WHAT DO PLANTS NEED?

All plants need **space** to grow, the right **temperature**, **light**, **water**, **air**, **nutrients**, and time. Most also need soil.

CHOOSE YOUR SIT SPOT

A **sit spot** is a special place outside that you choose. It's a place you can return to everyday, where you can settle in, be comfortable and use your senses to observe the world around you.

This week, try to choose a sit spot where you can observe different kinds of plants growing. If there is a place where you can dig, plant, and care for plants, choose that!

1. Choose your spot.
2. Start by spending 3 minutes making observations from your sit spot. Does that feel like a short or long time?
3. After 3 minutes, use a nature journal to write or draw what you remember observing.
4. Challenge yourself to add more 1 minute every day.

Over time, you will form a relationship with your spot. You might even be surprised by what you observe!

EXPLORE PLANT NEEDS IN YOUR SIT SPOT

Space

Both the leaves and the roots need room to grow. The leaves need **space** so they sunlight can get to them. The roots need room to spread out to absorb water and nutrients.

INVESTIGATE

How much **space** do the plants in your Sit Spot have? Measure the distance from where one plant comes out of the ground to where the next plant comes out of the ground.

Temperature

Plants need **the right temperatures** at the right times in their life cycles to grow. Many prefer cooler temperatures at night.

	
Black-Eyed Susan blooms from early summer to fall and can tolerate heat.	Pansies bloom in the winter. They can live in full or partial sun but need cooler temperatures to bloom.

INVESTIGATE

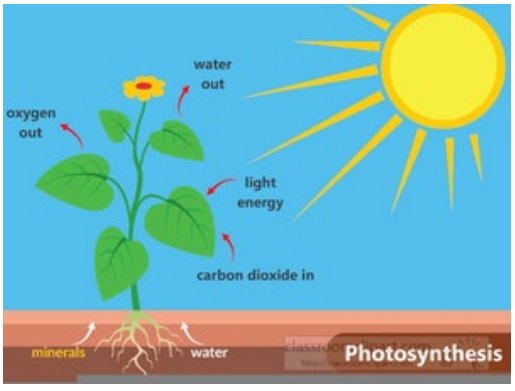
Record the temperature in your journal. Does it feel hot? Warm? Cool? Does the temperature change during the day?

Light

Photosynthesis is the process plants use to convert energy from the sun into energy they can use. During photosynthesis, plants take in carbon dioxide, water, and **light**, and turn them into sugar and oxygen. Sugar is then used by the plants for food. Oxygen is breathed out into the atmosphere. Plant cells have a green pigment called chlorophyll in their cells. Chlorophyll makes leaves green and it allows plants to absorb energy from sunlight.

INVESTIGATE

How much **light** does your garden or Sit Spot get? Shade? Does it change during the day?



Water

Water carries important nutrients from the soil to the plant tissues. Water also helps to keep plant cell walls turgid, or swollen, which helps a plant to stand. Without water, a plant droops. Water evaporating from the leaf surface is called transpiration.

INVESTIGATE

Do the plants you can see from your Sit Spot look like they have had enough **water**? How can you tell?

Air

Plants need **air** to make food. Even though they take in carbon dioxide and give off oxygen during photosynthesis they also need oxygen. Plant cells release their own energy by breaking down sugars and using up oxygen. They need oxygen to change food into energy.

INVESTIGATE

Is there any wind in the **air**?

Take 3 deep breaths. How do you feel?

Nutrients

Plants need **nutrients** to germinate, grow, fight off pests and to reproduce. For plants to stay healthy, different kinds of plants need different kinds and amounts of nutrients. Some common nutrients are nitrogen, which helps leaves grow, phosphorous which helps roots grow, and potassium which helps flowers and fruits grow.

INVESTIGATE

One source of **nutrients** for plants is decomposing material. Can you find any dead leaves, woodchips, or other decomposing material?

INVESTIGATE

Choose a plant to observe from your Sit Spot. Measure it on Monday. Measure it again on Friday. Did it **grow** taller? How much taller?

Time

Different plants need different amounts of **time** to germinate and grow. Botanists have studied this and for many plants, can tell how long each stage of growth will take.

Soil

Soil holds the plants up. Roots grow down into the soil. Soil also provides nutrients and water. While there's no such thing as a perfect soil, different plants grow best in different types of soil. Each type has different properties. It is important to know these to make the best choices and get the most from your garden.

Dirt is soil somewhere it is not supposed to be. Soil is in the garden plot. Dirt is on your hands after working in the garden plot.

INVESTIGATE

What does the **soil** in your garden or Sit Spot look like?

If you can, dig to see what the **soil** looks and feels like.

DID YOU KNOW?

Not all plants need soil to grow.

- Plants which grow on other plants are called *epiphytes*. Some tropical orchids are *epiphytes.*
- Tillandsia are air plants. They grow in air instead of soil.
- Paperwhites, a type of daffodil, will grow in only water, though they need pebbles at the bottom to hold them up.

There are six main soil groups: clay, sandy, silty, peaty, chalky and loamy.

- **Clay** feels lumpy and sticky when wet. It has few air spaces and does not drain well.
- **Sandy** soil feels gritty. It drains easily and dries out fast. And holds few nutrients.
- **Silty** soil feels soft and soapy. It holds water and is rich in nutrients.
- **Peaty** soil is dark and feels damp and spongy. It's acidic, decomposition is slower, and has fewer nutrients.
- **Chalky** soil is large grained and appears stonier. It drains well and is alkaline.
- **Loamy** soil is a mixture of sand, silt and clay, feels fine textured and slightly damp.

Most common garden plants prefer **loam** — soils with a balance of different-sized mineral particles (approximately 40% **sand**, 40% silt, and 20% clay) with organic matter and air space.