This Journal Belongs To

_____

_____

_____

This journal was created through a partnership between Fairfax County Goverment and Fairfax County Public Schools.

Virginia Bluebell

Fairfax County Field Journal

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Director of Stormwater Planning
12000 Government
Center Parkway, Suite 449
Fairfax, VA 22035

Red-headed Woodpecker

Hi there! Welcome to the amazing world of field journals! We hope you use this book to discover more about your neighborhood, school, and the outdoors while having fun with the natural world around you.

How To Use This Book

A field journal is a place to record whatever you want about your world. In the following pages you will see lots of ideas for exploring nature through a combination of art, writing, and science. There are also plenty of blank pages for you to record your own observations.

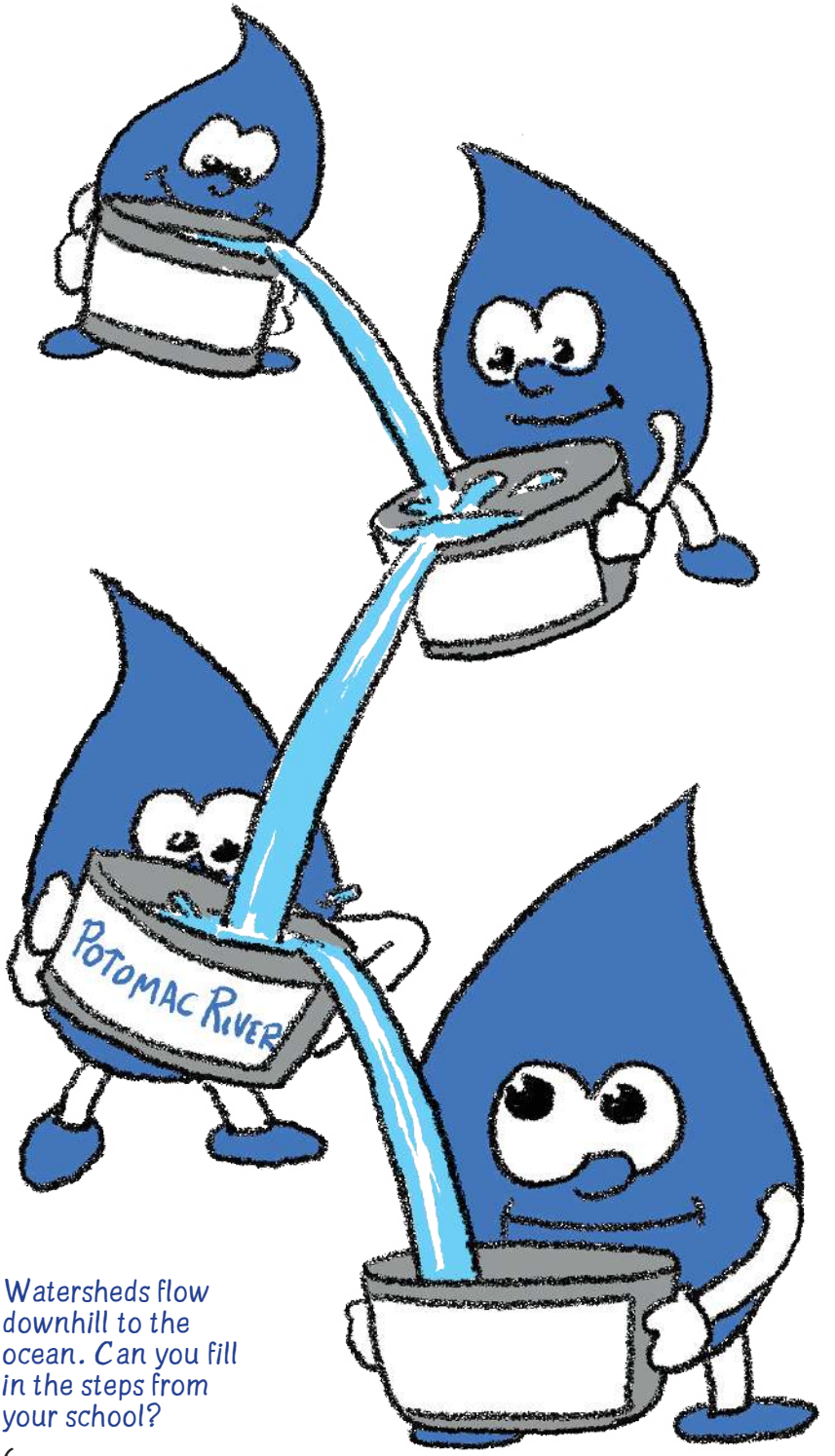
There are no rules! Draw, write notes, use color, pencil, pen, markers, paints, dirt, whatever you want! You don't have to worry about batteries or charging time, just enjoy being outside.

Field journals are among the most famous books ever created—and each one is different. It might take you a few tries to figure out what style works best for you, but that is what will make your field journal special.

Feel free to follow instructions or invent your own ideas—the important thing is to explore our amazing natural world!

Here are some things you can put in your journal...

I SMELLED...
HONEYSUCKLE
THE WOODS AFTER IT RAWS
A PINE TREE
AN ACORN
I TOUCHED...
A RED MAPLE LEAF



Watersheds flow downhill to the ocean. Can you fill in the steps from your school?

What's Your Watershed Address?

A watershed is an area of land where all the water drains to the same body of water, such as a stream, river, or ocean. Here in Fairfax County, we have 30 major watersheds, but each watershed is made of smaller watersheds. Smaller watersheds are nested within larger watersheds, similar to measuring cups.

All of the watersheds in Fairfax County flow into the Potomac River and are part of the Potomac River Watershed. Where does the water go from there?

Fill in the rest of the raindrops' buckets with your watershed address. You can use www.fairfaxcounty.gov/publicworks/stormwater/find-your-watershed to find out which watershed your school is in.

Make Your Own Watershed Map

Watersheds are separated by watershed divides which are the highest point in the land. This could be a natural ridge or even a road.

Materials you will need:

1) Spray bottle filled with water
2) Washable markers, preferably blue (using washable markers will let the ink travel "downstream" with the water as it's sprayed)

Instructions:

1) Tear out the next journal page.
2) Crumple it up into a ball.
3) Unfold your paper and flatten it a little bit. (Leave some ridges!)
4) Use your marker to color along the ridges in the paper.
5) Make it rain on your watershed! Use a spray bottle to lightly mist your watershed until water begins to flow down the paper.

Tear me out!

Tear me out!

Record your observations

Where did the rain flow?

Where did it collect and why?

How many watersheds do you have on your paper?

Are some watersheds larger than others?

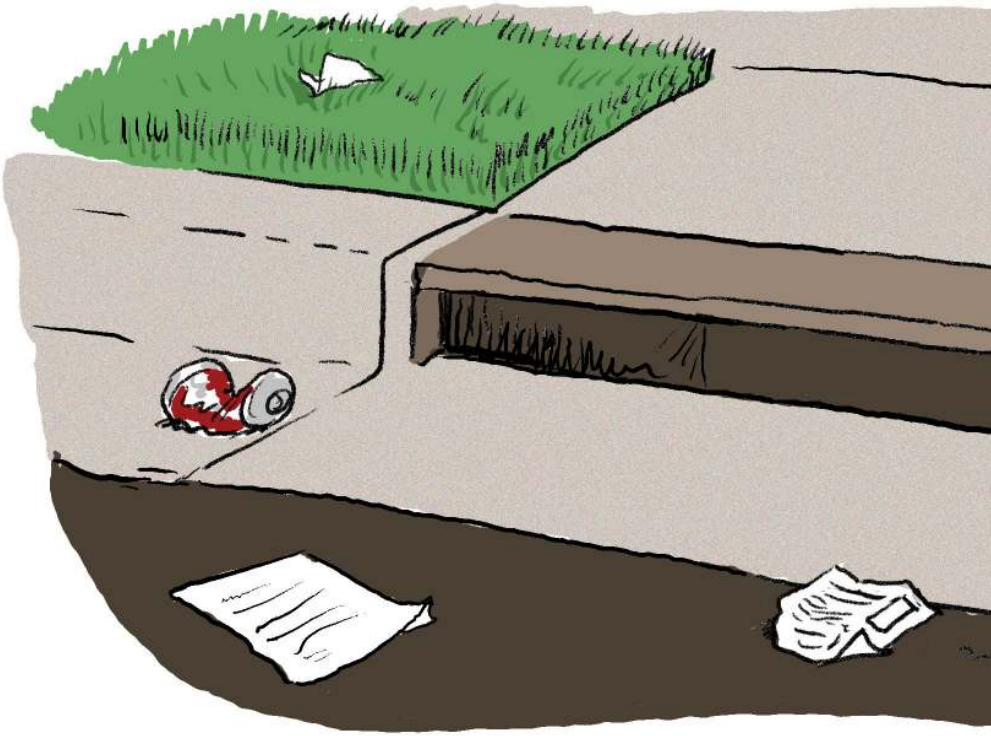
Are there smaller watersheds nested within larger ones?

What do you think the ridges on your paper represent?

What Is A Storm Drain?

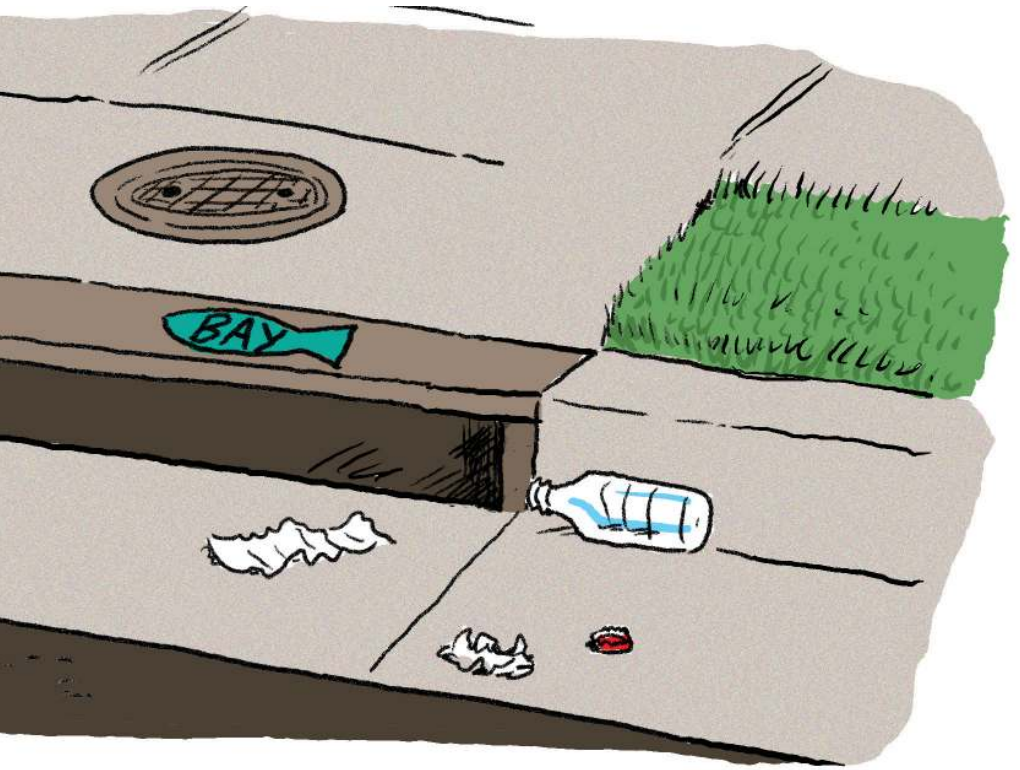
Have you ever wondered why we have storm drains? What do they do? Where do they lead?

Storm drains help move stormwater off our roads and parking lots to prevent flooding. Sometimes they look like the picture below and sometimes they look like grates in the ground. Once something enters the storm drain, it comes out at the closest stream or pond.



Think of all the litter you see on the ground. When it rains, all that litter washes into a storm drain and then into the closest stream. That means our wildlife are living in streams full of soda cans, plastic bags, and food wrappers. Yuck!

Take a walk around your school. How many storm drains do you see? Where are they? Use the next page to draw a map of your school and label where the storm drains are.



How Much Litter is There Really?

Did you know there are more than 1.1 million people living in Fairfax County?

If everyone dropped one piece of litter a day how many pieces of trash would there be after 1 week?

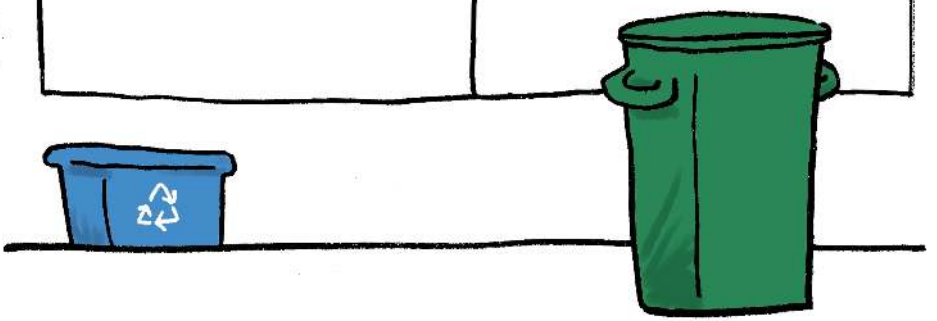
When it rains, water picks up all this litter and other pollutants on our land and brings it to the nearest stream.

Go around your school and record what litter you find. Use the data sheet to tally up your findings.

What litter did you find?

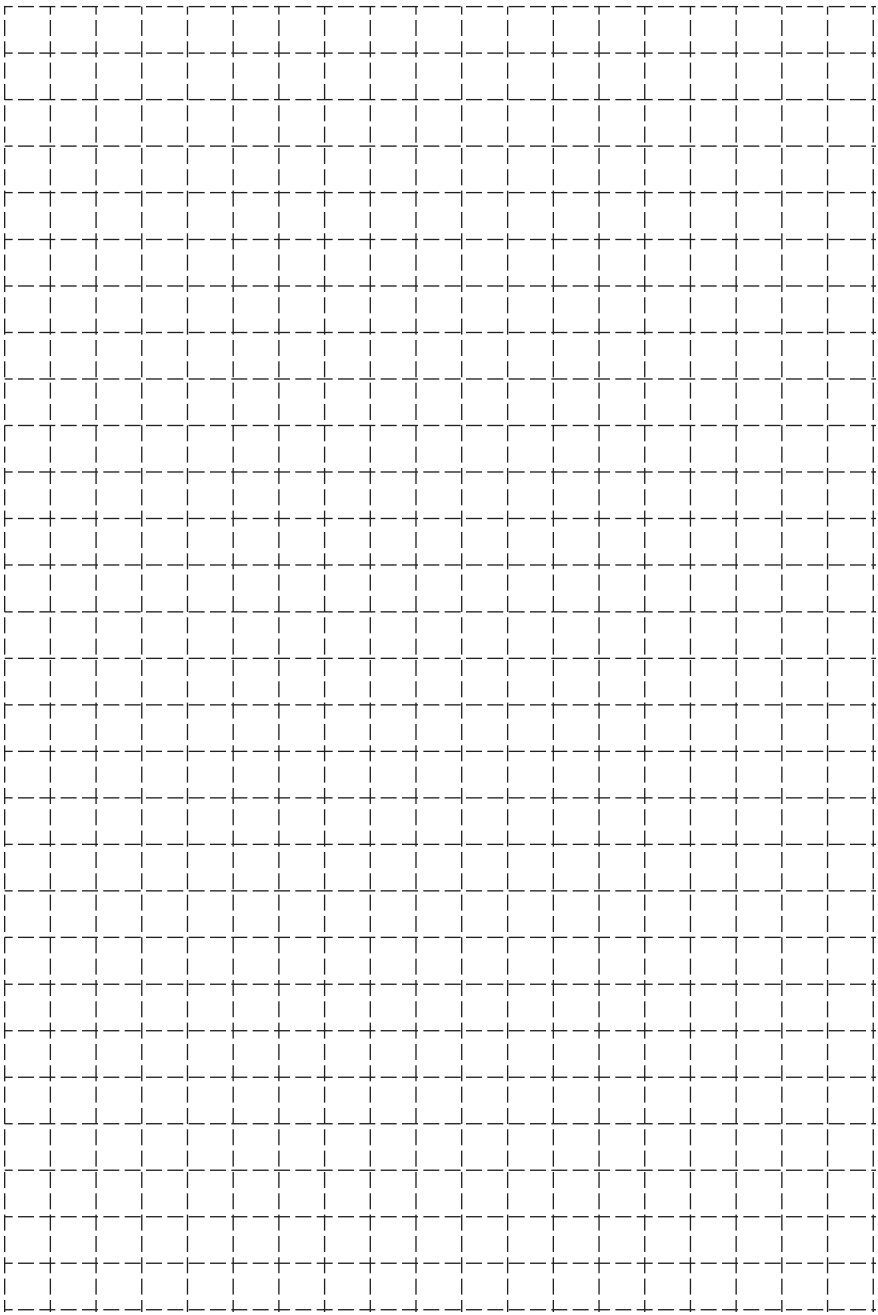
Keep track of what you find here
- add categories if necessary.

RECYCLE	TRASH



For current information on what you can recycle at school, go to
get2green.fcps.edu

Make a bar graph of your findings here:

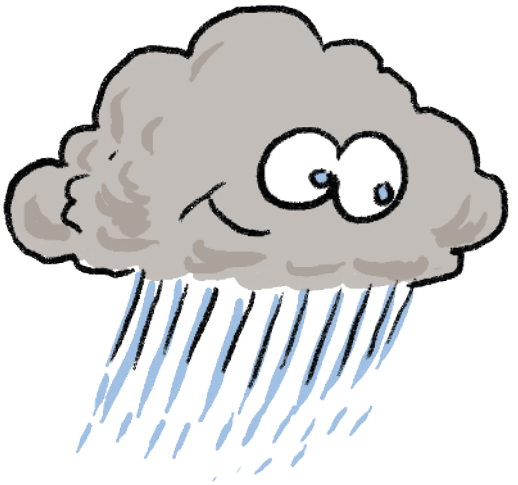


Turn the page *sideways if you need more space*

Analyze your results

What kinds of items did you find the most of? The least of? Why might that be? Where do you think it all came from? Create a campaign to stop litter at your school.

It's Raining!



But how much? A lot? A little?

How much rain does Fairfax County get per year?

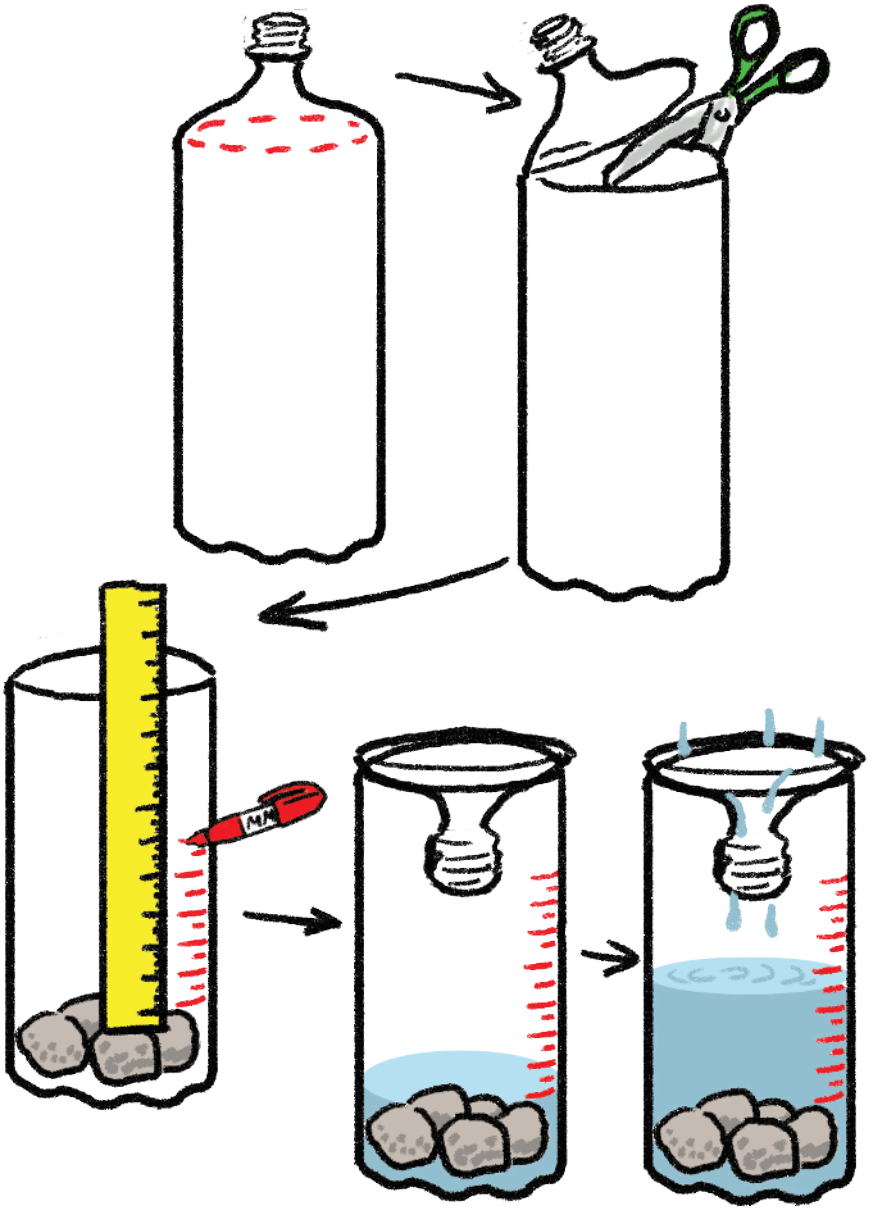
How much rain do you think is normal?

Does it change based on the season?

Build your own rain gauge to find out!

What you'll need:

- Plastic soda bottle
- Some stones/pebbles
- Scissors
- Sharpie
- Tape
- Ruler



How to make it:

1. Take off bottle cap.
2. Cut the top off the bottle.
3. Place stones in the bottom of the bottle to keep your gauge from tipping over.
4. Use a ruler and marker to make a scale on the bottle. Mark the top of the rocks as zero.
5. Turn top upside down and tape it to the bottle.
6. Add water to the zero mark.
7. Place gauge outside where it can collect rainwater.
8. After a storm, check out how much it has rained! Record your results on the next page. Empty, refill, and place your bottle back outside for the next storm.

Let's collect some data!

Date of storm_____ Amount of rain_____

Date of storm_____ Amount of rain_____

Date of storm_____ Amount of rain_____

Date of storm_____ Amount of rain_____

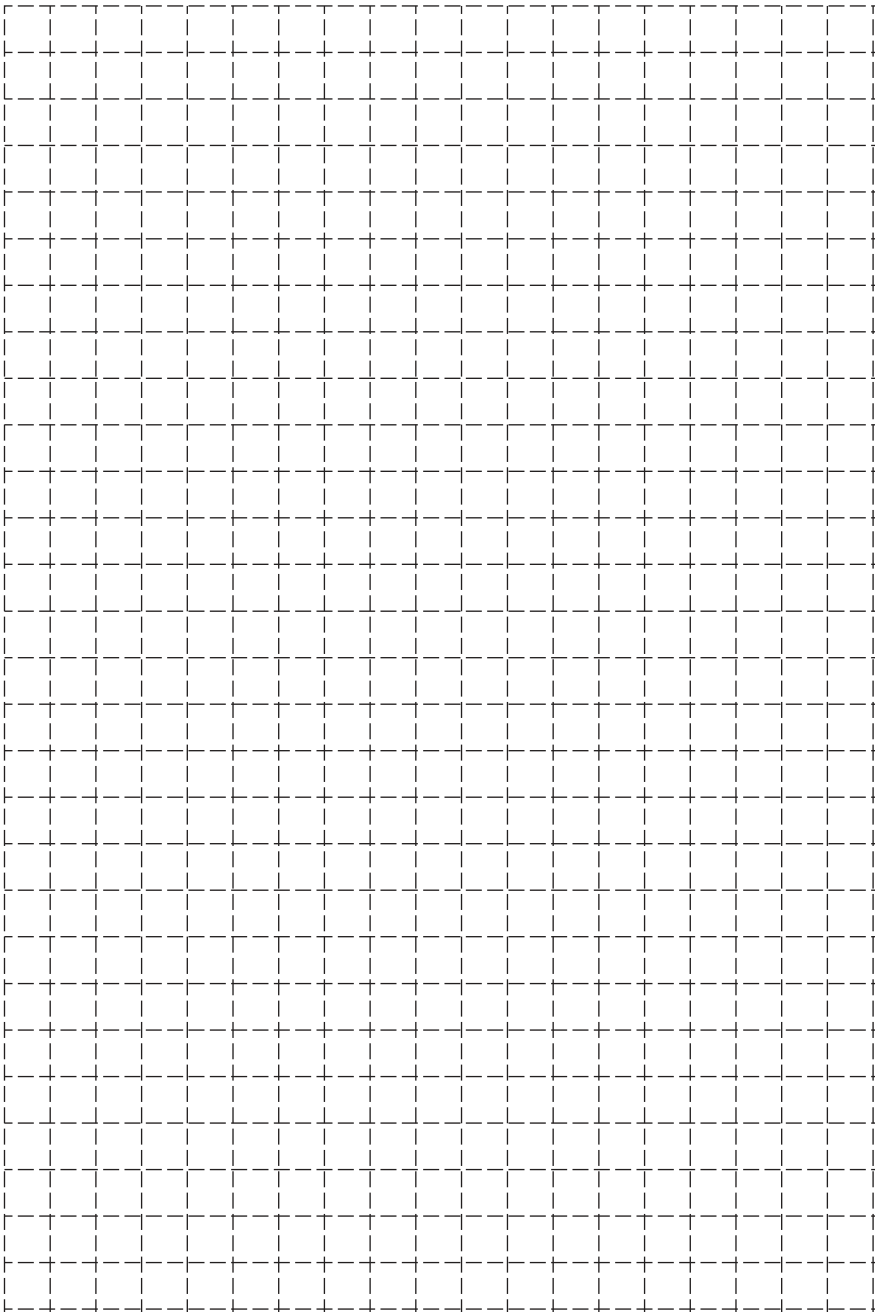
Date of storm_____ Amount of rain_____

Where do you think the water goes?

How does it benefit plants and animals?

Can there be too much rain? How so?

Make a graph of your findings here:



Turn the page sideways if you need more space

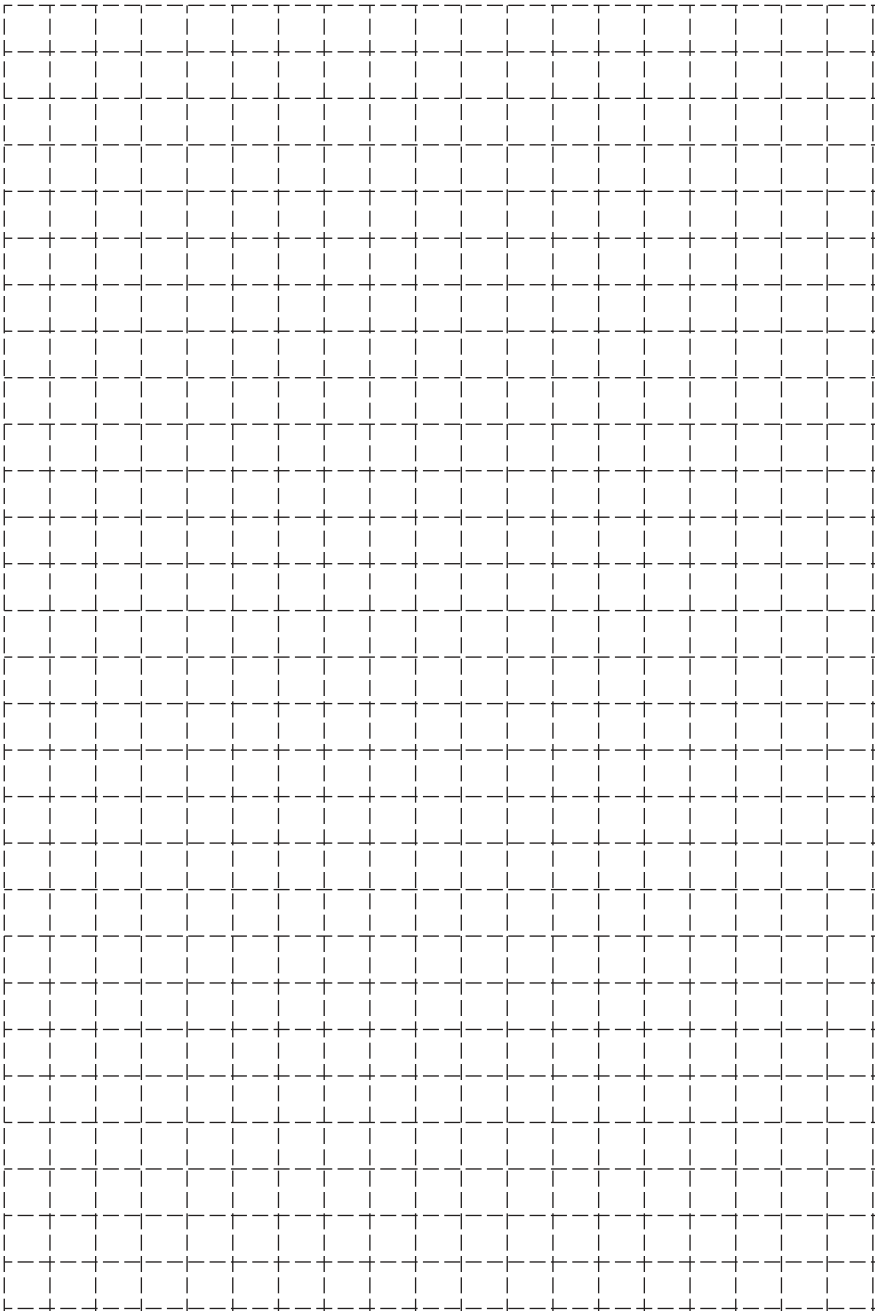
It's Snowing!

Fill your guage with water to the zero mark and then put it outside before it's supposed to snow. Measure the height of the snow and bring it inside to melt. How much water is in snow? Is it more or less than you thought it would be?

Date of storm_____
Amount of snow_____
Amount of melted snow_____

Date of storm_____
Amount of snow_____
Amount of melted snow_____

Make a graph of your findings here:



Turn the page sideways if you need more space

Pervious vs. Impervious

Stormwater runoff is rain or snowmelt that flows over land. Depending on where the stormwater falls, it can either soak into the ground or run off over land. A surface that allows stormwater to soak into the ground is called a pervious surface. A surface that does not allow stormwater to soak into it is called an impervious surface.

Take a walk outside around your school and list some examples of pervious and impervious surfaces you see. If you are not sure, pour some water onto the surface to see whether it soaks in or runs off!

Pervious Surface (Water can soak through)	Impervious Surface (Water cannot soak through)
Example: Forest	Example: Driveway

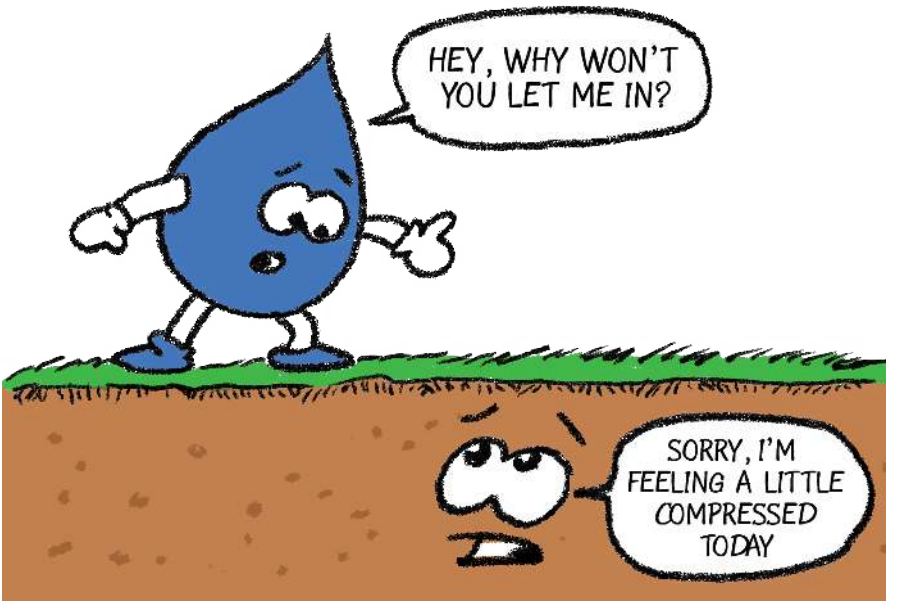
Sometimes, even when a surface seems like it should be pervious, it may not be. Think of a bowl of cereal. If you pour the cereal into a bowl, there's a lot of space between each piece of cereal. Now pour in the milk. The milk flows to the bottom of the bowl because there was room for the milk to go between each piece of cereal.

Now if we crushed up the cereal and packed it as tightly as possible in the bowl, the milk would have nowhere to go and spill over the side!

Liquids need space to travel through or else they get stuck on the surface. We call this pore space, and pervious surfaces have a lot of pore space. In the first example, there is a lot of pore space between the pieces of cereal for milk to go through. When we crush up the cereal, we take away all the pore space between the pieces of cereal. Now the milk has nowhere to go and runs off.

The same thing happens with our soil. If we have soil that has lots of pore space, water can easily soak through it. If we step on that soil a lot, we crush the spaces between the soil and reduce the amount of water that can travel through it.

An example of this is an open field where students have recess every day. The surface is covered by grass that water should be able to pass through easily. However, it is almost an impervious surface from being stepped on all the time, which closes all of the pore space in the soil beneath the grass. Test out the grass field at your school, pour water in a spot on the field and see whether it soaks in easily or not.



List some ways we can prevent closing pore spaces in soil.

How can we add more pore space?

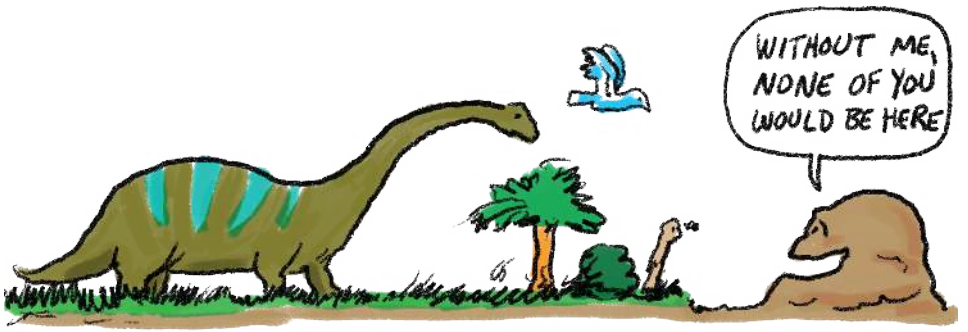
Why is it good for water to soak into the ground instead of sitting on the surface or running off over land?

What is Soil and Why is it So(il) Important?

Have you ever thought about the soil underneath your feet? What comes to mind when you hear the word soil?

Soil is a mixture of organic materials like decaying plants and animals, and inorganic materials like very small bits of rock and minerals.

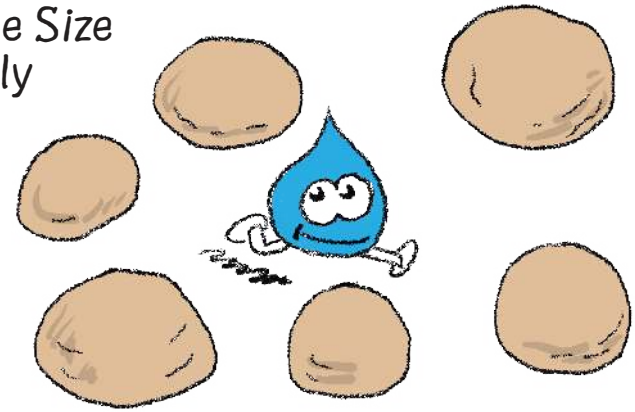
Soil is the foundation for life on Earth. It provides a place for plants to grow, filters and cleans water, and much more!



There are three different types of soil

SAND

- Large Particle Size
- Drains quickly
- Feels gritty

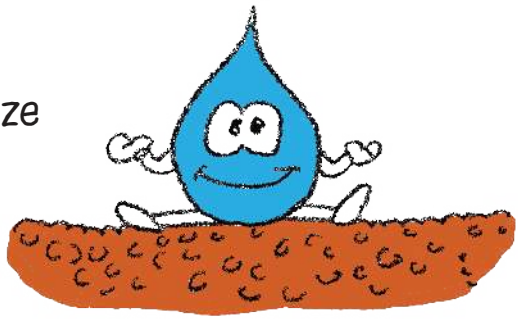


SILT

- Medium Particle Size
- Drains not too quickly or too slowly
- Feels smooth and slippery

CLAY

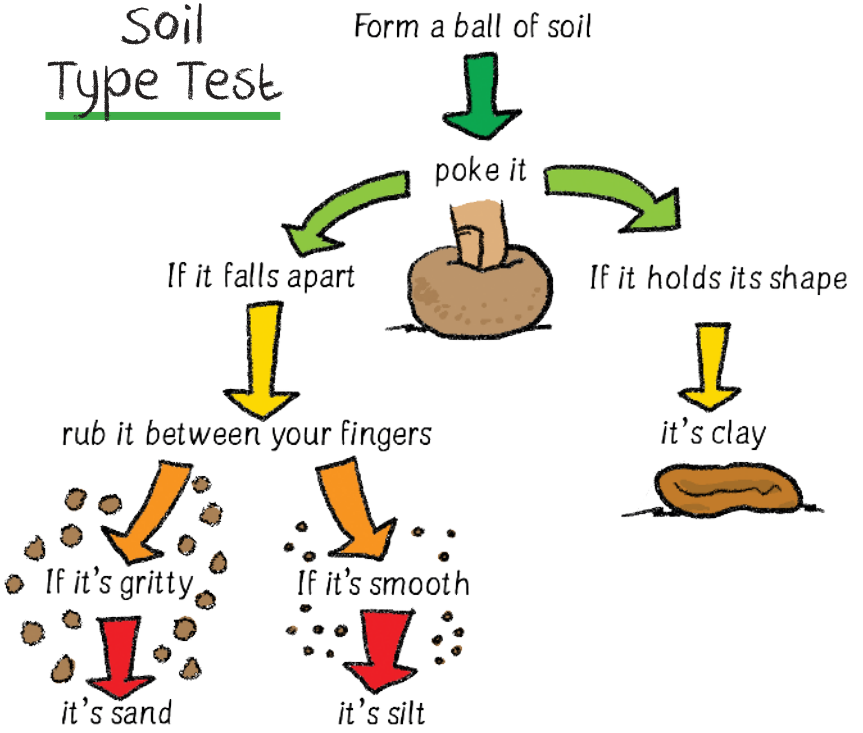
- Small Particle Size
- Drains slowly
- Feels sticky



How do we tell which type of soil we have?

Most of the time, we have a mixture of soil types. Can you tell which soil type is most dominant at your school?

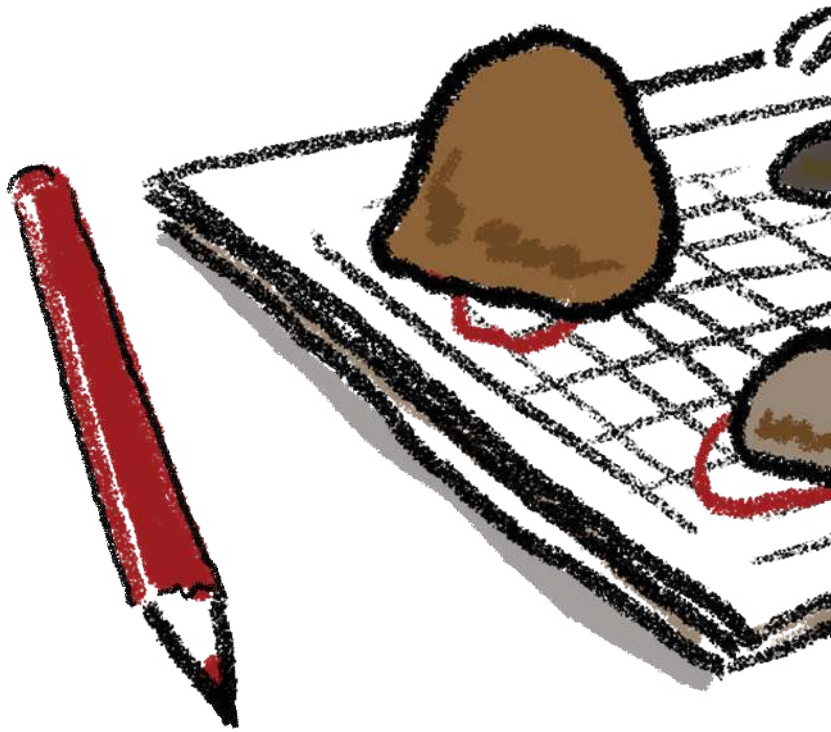
Dig a hole two inches deep (this makes sure you are below the top layer of grass and organic material). What type of soil did you find? Take a scoop of soil, hold it in your hand, add just a little bit of water, then squeeze.

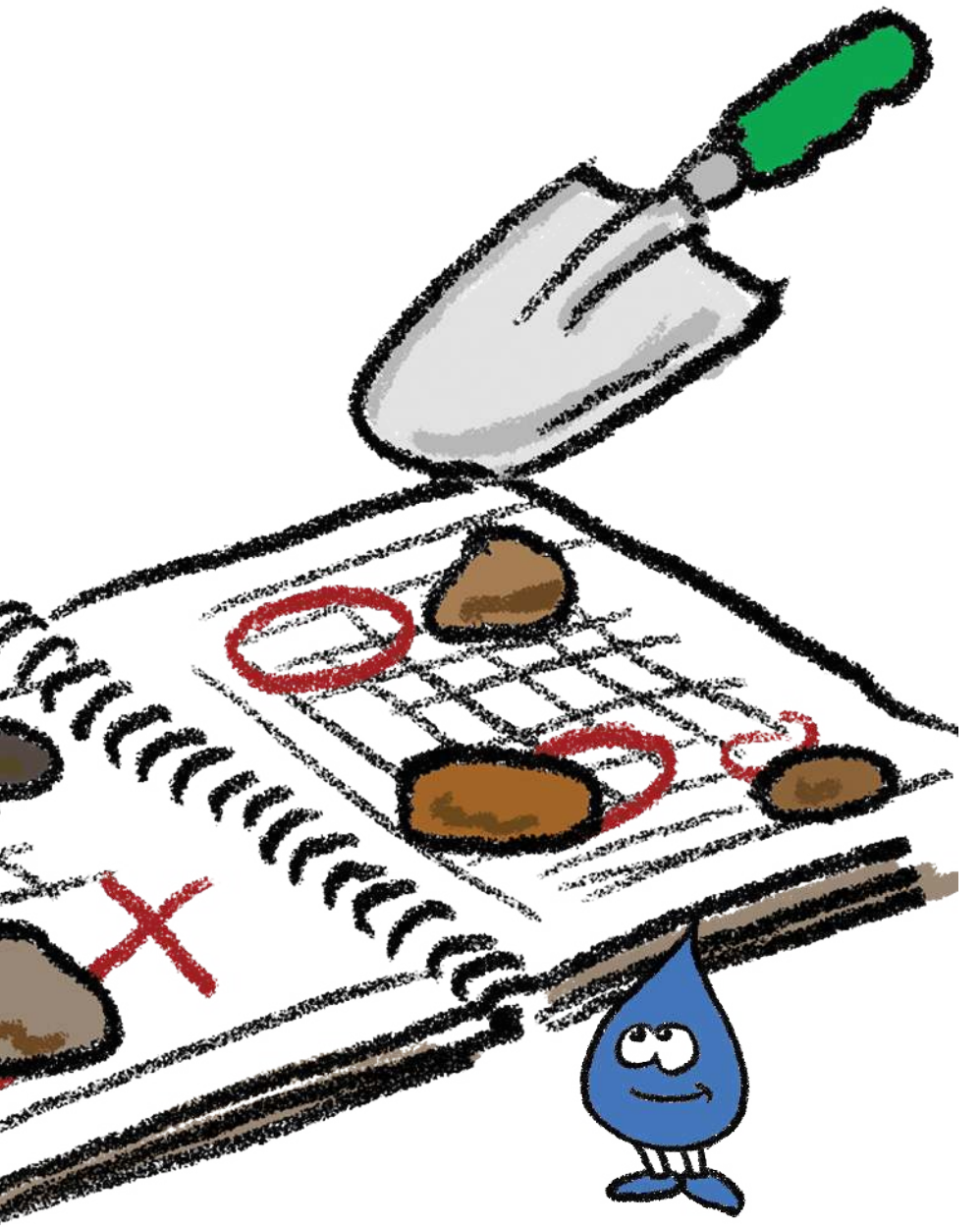


Make a Soil Map of Your School!

Do the soil type test in different locations around your school. Draw a map of your school campus on the following two pages. Mark on the map where you sampled soil. Write down what types of plants are growing in that soil.

Smear some of the soil you collected on your map where you dug it up. Label the type of soil (sand, clay, or silt) on your map. If you can't dig down at least two inches no matter how hard you try, label that area as "urban."





Write about your soil samples

Soil that is loose and crumbly lets in a lot of water and oxygen and allows roots to easily grow. Soil that is hard and packed tight does not. Soil that is black or dark brown has lots of nutrients. Soil that is light colored, orange, or red does not. Observe the look and feel of your soil.

How does your soil feel?

What color is it?

What does it smell like?

Why would you want different types of soils?

What differences do you see in plant communities growing in the different types of soil?

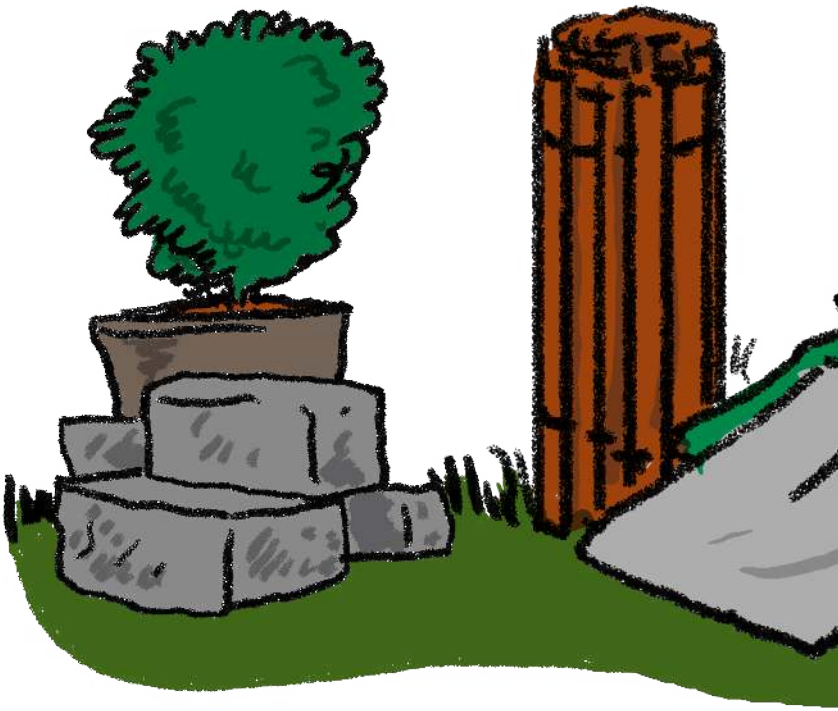
How can you tell if your soil is good for plant growth?

Are the soils you found good for plant growth?

Design a Garden!

Your principal has given your class an area of land 20 meters by 10 meters to turn into a garden. Your garden will act as a sponge for stormwater, catching the water as it runs over our land, and slowing it down before it makes its way to our streams.

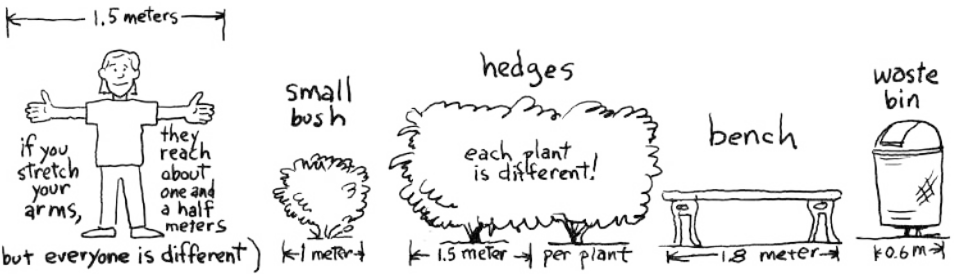
Things to think about:
What plants will you use?
In addition to plants, what will you add?
What wildlife will want to be in your garden?
What do living things need in a habitat?

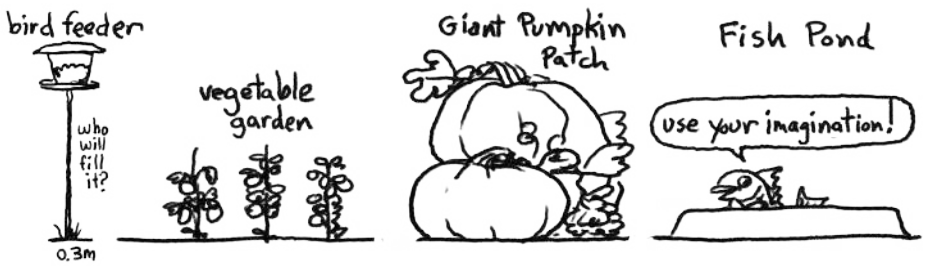


20 meters

10 meters

THIS IS ONE SQUARE METER




bird feeder
who will fill it?
0.3m
vegetable garden
Giant Pumpkin Patch
Fish Pond
use your imagination!

Design Your Own Field Guide Pages!

Pick an organism you see outside.
It can be any living organism you see.
What did you pick?

Draw a picture of your organism below:

Write a detailed description of your organism (size, shape, color).

What is its habitat?
(Where did you find it? Where does it live?)

Where does it fit in the food web?
(Where does it get its energy/what does it eat? What eats your organism?)

eats gets eaten by

Include a fun fact about your organism

Second Organism!

Pick another organism that you see outside.
It can be any living organism you see.
What did you pick?

Draw a picture of your organism below:

Write a detailed description of your organism (size, shape, color).

What is its habitat?
(Where did you find it? Where does it live?)

Where does it fit in the food web?
(Where does it get its energy/what does it eat? What eats your organism?)

eats gets eaten by

Include a fun fact about your organism

Third Organism!

Pick another organism that you see outside.
It can be any living organism you see.
What did you pick?

Draw a picture of your organism below:

Write a detailed description of your organism (size, shape, color).

What is its habitat?
(Where did you find it? Where does it live?)

Where does it fit in the food web?
(Where does it get its energy/what does it eat? What eats your organism?)

eats gets eaten by

Include a fun fact about your organism

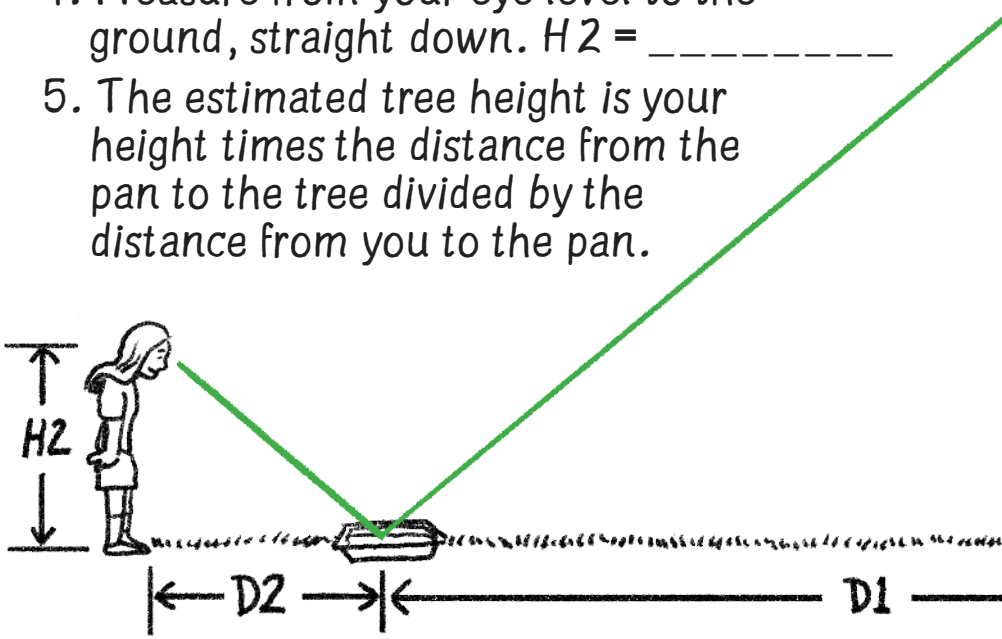
How would your three organisms interact with each other?

Draw all three on this page. Show how you think they would get along together.

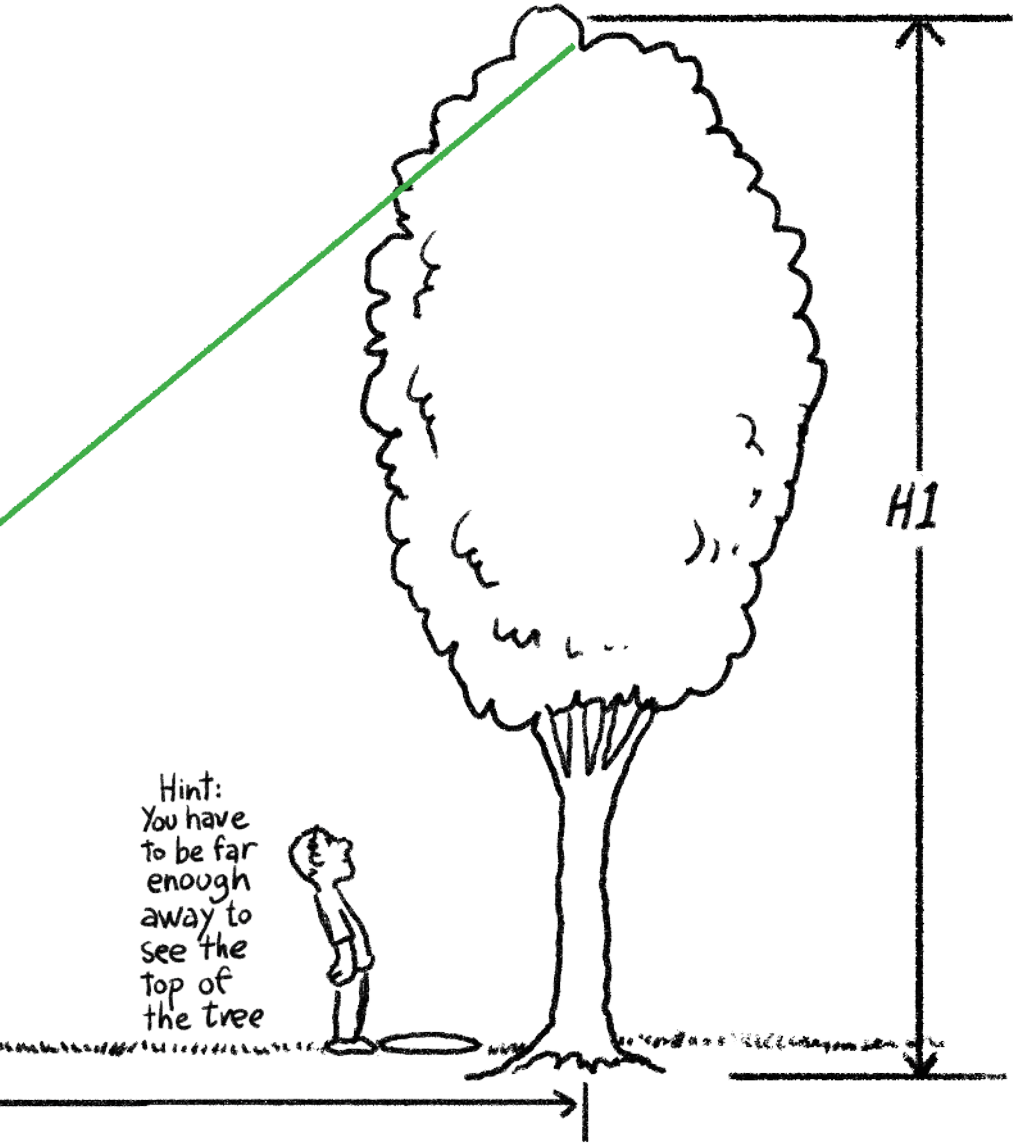
How Tall is that Tree?

Have you ever wondered how tall that tree at school is? Now you can find out!

1. Fill a black pan with water—this makes a great mirror during the day (or you could just find a mirror).
2. Place the pan a known distance from the tree. Measure the distance from the middle of the pan to the tree. D1 = _____
3. Stand back from the pan until you see the top of the tree in the middle of the reflection. Measure the distance from you to the center of the pan. D2 = _____
4. Measure from your eye level to the ground, straight down. H2 = _____
5. The estimated tree height is your height times the distance from the pan to the tree divided by the distance from you to the pan.

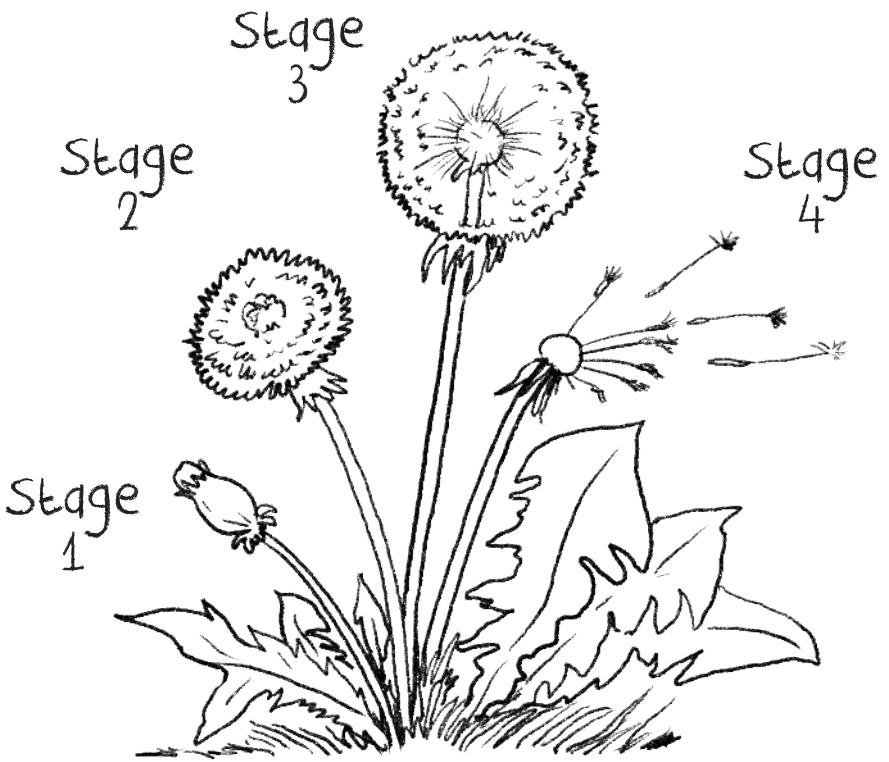


H2 ___ x D1 ___ / D2 ___ = H1 ____


H1
Hint:
You have
to be far
enough
away to
see the
top of
the tree

Draw with Dandelions

Dandelions go through stages as they grow. How many stages can you find? Pick a yellow dandelion and rub it on the stage 2 flower to color in the drawing below.

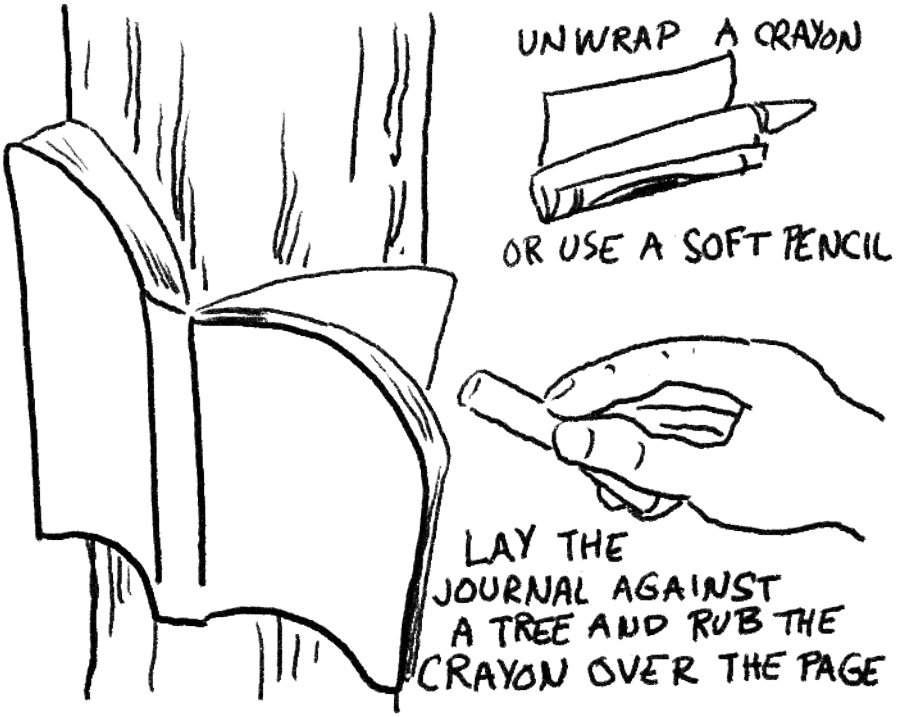


Can you find any white fluffy dandelions (stage 3 and 4)? These are in the seed dispersal stage.

The soft hairs carry the seeds when the wind blows strong enough. The seeds will grow where they fall.

Let Nature Rub Off on You

Just as your fingerprints are unique to you, bark patterns are different for every tree type or species. Tree bark protects a tree just like our skin protects us!



How many types of tree bark can you find?

How are they similar?

How are they different?

Bark Rubbing Page

Bark Rubbing Page

Bark Rubbing Page

Bark Rubbing Page

Know Your Leaf

Find a leaf on the ground and draw it to scale or do a leaf rubbing!

Write down some things you observe about your leaf. Then see if you can identify it.

Hey! When you see this icon, you can use your Fairfax County Field Guide to help with the activity.

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Write down some things you observe about your leaf. Then see if you can identify it.

Best of Buds

Before deciduous trees grow new leaves in the spring, they develop leaf and flower buds. Draw some here!

Zoom in! Focus on one bud.

Field Guide Connection

Zoom out! Draw the whole tree. Identify what tree it is:

Best of Buds

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Draw some here!

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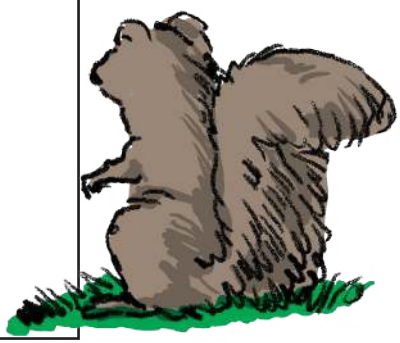


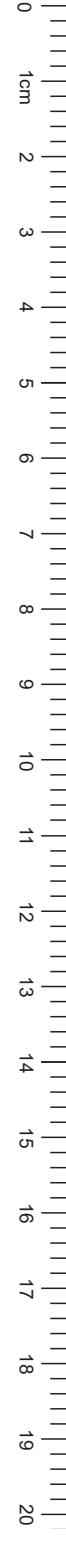
Look and Listen

Northern Cardinals

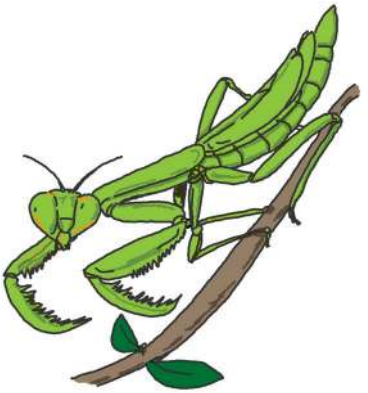
There are lots of animals in Fairfax County. What animals have you seen at your school? What do you see most often?

Go outside. Look and listen for animals. Write down the animals you see and hear.

Field Guide Connection



Draw what you think their tracks might look like on the ground. Draw them to scale.



Praying Mantis

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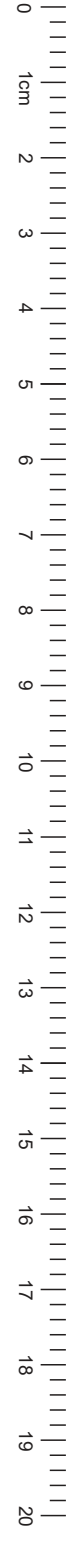
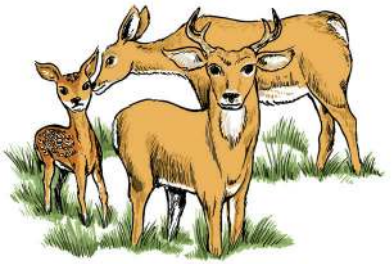
Field Guide Connection



Draw what you think their tracks might look like on the ground. Draw them to scale.

Look and Listen

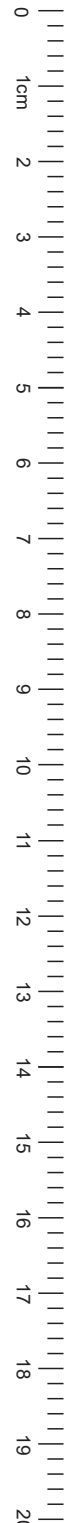


White-tailed Deer

There are lots of animals in Fairfax County. What animals have you seen at your school? What do you see most often?

Go outside. Look and listen for animals. Write down the animals you see and hear.

Field Guide Connection



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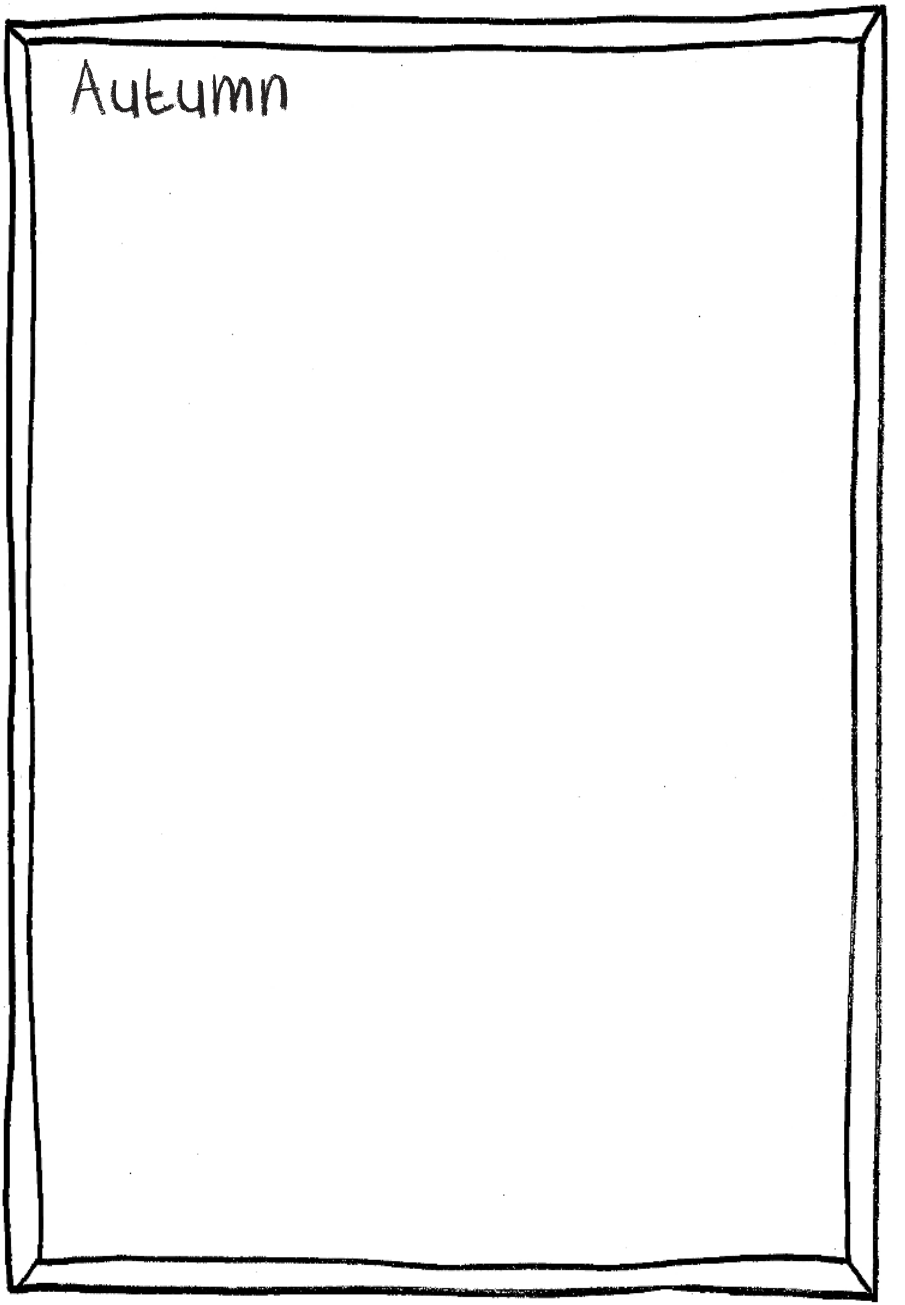
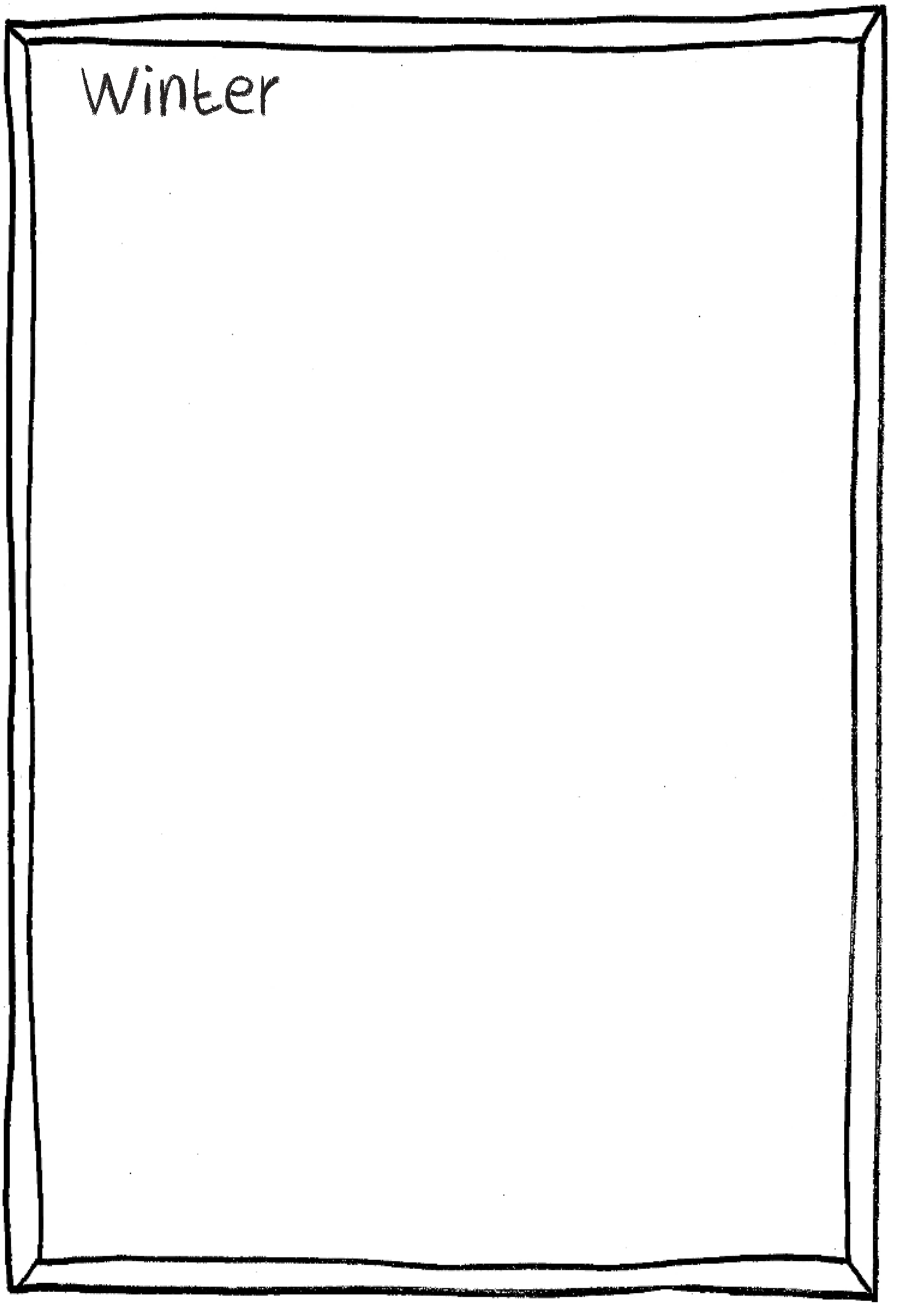


Find a spot with trees. Draw your tree throughout the seasons. Use color!



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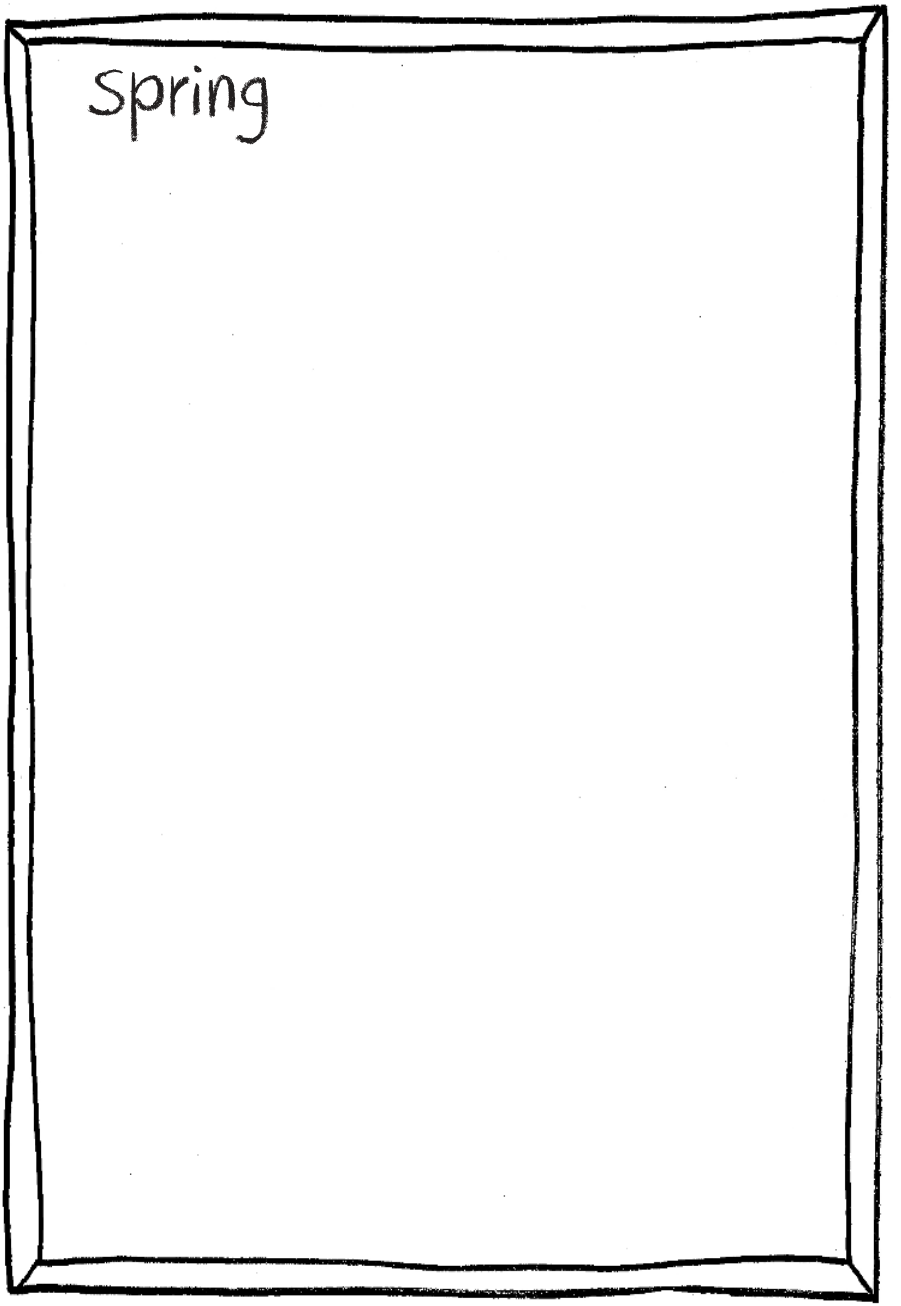

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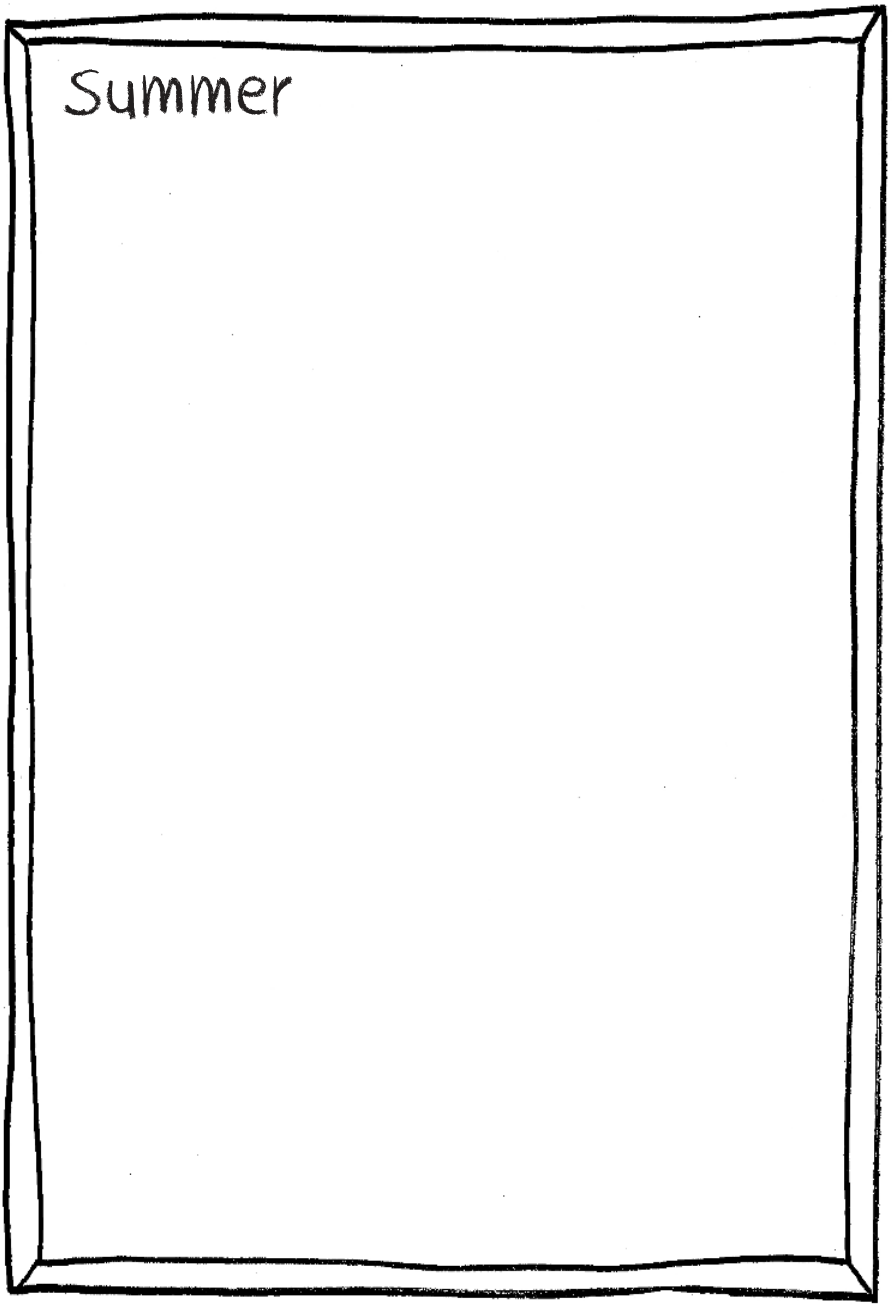


Find a spot with trees. Draw your tree throughout the seasons. Use color!

Zoom in, Zoom out Activity

Draw an organism that you see outside. What organism did you choose?

Zoom out! Draw your organism in its surroundings

Zoom in!
Pick a part of your organism to zoom in on and draw it in detail! What did you choose to zoom in on and why?

Zoom in, Zoom out Activity

Draw an organism that you see outside. What organism did you choose?

Zoom out! Draw your organism in its surroundings

Zoom in!
Pick a part of your organism to zoom in on and draw it in detail! What did you choose to zoom in on and why?

Sky Dreaming

Find your place. Look up. What kinds of clouds do you see? Sketch the clouds on this page. Do you see faces, animals, objects, or geographical features in the clouds? Use your imagination to identify any.

Time Travel

Choose an area to draw or write about.
What do you think that area was like
100 or 1,000 years ago?
What do you think it will be like in
100 or 1,000 years?

Sensing Nature

Find your place.
Close your eyes.
Listen carefully to the sounds—
do you hear insects, birds, water?
What do you hear? What do you smell?
Flowers, rain, soil? Open your eyes.
What do you see?
Pay attention to the little details and
record your observations here.

Human Impact

Think about your personal impact on the environment. Take a walk around your school campus. Make a list of ways that humans have impacted this site.

What are some actions that you can take to reduce your impact on your school grounds? Think about...
How do you get to school? What do you eat for lunch? What daily habits can you change to reduce your use of resources?

Food Web

Take a walk and make a list of the organisms you see. Don't forget producers and decomposers! Do you know how each organism gets their energy? Do some research if needed and draw a food chain, or write down the names of the organisms showing energy transfer. Get together with other students to see if you can combine your food chains to make a food web.

My Place in Nature

Write a letter to yourself.
Speak for nature—give it a voice.

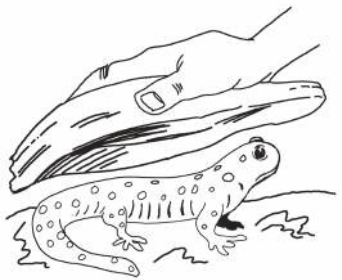
How Does Nature Inspire You to...?

Communicate?
Collaborate?
Think Critically & Creatively?
Be Goal Directed & Resilient?
Be an Ethical & Global Citizen?

"Look deep into nature, and then you will understand everything better."

Albert Einstein

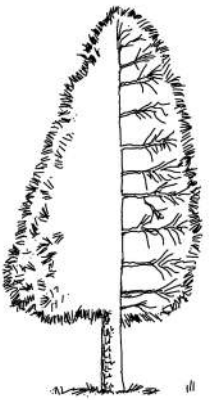
Go ahead and color!



Spotted Salamander

"I took a walk in the woods and came out taller than the trees."

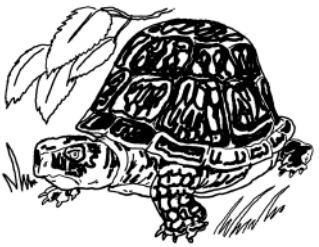
Henry David Thoreau



Pine

"Adopt the pace of nature: her secret is patience."

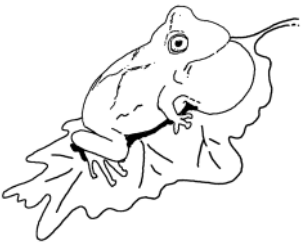
Ralph Waldo Emerson



Eastern Box Turtle

"All my life through, the new sights of Nature made me rejoice like a child."

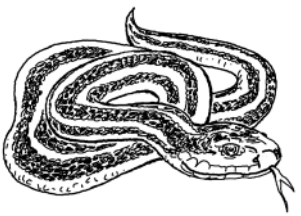
Marie Curie



Northern Spring Peeper

"Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has."

Margaret Mead



Eastern Garter Snake

"One of the first conditions of happiness is that the link between Man and Nature shall not be broken."

Leo Tolstoy

Honeybee

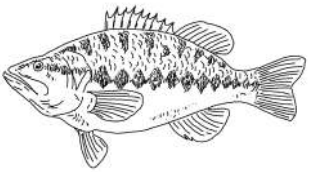
"You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make."

Jane Goodall

Monarch Butterfly

"Do unto those downstream as you would have those upstream do unto you."

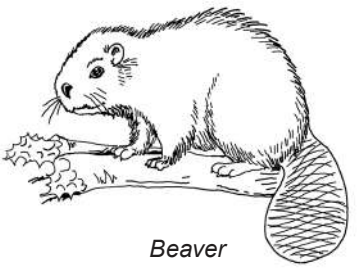
Wendell Berry



Largemouth Bass

"*In every walk in with nature, one receives far more than he seeks.*"

John Muir



Beaver

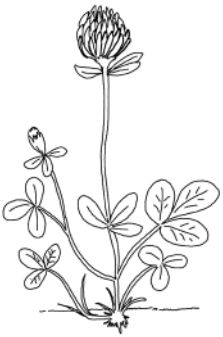
"We don't inherit the earth from our ancestors; we borrow it from our children."

Wendell Berry

Bradfor Pear

"I will find my joy - not in a bed of hothouse roses, but in a wayward roadside flower."

Muriel Strode



Red Clover

"Forget not that the earth delights to feel
your bare feet and the winds long to play
with your hair."

Kahlil Gibran

Red-tailed Hawk

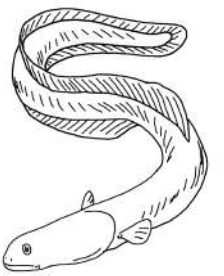
"Earth laughs in flowers."

Ralph Waldo Emerson

Black-eyed Susan

"If there is magic on this planet,
it is contained in water."

Loren Eiseley



American Eel

"The creation of a thousand forests
is in one acorn."

Ralph Waldo Emerson

Gray Squirrel

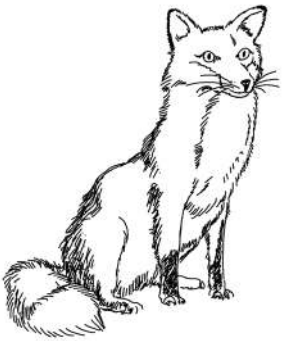
"Of all the paths you take in life, make sure a few of them are dirt."

John Muir

Mushrooms

"The mind that opens to a new idea never returns to its original size."

Albert Einstein



Red Fox