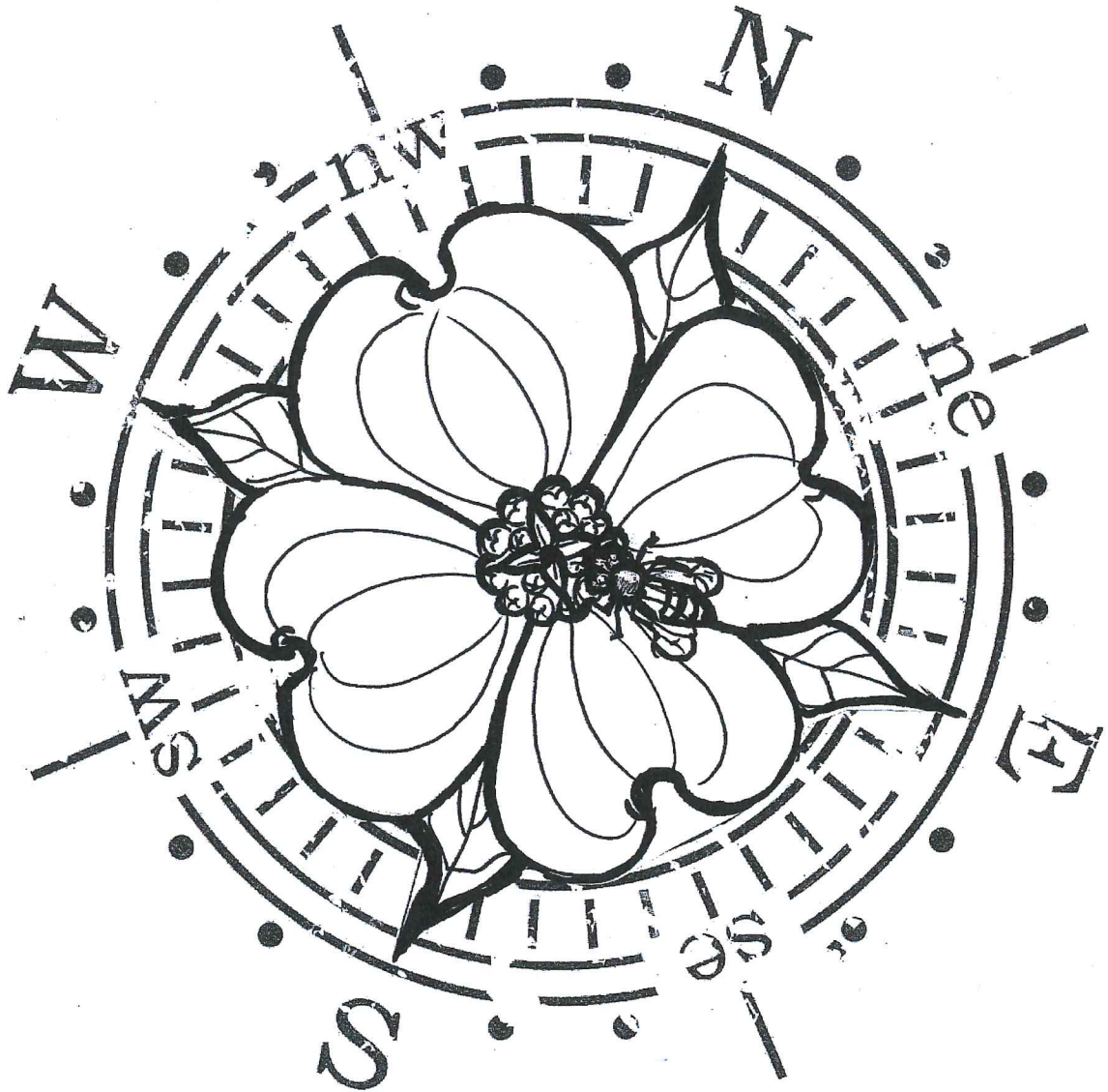


Nature Navigators



Journal & Play Book

for 9-12 year olds

Name: _____



About this book

This book contains activities for parents and children to do together in nature. They are short and fun! Each one should take 20 to 60 minutes, depending on how much you get into it.

Do one activity per week. Fill in the date you start each week's activity. Each activity has three parts: an introduction to do Monday, an assignment to do later in the week, and an end of the week reflection to do Friday. Check the boxes in the introductory part once you finish!

Each activity has a things-to-do page and a journal page. Use these journal pages to write a quick summary of how the exercise went. Keep a record of your thoughts, feelings, and "magic moments" in nature. Make notes with writing and with drawings!

If possible, pick a consistent time and day of the week to do this journaling exercise together.

Nature Navigators Certificate Program

For the certificate program complete **at least as many weeks as your age**. This total includes the Starter and Closing activities; for the middle weeks you can pick and choose. Fill in the Secret Spot Visit # line each time you do an activity to help keep track!

This book is for nine to twelve year olds.

Nine year olds should complete nine activities (Starter, seven of your choice, and Closing)

Ten year olds should complete ten activities (Starter, eight of your choice, and Closing).

Eleven year olds should complete eleven activities (Starter, nine of your choice, and Closing).

Twelve year olds should complete all twelve activities in this book.

If you're having fun, feel free to do more!

Starter: Beginning your exploration, being aware of hazards, and having fun!

Date: _____ Secret Spot Visit #: 1

Look for and choose your own special secret spot in nature. It should be easy to get to from your house and safe to play in.

It could be in your backyard! Bird feeders, back porches, and tree houses all make great spots. Try walking downhill to find water, like a sewer easement or creek. Different spaces will have different animals and plants to observe.

Is there any poison ivy around? Be careful not to touch it if you see any! Poison ivy has a hairy-looking vine and its leaves grow in groups of three: once central leaf and two mitten-like leaves on either side.



My Journal: Starter

Assignment

Come back to your secret spot at least once during the week.

Time yourself for three minutes and write down as many questions as you can about things you see in your secret spot. Try to start some with "I wonder..." or "What if...?"

End of the week

Did you see anything exciting in nature this week? How was visiting your secret hideout?

Habitats

Date: _____ Secret Spot Visit #: _____

A **habitat** is the place where a living thing lives or grows. It includes both the location and the community of other living things in that place. Your secret spot might be a habitat in the North Carolina piedmont with soil, grasses, squirrels, and more.

All living things need to get **food**, **water**, and **shelter** from their habitat. Shelters can be places to avoid the sun, keep warm, stay safe in the wind, hide from predators, or have young. Even plants need shelter!

Play a game of hide and seek at your secret spot.

Where do you think animals might live here? Do you see any shelter that animals could use? Look for holes, tree limbs, and other places to hide from predators. Describe it here if you want.

Pick an animal who might live here to pretend to be. Now look at your secret spot as a habitat for that animal.

What's your animal?

Where would you sleep?

Is there any food for you here?

Would you have to go on a trip to get some water to drink?

My Journal: Habitats

Assignment

Build a tiny shelter an animal might use from sticks and leaves at your secret hideout this week. Bonus points if you make it big enough for yourself!

End of the Week

Did you see any animals this week? Think of birds, insects, lizards, and other kinds of animals. What were they?

Arthropods

Date: _____ Secret Spot Visit #: _____

Do you like bugs? Do you know the difference between an insect and an arachnid? A bug geek like you might want to know that a handy name for all crawly things with an exoskeleton is **arthropod**, which means “jointed foot.”

Arthropods you might see in your secret spot include:

- **Insects:** 3 body parts and 6 legs
- **Arachnids:** 2 body parts and 8 legs
- **Centipedes:** many body segments and legs, with 1 pair of legs per segment (usually move quickly)
- **Millipedes:** many body segments and legs, with 2 pairs of legs per segment (usually move slowly)

Centipedes and millipedes are part of a group of arthropods called **myriapods**.

There are even **crustaceans**, another kind of arthropod, that live on land. You may call them “rolly pollies” or “pill bugs.” They’re cousins to shrimp and crabs! If you find one, it should have 14 legs (7 pairs) like most crustaceans.

Roll over a rock or log in your secret spot – carefully! Who’s under there?

How many of each of these kind of arthropod can you find in your secret spot?

Draw your favorite arthropod.

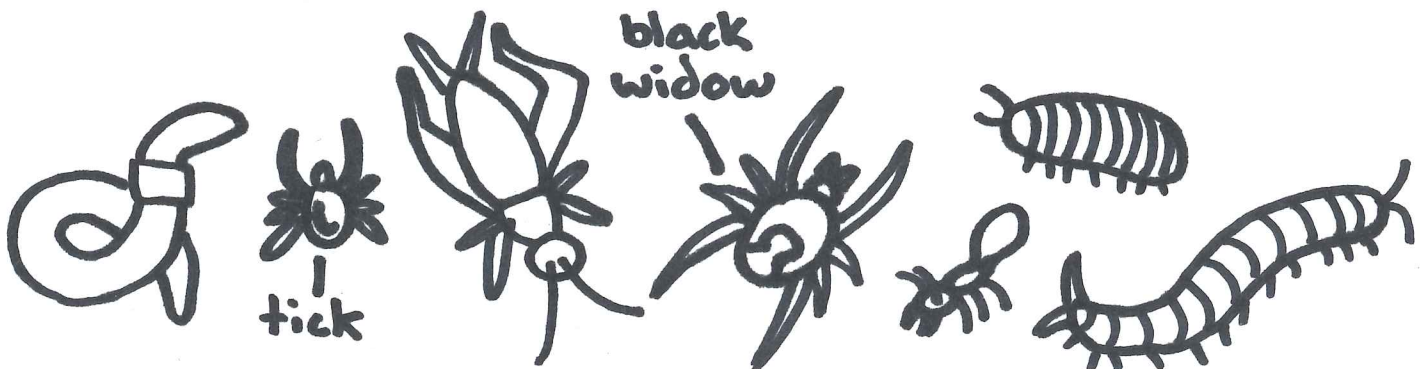
Insects: _____

Arachnids: _____

Myriapods: _____

Crustaceans: _____

Other: _____



Be careful with bugs. Black widow spiders, bees and wasps, fire ants, and ticks can be dangerous!

Don't forget to put the log or rock back nicely for all the creatures who live there.

My Journal: Arthropods

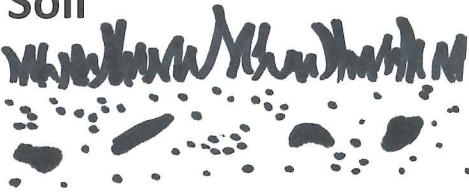
Assignment

Return to your secret spot and check under the same rock or log you rolled over. How many of each kind of arthropod can you find? Are your numbers different from earlier in the week? Now try a different rock or log.

End of the Week

What was different when you returned to your secret spot? Did you see any exciting arthropods or other animals?

Soil



Date: _____ Secret Spot Visit #: _____

How many living things are under you right now? There are lots of animals, plants, fungi, and bacteria in the soil!

Have you ever looked closely at soil? If you have, you may have noticed how many varieties there are!

There are different ways to categorize what kind of soil you see.

Humus is mostly organic matter, like decaying leaves, at the very top of soil. Not all soils have a humus layer, but Piedmont soils do.

Topsoil is below humus and has lots of minerals from broken up rock combined with some decayed organic matter. Topsoil is great for plants and other things to live in.

Subsoil is the bottom layer of soil and has lots of minerals from broken up rock and some added minerals that have sunk down from the higher layers. Not all soils have a subsoil layer, but Piedmont soils do (and it's often under 10" from the surface).

Sand is the largest kind of soil particle. It feels rough when you rub it. It doesn't hold water very well.

Silt is a medium-sized soil particle. It feels smooth. When it's dry it feels powdery, and when it's wet it's not sticky.

Clay is the smallest kind of soil particle. It feels very smooth. When it's dry it gets hard, and it's wet it's sticky.

Dig a hole! Make it as deep as you want.

See how many colors of soil you can find. Make rubbings from four of your soil samples.

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What other information can you record about each sample?

Think about how deep you found it, what it feels like, how wet it is, and more.

Pour some water on your soil samples, or into your hole. What do you observe?

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Keep an eye out for different kinds of soils this week!

My Journal: Soil

Assignment

Look for different layers as you dig your hole. You might see changes in the color or texture of the soil

Can you find topsoil in your secret spot? It might have many living things in it, like worms and plant roots. What's in your topsoil?

Can you find subsoil in your secret spot? What color is it? What does it feel like?

End of the Week

Fill in your hole to re-create habitat. Try to put the layers back where you dug them up from.

Did you notice different soils in your life this week? Where were they? What about them is different?

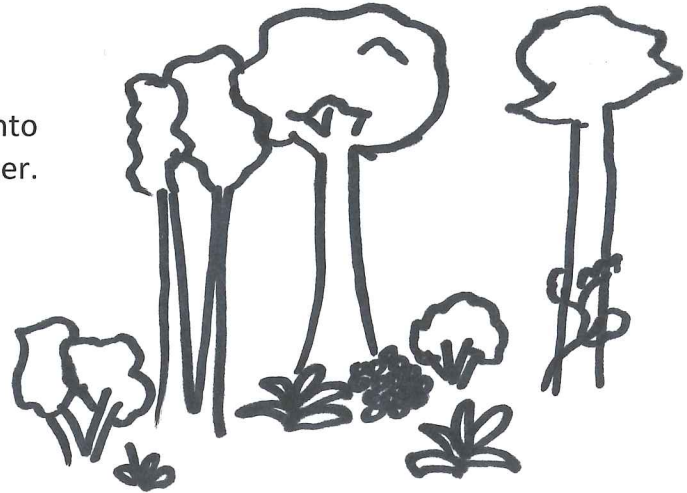
Plants

Date: _____ Secret Spot Visit #: _____

Plants are the food factories of the forest.
They take sunlight, soil, and water, and make it into
air for us to breathe, food for us to eat, and shelter.

Take a deep breath in and enjoy the fresh
air from the plants around you.

Breathe out, and give a plant some carbon
dioxide. In the next half hour, your breath will
become a part of one of the plants around you.



Search the area to find the largest plant and the smallest plant.

Examine each one closely and make a list of your observations for each. You can also sketch them.
Then compare your lists. What is different? What is the same?

My Journal: Plants

Assignment

Invent a plant. Come up with a name for your plant and draw a picture of it.

What adaptations does your plant have?
What could you do to avoid being eaten by insects or animals?

End of the Week

Close your eyes and name the three plants closest to you. Describe them without looking!

Okay now you can look. What details did you miss? Draw or write here.

Weather

Date: _____ Secret Spot Visit #: _____

You're already an expert on the **weather** where you live! We experience many parts of it every single day, although you might not usually think about it too much.

The weather includes the **temperature, clouds, wind,** and **precipitation,** and some other things that are harder to see, like humidity and air pressure.

What temperature do you think it is?

Describe the temperature and how it feels to you.

Is the wind blowing?

Describe the wind or breeze.

Which way is the wind blowing from?

Lick your finger and feel for coolness when you point in different directions.

Are there clouds in the sky?

What do they look like? Describe or draw a picture.

My Journal: Weather

Assignment

Keep track of precipitation and temperature during the week.

When is there precipitation? What kind is it (rain, snow, or something else)? How heavy is it? If you can, record how much falls.

Check your spot on a sunny day and a cloudy day. Does it look different?

End of the Week

How did the weather this week affect things living in your secret spot? Try to find three examples.

Birds and Listening

Date: _____ Secret Spot Visit #: _____

How many of your senses have you used when observing your secret spot? Seeing, hearing, feeling, touching, and tasting can all tell us something new about the thing we're observing (don't taste anything you find in your secret spot, though!).

Sight and sound are both important in identifying birds. Different birds look different, and they make their own unique calls. Either sense can help you identify a bird nearby!

You can look research what common birds in your area sound like online. You might look up cardinals, mockingbirds, crows, and barred owls to listen for. When you're trying to identify a bird by sight, pay attention to what colors it is on its head, wings, chest, and tail.

Close your eyes and listen to the sounds of nature.

Describe the sounds that you hear and try to identify what animals are making the sounds.

Draw a map of where the sounds are located around you.

X
(you are here)

Put out some bird feed or, if you have one, take a look at your bird feeder.
What birds can you find? Color in these birds to look like the birds you see.



My Journal: Birds and Listening

Assignment

Serious birders have “life lists” of the birds they have seen. Keep a list of every bird you see this week. If you don’t know its name, write down what color it is. If you see more than one of the same bird, make check or tick marks to count how many you see.

End of the Week

Do you have a favorite bird? Why is it your favorite? What do you know about it, and what do you wonder?

Did you meet any new birds this week? Describe what you saw.

Water

Date: _____ Secret Spot Visit #: _____

How many kinds of precipitation have you seen? How about bodies of water on the ground? There's a lot of water all around the Earth in rain, snow, ice, rivers, lakes, oceans, and more!

Water moves in a cycle around the planet: water on the ground **evaporates** into the air, where it **condenses** into clouds, and eventually falls back to the ground as **precipitation**. Water is important for every living things on the planet!

- If you were a raindrop falling from the sky, what path would you take through your secret spot?
Think about how water moves.

- Go on a water walk.

Find a body of water near your secret spot.

What does the water look like? Is it a puddle, creek, trickle, pond, or something else? What color is the water? Can you see to the bottom?

Are there any living things in the water?

My Journal: Water

Assignment

How are you connected to the water cycle? Pay attention to where your water comes from and goes this week.

End of the Week

Draw a diagram that shows the connections between you and the water cycle at your secret spot! You should include yourself, your house, any bodies of water you've found (creeks, ponds, puddles), the plants that live in your secret spot, and anything else you can think of!

Trees

Date: _____ Secret Spot Visit #: _____

Trees are a very special kind of plant! They provide homes for lots of other living things, like ants and birds, and people, too. Trees live all over the world – there are trees on almost every continent – and there are lots of different types.

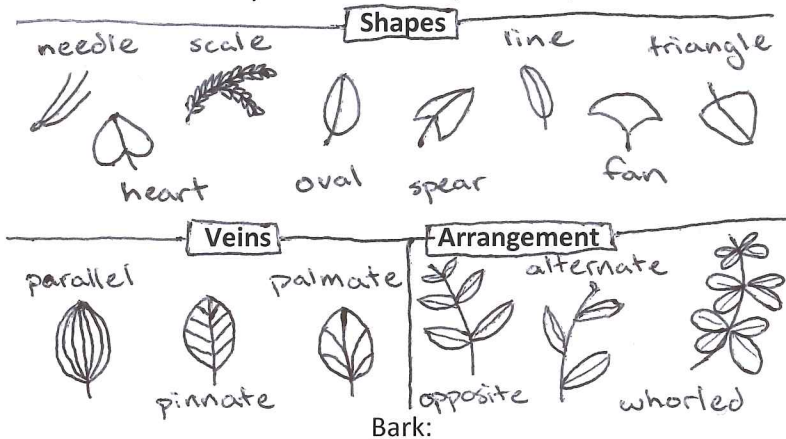
Here are differences you might notice when you look closely at trees. They can help identify them!

Leaves:

Deciduous trees lose their leaves in the winter.

Evergreen trees keep them all year.

Leaves can be many different **colors**, **textures**, and **thicknesses**.



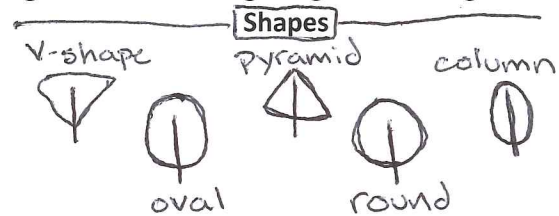
Bark has lots of different **textures**: it can be smooth, rough, bumpy, spiky, and in between.

Trees bark can be many different **colors**, even on the same tree.

Tree shape and size:

Most trees get bigger as they grow, but different kinds of trees have different **typical sizes**.

A tree's circumference multiplied by its **growth factor** is a good guess of its age.



Flowers, fruit, and cones:

Fruits can be the kind we eat, like apples, or other kinds, like small berries or acorns.

Some **flowers** are big and colorful, but others are small and easy to miss.

Conifers are the kind of trees that make cones (and they never make flowers or fruit).

Research a tree.

Pick your favorite tree in your favorite spot. Make a sketch of it.

Use the features you can observe to try to find out its scientific name. You might want to use a dichotomous key (in many identification books and online – like www.arboday.org/trees/WhatTree).

Look up your tree in a book or online and see if there are any interesting uses or facts about the tree. Take notes on your research.

My Journal: Trees

Assignment

See if you can find more examples of the tree you identified outside your secret spot. You might see it at the store, in a parking lot, near your house, on a walk, or lots of other places. Count how many you of your tree you see if you want to, or just say hi to your tree friend!

End of the Week

Guess how old a tree is! Try to find a tree the same age as you are. If you there don't seem to be trees your age near your secret spot, look for one the same height as you. Do you think it's younger or older than you are?

Animal Signs & Tracking

Date: _____ Secret Spot Visit #: _____

By now you have a good idea of the resources in your area. Knowing where the food, water, and shelter in your secret spot will tell you where the animals are.

Animal signs you might see include:

Chewed twigs from plant-eaters
like deer and rabbits

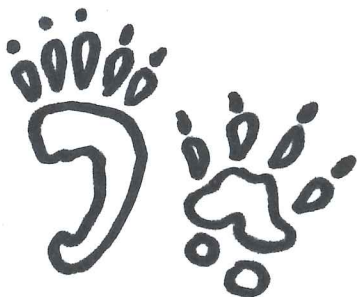
Bark that's been rubbed (male
deer) or chewed (beavers) off trees

Animal scat (a scientific name for "poop")

Footprints or animal tracks (especially easy to find
next to water, since everyone has to drink!) –
count the toes and look for claws to figure out
what made them

What animal signs can you find?
Make a list of the ones you see.

These are some animal tracks you might see in your secret spot. Color them in if you want!



squirrel



weasel



fox



raccoon

My Journal: Animal Signs & Tracking

Assignment

Make a track trap! Rake out a smooth, flat area and place some soft soil or sand on it. Then put peanut butter on a stick in the middle of your area.

Come back later and see if you find any animal tracks! Sketch the ones you see.

End of the Week

What animal signs did you see? Think about your track trap and any other kinds of signs in you found in your secret spot, like chewed or rubbed bark or sticks and scat.

Ecology

Date: _____ Secret Spot Visit #: _____

Ecology is the study of the relationships between living and non-living things.

An **ecosystem** is the community of living things interacting with each other and their environment.

One of the most important relationships different living things have with each other is over food. Every living thing needs energy and nutrients from somewhere! Some living things – like plants – can make their own food from nonliving things. Many others – like rabbits, mushrooms, and people – need to eat living things.

Build an ecosystem food web!

Start at the base: Draw a picture with the sun, rain or a body of water, and soil around the edges.

The first level of living things is **producers**. In your secret spot these are probably plants. Draw, describe, or write the names of plants in your secret spot. Put arrows to show how the sun, soil, and water “feed” the plants.

The next level are **consumers**, or things that eat producers. Add any plant-eating animals you have seen in your secret spot. Put arrows to the plants you have evidence of them eating or guess they might eat.

The top level is made of consumers that eat other consumers. If you have seen or heard any hawks, owls, cats, foxes, or other animals that eat animals add them to your diagram with what they eat.

After animals die, they get decomposed. Many of your favorite arthropods might be **decomposers**. Bacteria and fungi in the soil help to break dead plants and animals down into soil.

If you want, color your finished food web!

My Journal: Ecology

Assignment

Where do you fit in the earth's food web?
Draw a food web that includes you. Pick a meal you're eating this week and try to figure out where all the ingredients came from. How do they connect to the sun?

(Don't eat anything at your secret spot!
Your food web should have a farm in it. 😊)

End of the Week

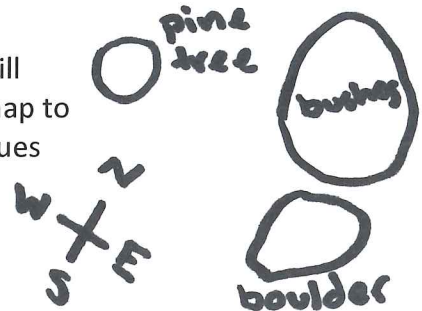
Did you notice anything interesting at your secret spot this week?

Closing: Final Map, Things You Wonder, and Last Observations

Date: _____ Secret Spot Visit #: _____

Maps are useful for getting from one spot to another, but they're also great for observing and noting down details about places. They show us the relationships between things in space using drawings, symbols, and labels. A compass rose tells us which way the directions are in the place the map shows.

There are different ways to figure out the cardinal directions. A compass will point North. If you have a map of the place you're in, you can line up the map to landmarks and see which way the compass rose points. You can also use clues from nature: the sun rises in the East and sets in the West.



Map your secret spot.

Draw a picture of your secret spot. Show where the sun is right now (draw the sun or the shadows it makes). Then make a guess of which way the directions go. Add a compass rose to your map.

Observe your secret spot closely.

Describe it as if you were designing a travel brochure to bring others to your spot.

Look back at your questions from the Starter activity in your first week at your secret spot.

Did you answer any of them by spending time here?
Do you have new questions about your secret spot?

My Journal: Closing

Assignment

Return to your secret spot later in the week and observe it closely again. Has anything changes from the last time you were here?

End of the Week

Draw or write any fun memories from your secret spot! Think of things you've done and seen here.