near you to ask them what you can do that would be helpful to Forest Service, Bureau of Land Management and State Parks. You can even contact someone that Complete a service project in your local public lands! Public land includes: National Park Service,
- Make a poster, diagram, skit, or whatever you would like about your new knowledge about Alaska's share or even teach someone else this information! Landforms and Geography and share it with your school, a library, or your neighbors to help to



Stellar Skies

Daisies and Brownies complete 3 activities, Juniors and up complete 4 to earn your Stellar Skies patch!

Constellations — Look up into the night sky for constellations! Constellations are a group of stars that make a picture or pattern in the sky. They can help people orient themselves and were used to help people travel. Identify some of the constellations you see by using a Star Wheel. A Star Wheel can be printed and assembled easily here: www.skyandtelescope.com/astronomy-resources/make-a-star-wheel/

Star Tales— Humans have looked into the skies for thousands of years using the stars to navigate as well as tell stories. Many of which are still told today! Most of the stories are of Greek origin based on their Gods, Goddesses and mythical creatures. Look into the sky and create your own mythical story! Connect stars together to create your own constellation, name it and create a story to go with it. Learn more about constellations here: https://youtu.be/MZffhapfOgg

Watch the Earth's Rotation with Shadows— Observe how the earth's rotation changes throughout the day by recording its movement. You can do this easily with a paper plate, a pen (or any other straight object) and play dough. See how the shadow moves during the day and for a longer study, compare days of November as they get shorter. What happens to the wheel? How does it change? Learn more about this activity here: www.giftofcuriosity.com/recording-the-earths-rotation-with-shadows/

Make a Telescope— Make your own telescope to help you better view the night sky. Learn about light refraction and how convex lenses are used to bend light waves. Experiment with different curvatures to change the magnification of the telescope. Learn more here: https://kids.nationalgeographic.com/explore/nature/make-a-telescope/

Make a Spectroscope— Spectroscopes are special tools to help Astronomers learn what stars are made of. It separates the white light from a star into a spectrum of colors. The colors are separated by black lines which form a particular pattern helping scientists learn what elements are present in the star. Directions for your own spectroscope can be found here: www.exploratorium.edu/snacks/cd-spectroscope

Choose Your Own Adventure— Choose your own astronomy activity. Do you want to look for aurora, observe meteors, or track the phases of the moon? Maybe you would like to teach a younger girl what you learned about constellations. This activity is up to you!

*Websites are just suggested resources. You may use other sources you find.



work while they were using it.

Girls Code Patch



Daisies and Brownies complete 2 activities, Juniors and up complete 3 to earn your Girls Code Patch!

Fill out this form to order your patches:

**For all online activities, make sure you have parent permission and are following the Girl Scout Internet Safety Pledge available here: https://www.girlscouts.org/en/help/help/internet-safety-pledge.html

Create Your Own Website! – Make a list of ideas for a website, think about each one and chose the one you think would be the best. It could be a site for your Girl Scout Troop, a blog where you share your accomplishments, or just a fun place to express yourself. Use this website maker or another site to create your website: https://www.weebly.com/. Once finished, send your website to a couple friends and/or family to try to use. Edit website if something did not



Code an Emoji – visit https://www.madewithcode.com/projects/ and code a holiday emoji for yourself. You could even save it and upload it onto your website if you created one. If you have extra time check out the other made with code activities!

Hour of Code – Try out coding in a fun way! Use <u>this website</u> to complete of the Hour of Code activities for your favorite games: <u>https://studio.code.org/courses</u>

Binary Bracelets – Get some string, 2 bead colors and use the <u>binary decoder key</u> to spell out your initials on your bracelet in computer language! Use one bead color for the black squares and one bead color for the white squares. https://code.org/curriculum/course2/14/Activity14-BinaryBracelets.pdf

Game Time! – Get creative making your own game using: https://gameblox.org/editor/ Click Help at the top of the screen to find tutorials to help you out. This site is best for Juniors and up. Have a friend or family member try out your game once you are finished.

Java Time! – Thimble is a website where you can be creative with Java, a type of coding language. Don't worry if you don't know Java, there is a great tutorial to help you out. Start by going to https://thimble.mozilla.org/en-US/. Here you can watch the intro video and then search for Keep Calm. Open the Remix project and there will be a tutorial page to walk you through the basics of Java. Best for Juniors and up.





girl scouts Animals in Winter

Daisies and Brownies complete 3 activities, Juniors and up complete 4 to earn your **Animals in Winter patch!**

Hibernate

Bears in Winter— Build a fort like a bear using whatever you can find outside. Think like a bear, if you were a bear where would you build your den? Snow, sticks, leaves can be used to make this den, get creative! Source: www.adfg.alaska.gov/index.cfm?adfg=wildlifenews.view_article&articles_id=701

Bearly Enough for Winter- Buried beneath the snow, the food that bears rely on for survival is not available in wintertime. Use math to evaluate how bears adapt to their environment in the winter! Compare yourself to a bear. The average 10 year old girl weighs 70 lbs and the average black bear in July weighs 240 lbs and brown bears weigh an average of 650 lbs! You can use these numbers on your form. Look to page 27 on this document for this activity: www.adfg.alaska.gov/static/education/educators/curricula/pdfs/bears/ bears of alaska teachers guide.pdf

Tolerate

How Warm is My Coat? - How do different fabrics or furs insulate mammals in winter? How can snow help animals stay warm? Use the scientific method to test which insulator is best! Use fur scraps or synthetic materials to see which can keep a hot potato warmest in the snow. Learn more here on page 33 of this guide:

www.adfg.alaska.gov/static/education/educators/pdfs/furs of alaska mammals teachers guide.pdf

Blubber Mitts— How do mammals survive the cold frigid waters of Alaskan waters? With blubber! Marine mammals such as whales, sea lions, seals and even polar bears have a protective layer of fat called blubber that helps keep their core temperature warm even in below freezing temperatures. Experiment with different insulating materials in this fun activity!

https://kids.nationalgeographic.com/explore/science/blubber-gloves/

Migrate

Caribou Migration Game- Where do the caribou go? Learn where and why caribou migrate in this fun game! https://www.fws.gov/alaska/fisheries/fieldoffice/fairbanks/salmon/caribou%20migration% 20activity.pdf

Bird Migration— Learn about bird migration flyways and take flight with the birds! Where do birds go when they leave for the winter? What birds stay behind? Research some birds that live in your area and map where they go on a globe or a map. Which bird travels the farthest? Shortest? Use different colored yarn to map out the different flyways. Learn more about flyways here: www.audubon.org/birds/flyways



Daisies and Brownies complete 3 activities, Juniors and up complete 4 to earn your Volcanoes & Earthquakes patch!

Build Your Own Volcano! — Choose your favorite of 10 different ways to make a volcano and do some fun science to see what a volcanic eruption would look like on a smaller scale. Source: https://inspirationlaboratories.com/10-ways-to-make-a-volcano-with-kids/

Petrification Station— Petrification is the process of a living thing gradually turning into stone. The ash and debris from volcanic explosions can cause this to happen. When these minerals get into all the spaces throughout a tree, it can cause the hardening we see in petrification. It's not just trees that can be petrified either! Try out this activity to petrify a paper towel! https://www.nps.gov/teachers/classrooms/create-a-cool-petrification-station.htm

Earthquake-Proof Structures— Most buildings in places, like Alaska, that have frequent earthquakes build structures specifically made to better withstand earthquakes. It is incredible the difference it can make! If you look at 2 places with similar magnitude earthquake occurrences where one place doesn't use these building techniques vs one that does, the difference is amazing! Experiment with Jello and toothpicks to find out what makes the best earthquake proof structure: http://stem-works.com/external/activity/575

Parts of a Volcano— Learn what makes up the parts of a volcano by labeling and coloring your own creative volcano or use the attached sheet on the next page. Source: https://volcanoprojectchapter3.weebly.com/parts-of-a-volcano.html

Ring of Fire and Tectonic Plate Art— Tectonic plates are a cause of earthquakes and volcanoes. The slipping of one plate under another is one cause of earthquakes. Weak spots in these same plates cause magma to makes its way up to land creating a volcano. The ring of fire is a horseshoe shaped string of volcanoes along an area where 2 large tectonic plates meet. Print attached map on the 3rd page. Notice the names of each tectonic plate and color each one a different color. Which plate is Alaska on? Make a red line marking the area of the ring of fire.

Make a Safety Plan with Your Family— Make sure you and your family have a plan for what to do during an earthquake and what you can do to prepare yourself and your home before an earthquake or volcano happens. Earthquake Safety: https://www.safety.com/earthquake-safety/#gref Volcano Safety: https://www.ready.gov/volcanoes

Snickers Science-Learn about the layers of the earth and explore how they move with a candy bar: https://www.nps.gov/tica/learn/education/upload/snickers-fault.pdf

Definitions

Ash Cloud: the cloud of ash that forms in the air after some volcanic eruptions.

Conduit: a passage through which magma (molten rock) flows in a volcano.

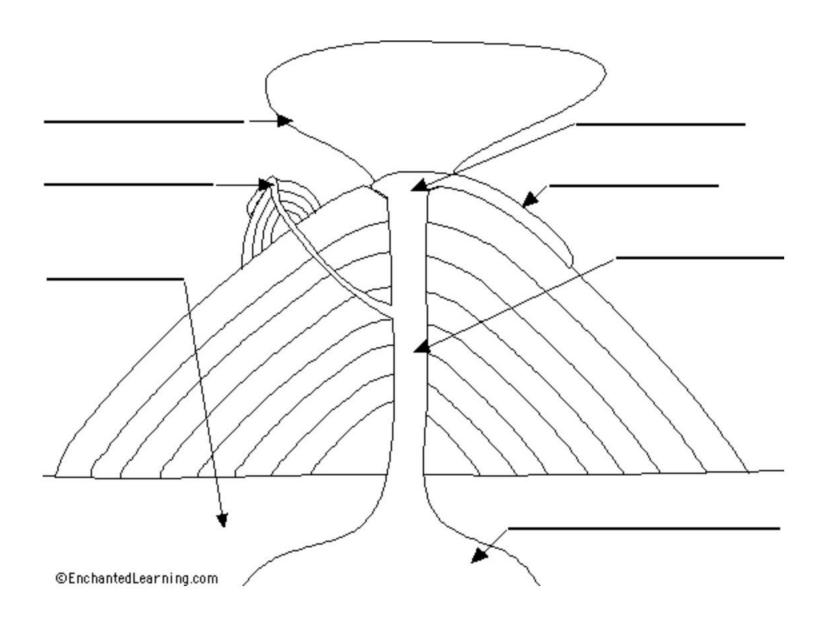
Crust: Earth's outermost, rocky layer.

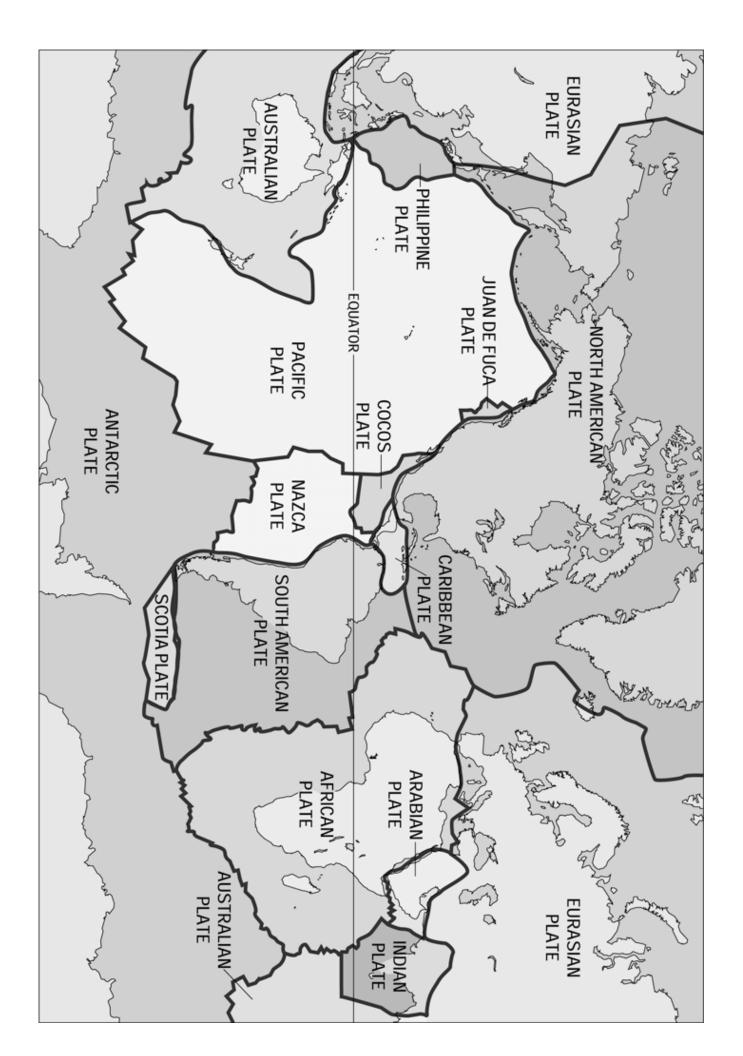
Lava Flow: molten rock; it usually comes out of erupting volcanoes.

Magma Chamber: contains magma (molten rock) deep within the Earth's crust.

Side Vent: a vent in the side of a volcano.

Vent Crater: an opening in the Earth's surface through which volcanic materials





Daisies and Brownies complete 3 activities, Juniors and up complete 4 to earn your Fantastic Fish Patch!

A Watery World—Learn how fish have survived to live in an aquatic habitat. Explore their anatomy by learning how they get oxygen, move and use camouflage to hide from predators. Design your own fish by choosing a habitat such as the frigid Arctic Ocean, warm coral reefs of Australia, glacial streams in Alaska or anywhere you choose! Imagine what its shape would be, its colors, and what it eats to best suit its environment. Learn more about fish adaptations here: https://www.floridamuseum.ufl.edu/discover-fish/fish/adaptions/

Fishy Foods—Fish are a staple food for many Alaskans! Whether its sushi, fried, baked or grilled, different cultures celebrate fish in many ways. Does your family eat fish? If so, how? Do you catch it yourself? Where? Cook a delicious meal that includes fish and share it with friends and family! If you or your family do not eat fish, learn how fish are celebrated in your community by learning local stories or legends about fish!

Just Keep Swimming—Fish are especially adapted to moving through the water (you could say they are pretty e-fish-ent!). Compare yourself to a fish! Black Marlin are the fastest fish in the world reaching speeds of up to 70 MPH! While your common goldfish can swim at a cozy .86 MPH (.4 m/s). How fast can you swim? Visit a pool (or try running on a track!) to time how many meters you can swim in a second and compare yourself to a fish!

A Poem for the Fish—Do some research on fish you find interesting. What kinds of things can you learn about that fish? Where does it live? What does it look like? What does it eat? Write a poem or a short story about a fish of your choosing and accompany it with a piece of art!

Fishing Fun—Have you ever gone fishing before? What about ice fishing? Rent, borrow or use your own gear and give fishing a try! If you are going ice fishing be sure to check ice conditions before making any plans.

Hatchery—Visit your local fish hatchery and learn about how the whole process works. Why do we have hatcheries in Alaska? What types of fish are in your local hatchery? Talk to someone working there to find out the answers to these questions.

Daisies and Brownies complete 3 activities, Juniors and up complete 4 to earn your Conserve Alaska Patch!

Litter Patrol— Choose a place in nature, it could be the beach, your favorite camping spot, or even along a trail and spend some time picking up trash with your troop or family! How much trash can you pick up?

Reduce Comes First!- How can you reduce the amount of plastic you throw away? Think of ways you and your family, school, or community can reduce waste in ways like using reusable shopping bags, only using refillable water bottles for drinks, using reusable containers and try reducing the plastic ware you use for to-go food and instead bring your own reusable utensils. Put one of these ideas into action.

Trash to Treasure—Find a few things that you were going to throw away and see how you can put it to use! Choose a few pieces of trash and create something new by combining them together into something you can reuse. This can be a piece of art or something that can be used. Here are some ideas: https://www.thesprucecrafts.com/top-trash-to-treasures-crafts-1254258

Create a Compost Bin— Composting is nature's way of breaking down biodegradable materials into nutrient rich soil. Anything that was once living can decompose given appropriate conditions. You can create your own compost bin to reduce waste going to the landfill. Check out this website to learn how to make your own compost bin: www.gardeningknowhow.com/special/children/composting-ideas-for-kids.htm. You may have to adapt your bin to work for your location or the materials you are looking to compost.

Water Conservation—Water is a necessity for all living things, it is also another thing we can be more conscious of in our reduce, reuse, recycle efforts. Choose one way you can reduce your water use and do that action for 7 days. For some ideas, check out The Water Page here: http://www.thewaterpage.com/water-conservation-kids.htm

Watt's Up? - How long can you go without using electricity? 30 minutes? 1 hour? Try going 2 hours without using *any* electricity! How much wattage can you save? Reduce your use of electricity by unplugging items that aren't in use like coffee makers, toasters, kettles, microwaves and more! Learn lots more about energy conservation: https://quiethut.com/energy-conservation-for-kids/

Human Powered—Notice a time when you are about to get in the car to go somewhere and think about instead using something human powered to get to your destination. This could mean just walking or maybe even taking your bike to your destination. Cars can cause pollutants that can be damaging to the environment, by walking you are helping save the planet!

Earth Day—Earth Day is April 22nd, do something on this day to celebrate the earth! Make a thank you card to the earth, do some arts and crafts, read books about the earth, or just spend the day outside to appreciate it!



Alaska's Botanicals

Daisies and Brownies complete 3 activities, Juniors and up complete 4 to earn your Alaska's Botanicals patch!

Wild Edibles — There are many different kinds of edible berries all over Alaska! From the blueberry and huckleberry, to thimbleberries and salmonberries! Many flowers and berries in Alaska can be eaten, prepared in cooked meals, as jam or used for tea! Can you name some eatable plants you know of in your area? Go berry picking with your family and make some jam or collect some fireweed to make fireweed jelly. Be sure you know everything about what berries and flowers you decide to collect before going out. Some flowers and berries are poisonous to humans. **Jam Recipe:** https://www.almanac.com/news/cooking/cooking/how-make-berry-jam

Plant Press Book — Take the summer to create a plant press book of all the new flowers and other plants that you find. Create the press using the link below, once dried, paste the flower into a book and label it by identifying it by looking at the leaves and petals, and see how many you can get in your book by the end of the summer! There are so many fun crafts you can do with pressed flowers! Resource: https://www.redtedart.com/how-to-press-flowers/

Nature Walk— Go on a nature walk with your family and see what plants you can already name while also seeing what new trees, flowers, berries and other you can find. Find a plant identification book from your local library, download a plant ID app or print out the Plant Identification Sheet from one of these websites: http://www.alaska.org/expert-advice/plants-flowers or https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd529923.pdf and bring it with you outside. Let's see how many different types of plants you can find! Take pictures of these plants and write down what you noticed while looking at them. What would you name the flower or tree if you were the one to discover it?

Flower Parts— Learn what makes up the parts of a flower by labeling and coloring your own flower or use the attached sheet on the next page. If you are making a plant press book, label the parts of your pressed flower after it is pasted in your book! If you would like to label even more flower parts or make your flower out of pipe cleaners and tissue paper look here: https://layers-of-learning.com/parts-of-a-flower/

Flower Dissection—Learn the parts of a flower in a hands on way by dissecting a real flower part by part: https://www.instructables.com/id/Flower-Dissection/



Alaska's Botanicals

Daisies and Brownies complete 3 activities, Juniors and up complete 4 to earn your Alaska's Botanicals patch!

Phytoplankton Races— Phytoplankton are probably not something that comes to your mind when you think about plants. However, these microscopic plants are essential to life in water! Phytoplankton are at the end of a long food web in the ocean. They had to adapt to not sink in water too fast since they need sunlight while also not staying at the surface and being eaten by a bird! Learn about what it takes to be a phytoplankton in salt water by participating in the phytoplankton races! http://www.cosee.net/best_activities/activity/Plankton_Races.pdf

Fairy garden— Create your own miniature garden for fairies and bees alike! Get creative using things that you already have around the house along with your choice in plants! It can be as big or as small as you like, and as simple or complex as you like—you can't go wrong with a fairy garden! No need to complete it in one day, take the summer to add, take away or change your fairy garden to perfect it. Use listed website for ideas and inspiration for your fairy garden. Resource: https://homesthetics.net/16-fairy-garden-ideas-kids/ If you would just like to make a garden outside full of native Alaskan flowers, that's fine too!

Celery Osmosis- Plants need water just like you and me however, they can not drink like we do. Learn how plants take in water through this fun science experiment: http://www.teaching-tiny-tots.com/toddler-science-celery-experiment.html

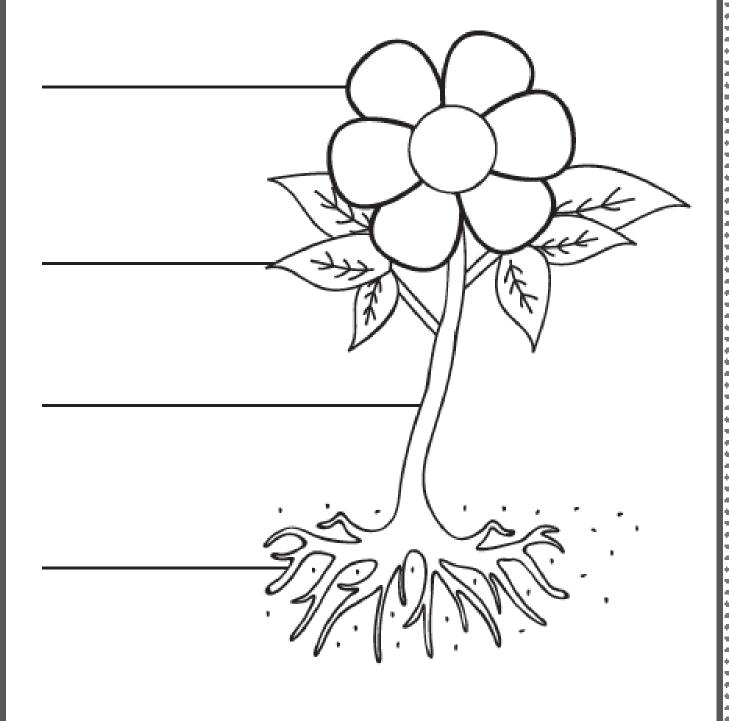
Bean Sprout—Watch the process of a bean sprouting from a seed! This is something we usually can not see since it happens under the soil. We can watch this process by taking 4-5 beans, of any kind, and placing them into a zip lock bag with a moist paper towel. You can tape this baggy to a window for some light and watch the beans growth every day!

Plant Language— Did you know that plants can talk to each other just like you and I? They warn each other of potential dangers, like an animal munching on them. Plants do this through fungi under the forest floor that can transfer a message from one plant to another! Plants are amazing! Draw a picture of what you think it looks like under a forest with all these connections.

Order your patch online here: https://tinyurl.com/alaskasbotanicals







Roots

Flower

Leaves

Stem

Label the Parts of the Flower

