

# Family Unit Study: *Seeds & Plants*



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## FAMILY UNIT STUDY: SEEDS AND PLANTS

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## FAMILY UNIT STUDIES

# Welcome Home!

Thank you so much for choosing a How Wee Learn Family Unit Study. This unit study has been created with care by me, a homeschooling Mom and former teacher. These unit studies have worked so beautifully with my own family, I knew they must be shared. My time in the classroom, certification as a Reading Specialist, and 18 years as a mom has given me a unique perspective on what children truly 'need to know'.

### What is a unit study?

A unit study focuses on critical thinking and problem solving, allowing children to dive deep into fascinating topics and engage in meaningful learning.

When a child is engaged in what he or she is learning, that learning sticks. And when a child is engaged *and fascinated* in what he or she is learning, learning is amazingly fun for the whole family! Say goodbye to those power struggles.

Each unit study is broken down into ten topics with manageable, bite-sized amounts of incredible information. Each of these ten topics includes a hands on activity, a math or literacy enrichment activity, a curated YouTube video, book suggestion, interesting fact and discussion question.

### What are the components of a unit study?

#### HANDS ON ACTIVITY

Each of the ten topics includes a hands on activity that brings the information shared and discussed to life! This allows children to really engage in and solidify their learning. The hands on activities use items you likely have already. If you do not have an item, think creatively about what you do have and adapt. No buttons? I bet beads could work. No pipecleaners? Maybe you have some yarn!

#### MATH ENRICHMENT WORD PROBLEM

Each unit study includes five math word problems modified to three levels so they are fitting for the whole family. They cover five math strands: Number Sense, Geometry, Measurement, Patterning and Data Management/Probability. The word problem introduces your child to each of these areas with

the belief of quality over quantity. This is not a full math curriculum of course, but an enrichment opportunity and chance to be exposed to some real world math.

As you go through a question, consider how you might change it slightly to ask a follow up question. Perhaps you could ask, "What would happen if there were 6 birds instead of 5?" Or you might get out some manipulatives and help your child dive into deeper learning about the geometry topic introduced.

#### LITERACY ENRICHMENT ACTIVITY

When a child is learning about a fascinating topic, there are so many natural opportunities to tie in literacy development. Reading, researching, recording information, labeling, and note taking will all happen naturally.

On top of this, each unit study includes five literacy enrichment activities modified to three levels so they are fitting for the whole family. Creating poems, public speaking, practicing letter formation, and literacy scavenger hunts are all fun ways literacy learning is brought to life with these unit studies.

#### CURATED YOUTUBE VIDEO

Each of the ten topics includes a carefully curated YouTube video. Dive into some fun and easy learning with experts in the field, entertaining stories, and inspiring tales, all selected to highlight key learning concepts. Enjoy some time snuggled on the couch learning with popcorn and a movie!

#### BOOK SUGGESTION

The book suggestions for each topic are just that—suggestions. Any books at all on the unit study



theme are strongly encouraged. Immersing our children in a literacy-rich environment and offering plenty of time to dive into research, pictures, and stories is key for child-led learning.

### INTERESTING FACT

Did you know that elephants suck their trunks much like babies suck their thumbs? Or that a human has the same number of neck bones as a giraffe? Interesting facts are a wonderful way to spark a child's interest and imagination, which is why every topic includes an interesting fact.

### DISCUSSION QUESTION

Asking the right questions and having meaningful discussions is a wonderful way to meet your child at his or her current level of understanding and to help your child grow his or her learning and thinking about topics. So much can be learned through one meaningful discussion!

### How do I use a unit study?

These unit studies are completely flexible and can be used however you wish. For those who would like a few suggestions, I will outline two possible ways you might choose to use these unit studies.

#### OPTION 1: FOCUSED UNIT STUDY

Your family might choose to focus on one unit study over a two day period.

Day 1	<ul style="list-style-type: none"> <li>Introduce the topic with the curated YouTube video</li> <li>Have an amazing discussion using the discussion question as a prompt</li> <li>Research more about the topic with the suggested book or a book of your choice</li> <li>Read the interesting fact together</li> </ul>
Day 2	<ul style="list-style-type: none"> <li>Dive into the hands on activity for some deep learning</li> <li>Complete the math or literacy enrichment question</li> </ul>
Day 3+	<ul style="list-style-type: none"> <li>Core skill work in reading, writing and math at your child's individual level</li> <li>Family outings</li> <li>Extracurricular activities</li> <li>Start another topic!</li> </ul>

#### OPTION 2: BLENDED UNIT STUDY

Alternatively, your family might choose to blend the unit study with your core skill learning over a three day period.

Day 1	<p>Morning:</p> <ul style="list-style-type: none"> <li>Core skill work in reading, writing and math at your child's individual level</li> </ul> <p>Afternoon:</p> <ul style="list-style-type: none"> <li>Introduce the topic with the curated YouTube video</li> <li>Have an amazing discussion using the discussion question as a prompt</li> </ul>
Day 2	<p>Morning:</p> <ul style="list-style-type: none"> <li>Core skill work in reading, writing and math at your child's individual level</li> </ul> <p>Afternoon:</p> <ul style="list-style-type: none"> <li>Research more about the topic with the suggested book or a book of your choice</li> <li>Read the interesting fact together</li> <li>Complete the math or literacy enrichment question</li> </ul>
Day 3	<p>Morning:</p> <ul style="list-style-type: none"> <li>Core skill work in reading, writing and math at your child's individual level</li> </ul> <p>Afternoon:</p> <ul style="list-style-type: none"> <li>Dive into the hands on activity for some deep learning</li> </ul>
Day 4+	<ul style="list-style-type: none"> <li>Core skill work in reading, writing and math at your child's individual level</li> <li>Family outings</li> <li>Extracurricular activities</li> <li>Start another topic!</li> </ul>

There is no right or wrong way to dive into this unit study. When learning is this exciting, you simply cannot go wrong!

I hope you and your family love this unit study! If you have any questions at all, wish to purchase more unit studies, or if I can be of assistance, please visit [www.howweelearn.com/family-homeschooling-unit-studies](http://www.howweelearn.com/family-homeschooling-unit-studies) or email me at [sarah@howweelearn.com](mailto:sarah@howweelearn.com).

xo  
Sarah



## TOPIC 1

# Four Types of Plants

There are four main types of plants. This unit study focuses on angiosperms, or flower plants, but there are also mosses and worts, ferns, and gymnosperms. Let's explore...

### Spark Curiosity

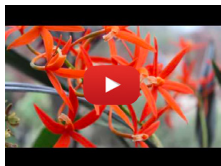


Did you know? Mosses and ferns both require lots of water and need very damp environments to survive. Many gymnosperms and angiosperms have adapted to live in much drier places.



Most people appreciate the beauty of a flower. What are some beautiful or interesting looking parts of plants that never grow flowers?

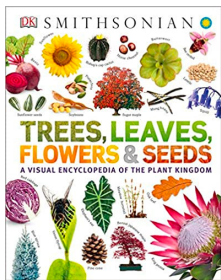
### Resource Suggestions



#### Plant Classification

Sarah Kitchen

See examples of each type of plant and learn about their characteristics.



#### Trees, Leaves, Flowers, and Seeds: A Visual Encyclopedia of the Plant Kingdom

DK and the Smithsonian

A unique guide to the extraordinary world of plants, from the smallest seeds to the tallest trees.

### HANDS ON ACTIVITY

- "Classifying Plants" on page 7
- "Types of Plants" on page 26
- "Plant Photos" on page 27

### Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ★ There are 4 main types of plants. If we were on a nature walk and found 2 plants for each of the 4 main types of plants, how many plants would we have found?
- ★★ There are 4 main types of plants. If we were on a nature walk and managed to find 12 plants for each of the 4 main types of plants, how many plants would we have found?
- ★★★ There are 4 main types of plants. If we were on a nature walk and managed to find 90 plants for each of the 4 main types of plants (Good Grief!), how many plants would we have found.



## HANDS ON ACTIVITY

# Classifying Plants

Types of Learning: Research Skills, Comparing and Contrasting, Classification Skills, Fine Motor Skills

## WHAT'S HAPPENING?



**Mosses and Worts** are low-growing plants that do not have a vascular system – a way for water to travel through them. These plants typically don't have leaves or stems and they grow low and very close together.



**Ferns** are a type of plant that grow taller than mosses and warts because they do have a vascular system. They have roots, leaves, stems, and trunks.



**Gymnosperms** are also vascular plants, but this type grows from seed. They do not make flowers and include trees such as pine, redwood, and spruce.



**Angiosperms** are flowering plants that have a vascular system. These plants grow from seed and the seeds grow inside a fruit. They have stems, roots and leaves, and make up about 80% of all living plants on Earth!

*Adapted from Your Dictionary.*

*[Check it out here for more interesting facts about the four main types of plants.](#)*

## Materials

- Paper
- Pencil
- Clipboard

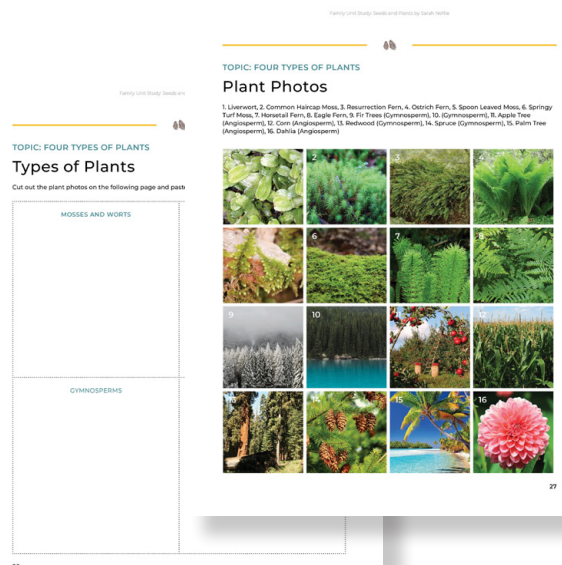
## Directions



"Types of Plants" on page 26

"Plant Photos" on page 27

1. Label a piece of paper with the four groups of plants—Mosses and Worts, Ferns, Gymnosperms, and Angiosperms—or print the Types of Plants printable.
2. Pop this on a clipboard and head outside to your backyard, a park, or out to a forest for a nature walk. Examine the various plants and see what category they fit into.
3. You can also print the Plant Photos printable and sort the plants into the four different categories.





## TOPIC 2

# Parts of a Seed

Most plants, flowers, and trees grow from a seed. It is amazing to think that a great big apple tree with hundreds of apples hanging from it started from a single apple seed! Let's explore...

### Spark Curiosity



Did you know? Many seeds can survive for dozens, even hundreds, of years thanks to their protective seed coat.



Humans eat many different kinds of seeds! How many can you think of? Which are your favourite? Why do you think seeds are often healthy to eat?

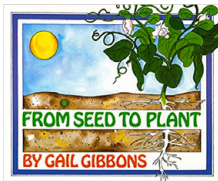
### Resource Suggestions



#### What's Inside a Bean?

SciShow Kids

Look inside a bean to see the parts of a seed.



#### From Seed to Plant

Gail Gibbons

Learn about the wide variety of seeds and how they grow.

### HANDS ON ACTIVITY

- "Seed Art" on page 9
- "Seed Art Template" on pages 29 and 30

### Literacy Enrichment Activity



"Seed Diagram" on page 28



Label the Seed Diagram printable with the words: Seed Coat, Endosperm, and Embryo. Your child can do this as copywork or can trace your writing.



Label the Seed Diagram printable with the words: Seed Coat, Endosperm, and Embryo and have your child describe the role each parts play to you aloud.



Label the Seed Diagram printable with the three parts of the seed and the three parts of the embryo and describe the roles all of these parts play. Your child might wish to write each role down as well.



## HANDS ON ACTIVITY

## Seed Art

Types of Learning: Art, Fine Motor Skills, Creativity, Sensory Learning

## WHAT'S HAPPENING?

Seeds contain everything needed to start a brand new plant, flower, or tree. Seeds stay dormant until given what they need to grow—typically soil, sun, and water. Seeds are very different from one another, but they tend to have three parts in common:

The outer layer of a seed is called the **seed coat**. This is the part of the seed that we see and touch. Some seeds have very thick seed coats, protecting them from the outside world. Often these seeds are moved around by passing through an animal in their feces! Other seeds have thin seed coats, allowing the inside of the seed to be exposed to the soil and water quickly.

The **endosperm** is located right under the seed coat and provides the embryo with the nutrients it needs while in the dormant stage (before it gets planted). Did you know that we eat endosperm? Popcorn and shredded coconut are both examples of endosperm that humans eat!

The **embryo** contains three parts needed for a seed to become a fully mature plant. It contains the **primary roots**, which are first to emerge from the seed and anchor the plant into the soil. The embryo also contains the **cotyledon**, which provides nutrients to the embryo as it begins to grow. The embryo also contains the **embryonic leaves**, which are the tiny plant's very first leaves.

*Adapted from Sciencing.*

[Check it out here for more interesting facts about the parts of a seed.](#)

## Materials

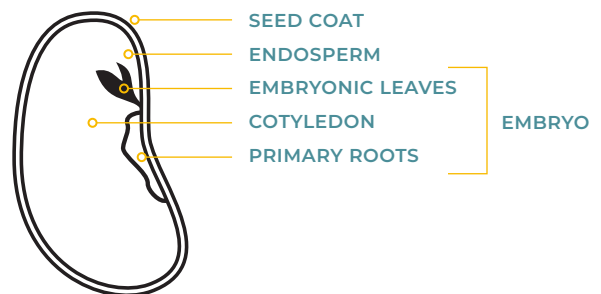
- Variety of dried beans, peas and seeds
- Paper
- White Glue

## Directions



"Seed Art Template" on page 29 and 30

1. Make some seed art! Get a variety of dried seeds, beans and peas (did you know that beans and peas are seeds?) from the dollarstore, bulk food store, or grocery store. It is ideal to have a variety of colours.
2. Print either the tree or bird Seed Art Template printable.
3. Fill one area with white glue and place seeds of one colour in that section, then fill a second area with white glue and fill that section with different seeds, creating a beautiful mosaic.
4. Take some time to explore and dissect the seeds as well, trying to find the various parts mentioned in the What's Happening section to the left. Soaking some seeds in water overnight will soften the seed coat, allowing greater exploration and dissection!





## TOPIC 3

# The Plant Life Cycle

All living things go through a life cycle. The plant life cycle is very interesting! Plants begin as a seed, grow to a plant, produce flowers, those flowers turn to fruit, the fruit contains seeds to start a new plant, and eventually, the original plant dies. Let's explore...

### Spark Curiosity



Did you know? Some plants produce new seeds several times and live many seasons (perennials), and some plants live only one season (annuals). Some plants can be either type, depending on the climate they are grown in.



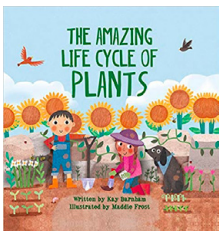
What needs and attributes do seedlings and adult plants have in common? In what ways are they different?

### Resource Suggestions



**Growing Red Bell Pepper from Seed Time Lapse - 4 Months**  
Boxlapse

Watch the time lapse life cycle of a pepper plant from seed through new fruit.



**The Amazing Life Cycle of Plants**  
Kay Barnham

Explore a plant's journey from seed to sapling and beyond.

### HANDS ON ACTIVITY

- "Draw the Plant Life Cycle" on page 11
- "Plant Life Cycle" on page 31

### Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ★ One single apple tree has 10 apples on it. If a raccoon came and ate 3 of those apples, how many would be left on the tree?
- ★★ One apple tree has 100 apples on it. If a raccoon came and ate 13 of those apples, how many would be left on the tree?
- ★★★ One apple tree has 100 apples on it. If a raccoon came and ate 8 apples, and those apples each had 5 seeds inside, how many seeds did the raccoon eat?



## HANDS ON ACTIVITY

# Draw the Plant Life Cycle

Types of Learning: Fine Motor Skills, Art Skills, Drawing, Plant Life Cycle, Research Skills

## WHAT'S HAPPENING?

Most plants progress through four stages:

A **seed** is the very beginning of a plant. We learned a bit about seeds in the previous topic. Seeds need to be spread in order to have space to grow. Seeds can be spread by animals, carried by birds, or blown by the wind. Once a seed is in a new location, it is ready for the next stage.

When a seed has the conditions it needs to grow (soil, sunlight, and water), **germination** begins and it will sprout. The roots will push their way through the seed coating to anchor itself into the soil, and the leaves and stem will sprout upwards.

**Seedlings** are baby plants. Seedlings get their nutrients from the soil through their roots and from the sun through their leaves. Photosynthesis begins now (we will explore photosynthesis in Topic 5).

A **mature plant** has leaves, roots and a stem, and continues to get its nutrients from the soil and sunlight, just as it did when it was a seedling. Adult plants will also produce flowers. These flowers need to be pollinated in order to turn into fruit. When a plant has fruit, the seeds within the fruit will fall and disperse, starting the process all over again.

*Adapted from ThoughtCo.*

[Check it out here for more interesting facts about the plant life cycle.](#)

## Materials

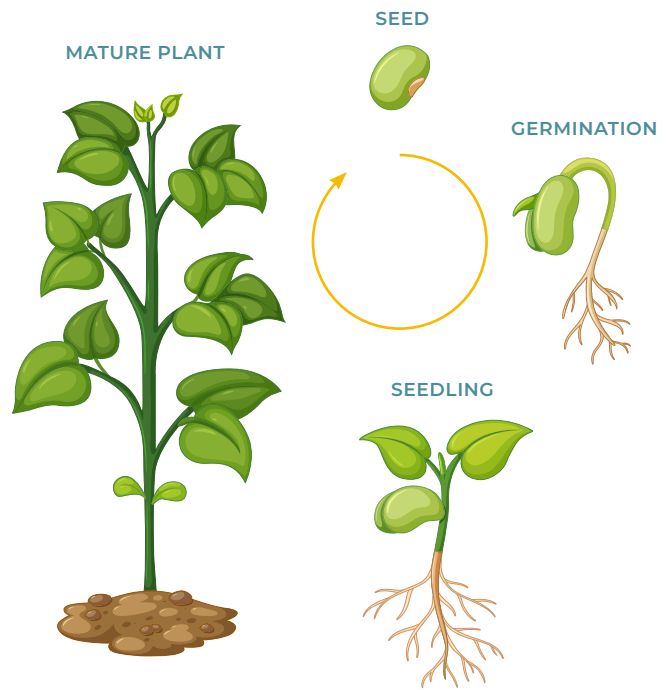
- Paper
- Markers or crayons

## Directions



"Plant Life Cycle" on page 31

1. Print off the Plant Life Cycle printable.
2. You will notice that the plant life cycle just has the words – no pictures! Decide on a plant, and draw what it would look like at each stage in its life cycle. You might choose an apple tree, a sunflower, or maybe even grass!





## TOPIC 4

# Parts of a Plant

Plants have six basic parts: roots, stem, leaves, flowers, fruits, and seeds. Each part of the plant has a unique function. Let's explore...

### Spark Curiosity



Did you know? Some types of plants have multiple edible parts. Carrot greens and zucchini flowers are both delicious! But some plants only have one (or zero!) edible parts. Potato plants grow small green fruit called potato cherries, but they are not safe to eat.



How does a plant having different, essential parts make it similar to an animal?

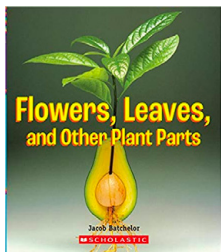
### Resource Suggestions



#### Parts of a Plant for Kids

learning junction

See an example of each of the main parts of a plant and learn how they work together.



#### Flowers, Leaves, and Other Plant Parts

Jacob Batchelor

Get an up close look at the bits and pieces of plant parts, from the tip of the root to the edge of a leaf, and everything in between.

### HANDS ON ACTIVITY

- "Create a Snack Plant" on page 13
- "Plant Placemat" on page 33

### Literacy Enrichment Activity



"Plant Parts Matching Game" on page 32

Let's play a matching game! Print two copies of the Plant Parts Matching Game printable and cut out the cards. Flip the 12 cards upside down, then flip two cards over. If the two plant parts match, you win those two cards and get to go again! If they don't match, it's the next player's turn.

- ★ Littlest players simply need to match the words.
- ☆☆ Older children need to match the words and read them aloud.
- ☆☆☆ Oldest children need to match the words, read them aloud, and state their function!



## HANDS ON ACTIVITY

# Make a Plant Snack

Types of Learning: Plant Functions, Research Skills, Fine Motor Skills, Critical Thinking

### WHAT'S HAPPENING?

Each plant part has a very important function to help it survive and thrive.

**Roots** help anchor a plant to the ground. They also absorb water and minerals to allow the plant to grow. Roots have small hairs that extend from the main root, helping to absorb even more water and nutrients. Plants like potatoes and carrots have a taproot system, designed for food storage. Grasses and flowers have a shallow fibrous root system, which holds soil together so the plant can absorb water and nutrients more easily.

The **stem** carries water and nutrients from the roots to the plant. There are two different types of cells in the stem: xylem cells carry water, and phloem cells carry food. Stems also help the plant stand up.

**Leaves** make food for the plant through a process called photosynthesis. There is a waxy layer on the outside of leaves that protects it, called the cuticle.

**Flowers** are the reproductive unit of the plant and create the seeds. The female part of the flower is the pistil and the male part is the stamen. Male cells must join female cells to create seeds. Flowers are bright and smell lovely to attract pollinators. Pollinators help with fertilization.

**Seeds** are tiny baby plants! They are found within the plant's fruit and may eventually become a brand new, full size adult plant.

*Adapted from Sciencing.*

[Check it out here for more interesting facts about the six basic parts of a plant.](#)

### Materials

- Various fruits, vegetables and seeds

### Directions



"Plant Placemat" on page 33

1. Did you know that we eat all parts of plants? Do a little bit of research to figure out which fruits and vegetables come from the various plant parts.
2. Create a special snack for yourself on top of the Plant Placemat printable. You might use carrots for the roots, celery for the stem, spinach for the leaves, and sunflower seeds for the seeds!





## TOPIC 5

# Photosynthesis

All living things need food to survive – but most plants don't EAT food. Instead, they absorb water and nutrients from the soil, and they make their own food by converting sunlight in a process known as photosynthesis. Let's explore...

### Spark Curiosity

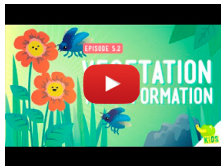


Did you know? Photosynthesis also makes the air healthier for all animals, including people, by removing carbon dioxide and releasing oxygen!



I wonder what would happen to a plant that didn't have access to enough sunlight? Or one that had much more sunlight than it needed?

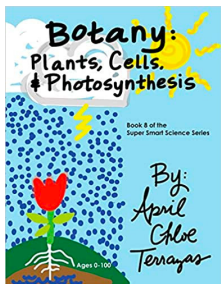
### Resource Suggestions



#### Vegetation Transformation

Crash Course Kids

Get a crash course in the process and benefits of photosynthesis.



#### Botany: Plants, Cells, and Photosynthesis

April Terrazas

A microscopic view of plant cells and the process of photosynthesis

### HANDS ON ACTIVITY

- "Why Do Leaves Change Colour?" on page 15

### Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ☆ A small tree has 2,564 leaves. Each leaf is used to make energy for that tree by using photosynthesis! What number is in the ones column? What number is in the tens column? What number is in the hundreds column?
- ☆☆ A medium tree has 28,392 leaves. Each leaf is using photosynthesis to make food for that tree! What number is in the ones column? What number is in the tens column? Hundreds column? Thousands column? Ten thousands column?
- ☆☆☆ A large tree has 368,121 leaves. Each leaf is using photosynthesis to make food for that tree! What number is in the ones column? What number is in the tens column? Hundreds column? Thousands column? Ten thousands column? Hundred thousands column?



## HANDS ON ACTIVITY

# Why Do Leaves Change Colour?

Types of Learning: Scientific Discovery, Following Instructions, Sensory, Learning About Our Natural World

### WHAT'S HAPPENING?

Leaves contain chlorophyll, which makes leaves look green. It is so dominant, it covers up all the other colours in the leaves. In the fall, chlorophyll in the leaves breaks down, allowing the other colours to shine through and show beautiful reds, yellows, and oranges.

In this science experiment, we use rubbing alcohol and energy (hot water) to separate the colours and find out what colour a leaf would be without the dominant chlorophyll colour. You likely saw green, and depending on your leaf type, maybe red, yellow, or orange!

### Materials

- Three leaves from the same tree
- Rubbing alcohol
- Paper coffee filter
- Jar
- Small bowl or pan
- Baggie or plastic wrap

### Directions

1. Break the leaves into tiny pieces and put them in the jar.
2. Pour rubbing alcohol over the leaves until they are just covered.
3. Mash and stir the leaves into the rubbing alcohol until the alcohol turns slightly green. Really give it a good mashing – this is key!
4. Cover the jar with a baggie or plastic wrap. Place the jar in a small bowl and pour hot water into the bowl.
5. Leave the jar in the water for at least 30 minutes (45 minutes to an hour is ideal!), swishing the jar occasionally to stir the leaves. The alcohol should be a very dark green (leave it longer if needed).
6. Cut a strip from a coffee filter and place it in the jar, securing it to the edge so it can reach the rubbing alcohol.
7. The liquid will travel up the coffee filter and the colours will separate as the alcohol evaporates from the coffee filter. Let this evaporation happen for about an hour for the full effect. The leaves we used in this experiment turn to a beautiful yellow in autumn!





## TOPIC 6

# Pollination

Pollination happens when the pollen from one flower mixes with the pollen of another flower. This is needed for flowers to reproduce, creating seeds. Let's explore...

### Spark Curiosity



Did you know? Gardeners often grow some plants specifically to attract pollinators to their garden. This often means the pollinators will be around more to help out with the fruits and vegetables, and it also provides them with an important source of food.



Thinking about the plants in my area, I wonder what the pollinators first food is in spring? What about their last food in fall? Do they have food here in the winter or do they hibernate or migrate?

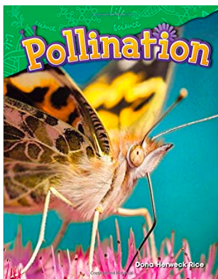
### Resource Suggestions



#### Like Fruit? Thank a Bee!

SciShow Kids

Watch how bees help pollinate many of your favorite foods.



#### Pollination

Dona Rice

Learn how plants are pollinated!

### HANDS ON ACTIVITY

- "Pollinating Chalk Flowers" on page 17

### Literacy Enrichment Activity

Create a scavenger hunt hide and seek game about pollination. Write the letters POLLINATION on a piece of paper and cut out each letter, hiding the letters around the house. Have your children hunt and find all of the letters.

- ★ Little ones can find each of the letters and call out the letter names and sounds as they find them.
- ★★ Older children can call out the letter names and sounds and place them in the correct order.
- ★★★ Oldest children can find all of the letters, place them in order and call out one word related to pollination for each letter. For example, they might call out "plant" for the letter P.



## HANDS ON ACTIVITY

# Pollinating Chalk Flowers

Types of Learning: Hands On Discovery, Science, Art Project, Sensory Learning, Drawing with a Different Modality

### WHAT'S HAPPENING?

For a flower to become pollinated, it relies on external forces. Sometimes rain and wind move pollen from one flower to another, but more often, pollinators are required. Birds, bees, butterflies, insects, and even bats can be pollinators.

A pollinator goes to a brightly coloured flower to sip **nectar** or collect **pollen** to eat. Some of the pollen gets stuck on the pollinator and is taken for a ride to another flower where it might fall off. If this pollen happens to fall into that flower's stigma, reproduction happens. The pollen from the **anther** (male part) of one plant must end up in the **stigma** (female part) of the other plant. This is called **cross-pollination**.

Some plants can actually **self-pollinate**. This occurs when the pollen from the stigma can mix with the pollen from the anthers in the same plant.

*Adapted from U.S. Forest Service.*

[Check it out here for more interesting facts about pollination.](#)

### Materials

- Construction paper
- Cotton balls
- Chalk

### Directions

Create some flowers on construction paper using chalk. These can be nice and simple flowers, or you can watch the YouTube video below and turn this into a full blown art project!



### How to Draw Easy Flower Bouquet | Chalk Painting Chuchiyalog ART

1. Make two flowers on two different pieces of paper using two different colours of chalk. You might have a blue flower on one piece of paper and a red flower on a second piece of paper.
2. Now get a cotton ball "pollinator". Rub the cotton ball on the first flower and notice how the chalk "pollen" sticks to it.
3. Now rub that cotton ball on the second flower and notice how the colours mix.



## TOPIC 7

# Spreading Seeds

Plants need to spread their seeds so that baby plants have space and room to grow. Since they can't walk, plants use a variety of methods to spread their seeds! Let's explore...

### Spark Curiosity

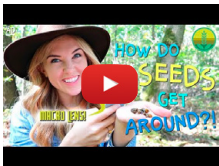


Did you know? Ants are important seed dispersers! They carry seeds back to their nest, feed on the plant flesh stuck to the seed, then leave the seeds in a place where they can grow.



Can you think of any other ways seeds move?  
Can you invent a new way for seeds to travel?

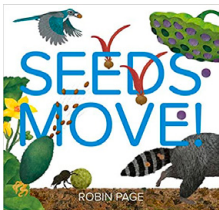
### Resource Suggestions



#### How do seeds get around?!

Maddie Moate

Get an up-close look at a few types of seeds and learn how they are spread.



#### Seeds Move

Robin Page

Discover the fascinating and surprising ways that seeds move and find a place to grow.

### HANDS ON ACTIVITY

- "Exploding Seed Pod" on page 19

### Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ☆ A very inquisitive and extremely patient child took a tally of the number of animals that ate apples off of an apple tree. He found that 3 raccoons, 4 squirrels, and 3 birds ate the apples. Draw these tally marks. How many animals ate the apples in total?
- ☆☆ A very inquisitive and extremely patient child took a tally of the number of animals that ate apples off of an apple tree. He found that 13 raccoons, 14 squirrels, and 9 birds ate the apples. Draw these tally marks. How many animals ate the apples in total?
- ☆☆☆ A very inquisitive and extremely patient child took a tally of the number of animals that ate apples off of an apple tree. He found that 23 raccoons, 11 squirrels, and 19 birds ate the apples. Draw these tally marks. How many animals ate the apples in total? How many more raccoons ate the apples than squirrels?



## HANDS ON ACTIVITY

# Exploding Seed Pod

Types of Learning: Scientific Discovery, Following Instructions, Numeracy, Critical Thinking, Problem Solving

### WHAT'S HAPPENING?

Plants spread their seeds using many different methods.

Some seeds are transported by the wind. These seeds have a special shape that helps them glide or spin through the air.

Some seed pods are even designed to explode! These seed pods throw the seeds a good distance from the mature adult plant, allowing those seeds to have their own space and sunlight for a chance to grow.

Many plants use animals to carry their seeds. Some seeds have hooks, which catch in animals' hair and go for a bit of a ride before falling off in a new location. Other plants hide their seeds in fruits, encouraging animals to eat them. This allows seeds to be dispersed through the animals' waste.

*Adapted from BBC.*

[Check it out here for more interesting facts about how plants spread their seeds.](#)

### Materials

- Seeds
- Balloon
- Pin (optional)

### Directions

Some plants spread their seeds by having their seed pods pop, or explode. This gives their seeds a little boost and allows the seeds to spread out to their own patch of land to grow.

1. You can simulate an exploding seed pod by putting a few seeds inside a balloon, then blowing up the balloon.
2. Take that balloon outside—or inside if you are brave—and make it POP! You can do this by squeezing it or by popping it with a pin.
3. Try to find the seeds! It will be easier to find the seeds if you do this activity inside, though it might be a bit messy!





## TOPIC 8

# Plant Adaptations

Plants have unique features to help them survive in their unique environments. These are called plant adaptations. Plant adaptations help plants to survive and thrive. Let's explore...

### Spark Curiosity



Did you know? Some desert plants have adapted to bloom only at night, avoiding dehydration and attracting nocturnal pollinators that avoid the heat of the day.



How might plants adapt to very wet and soggy environments? Or cold and dark places?

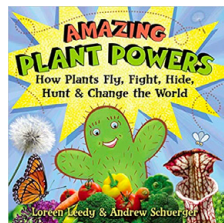
### Resource Suggestions



#### Plants with Weapons?

SciShow Kids

Learn about defenses, one type of plant adaptation.



#### Amazing Plant Powers: How Plants Fly, Fight, Hide, Hunt, & Change the World

Loreen Leedy and Andrew Schuerger

Go beyond the basics of botany with this introduction to the strangest, coolest things plants can do.

### HANDS ON ACTIVITY

- "Play Wetlands vs. Desert" on page 21
- "Wetland vs. Desert Game Cards" on pages 34 and 35
- "Wetland vs. Desert Game Board" on page 36

### Literacy Enrichment Activity

- ☆ Choose a plant and write a plant adaptation it has to thrive in its environment. Draw a beautiful picture!
- ☆☆ Choose a plant and write a few plant adaptations it has to thrive in its environment. Draw a beautiful picture!
- ☆☆☆ Choose two plants and compare their plant adaptations. Draw a picture of each plant as well.



## HANDS ON ACTIVITY

# Play Wetlands vs. Desert

Types of Learning: Critical Thinking, Research Skills, Sportsmanship, Taking Turns

## WHAT'S HAPPENING?

In the **wetlands**, plants are wet almost all of the time. Plants have adapted so they don't get too much water, but still get enough oxygen. Some wetland plants have air pockets that allow oxygen to flow down to the roots. Some plants have adventitious roots, which grow out of the stem in unusual places, helping the plants take in more oxygen. Some wetland plants, such as cattails, have very long stems, allowing the tops to reach above the water's surface. Wetland plants also tend to have wide shallow roots to anchor them in place while the water flows over and around them.

*Adapted from Study.com.*

[Check it out here for more interesting facts about wetland plant adaptations.](#)

In the **desert**, there is very little water or rain, so plants have adapted to this dry, hot climate. Some desert plants have a thick, waxy skin which helps prevent water loss, keeping the plant hydrated. They also often have thick, fleshy stems to store water. Spikes are prevalent on desert plants to prevent animals from trying to access the stored water. These plants will often lie dormant for years until a rainfall. The roots of these plants can be really deep to tap into water found deep in the ground, or very shallow and far reaching to soak up any bit of rain that might fall.

*Adapted from BBC.*

[Check it out here for more interesting facts about desert biomes.](#)

## Materials

- Two small item to use as game pieces

## Directions



"Wetland vs. Desert Game Cards" on pages 34 and 35

"Wetland vs. Desert Game Board" on page 36

- Let's compare plant adaptations from two very different environments! Begin by printing off the Wetlands vs. Desert Game Board and Game Cards printables and cut out the game cards.
- Now read the What's Happening section to the left and you are ready to play!
- Place the game cards upside down in a pile and place two game pieces on the first square.
- One player (or team) is Team Wetlands and one player (or team) is Team Desert.
- The first player turns over a card. If it's a description of an adaptation that helps plants survive in their environment, they move ahead as indicated on the card. If it isn't, shuffle the card back into the deck and it is now the other player's turn. Continue to take turns and shuffle the cards together until one player reaches the finish line.





## TOPIC 9

# Why Do We Need Plants?

Plants are important for our world, animals and humans as well. Let's have a look at why plants are so important. Let's explore...

### Spark Curiosity



Did you know? Plants have been used as medicine since prehistoric times. Even today, about half of prescription medicines are derived from plants.



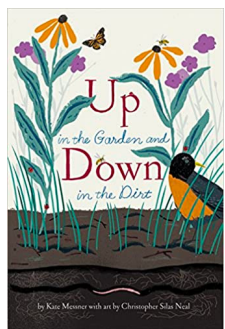
What are some other ways plants make our lives better?

### Resource Suggestions



**Why do we need plants?**  
WHIZBUSTERS

Discuss just a few of the many ways plants are important for people and animals.



**Up in the Garden,  
Down in the Dirt**  
Kate Messner

Discover the vibrant variety of creatures who make a home in one family's garden.

### HANDS ON ACTIVITY

- "Grow a Seed" on page 23

### Math Enrichment Word Problem

Have blocks, stones, or other manipulatives available for these math problems. Be flexible and change up the numbers to make these problems the right challenge for your children. Extend on the problems and ask follow up questions if your child is enjoying these challenges!

- ☆ About 25% of our medicine comes from plants that grow only in the rainforest. This means that for every 4 medicines we have, 1 comes from a plant in the rainforest. If we had 8 different types of medicine, how many of those would you expect came from a plant in the rainforest?
- ☆☆ About 25% of our medicine comes from plants that grow only in the rainforest. If we had 16 types of medicine, how many would you expect came from the rainforest? (Hint: Split the types of medicine into groups of 4.)
- ☆☆☆ About 25% of our medicine comes from plants that grow only in the rainforest. If we had 160 types of medicines, how many would you expect came from the rainforest? (Hint: ignore the zero then add it back on at the end!)



## HANDS ON ACTIVITY

# Grow a Seed

Types of Learning: Gardening, Sensory Learning, Patience, Independence, Follow Through

### WHAT'S HAPPENING?

As you grow your plant, consider these reasons for why we need plants:

- Plants absorb **carbon dioxide** and give us **oxygen**. This is the opposite of what humans do! We take in oxygen and breath out carbon dioxide. Plants are our perfect match.
- Humans and animals eat plants every single day.
- Humans and animals use plants to build homes. Without plants and trees, it would be very difficult for animals to make shelter.
- Most of our medicine comes from plants.
- Plants help clean our waters.
- Plants help hold soil in place and prevent erosion.
- A lot of our clothing and materials that we use come from plants as well!

*Adapted from BBC.*

[Check it out here for more interesting facts about why plants are important.](#)

### Materials

- Paper towels
- Seeds
- Mason jar

### Directions

Since plants are so important for our world, let's grow one! As you grow your seed, have a look at the root structure and the different parts of the plant pressed against the mason jar. This is a great opportunity to really examine how a plant grows up close.

1. Wet some paper towels and stuff them into a mason jar.
2. Place a few seeds around the outside of the mason jar, nestled between the glass and the paper towel.
3. Keep the paper towel moist and place the mason jar in a sunny spot.
4. Watch the seeds sprout and grow!





## TOPIC 10

# Get Growing!

There is no better way to learn about growing plants than by actually growing plants! Growing plants is fun activity that is very manageable and inexpensive. You can use beautiful flowers, vegetable seeds, or a combination! Let's explore...

### Spark Curiosity



Did you know? Caring for plants is known to be healing and calming for our brains!



What plants would you like to learn how to grow?

### Resource Suggestions



**Grow Your Own Potatoes!**  
SciShow Kids

See how to sprout a potato and even grow new potatoes of your own.



**Don't Throw It, Grow It:**  
**68 Windowsill Plants**  
**from Kitchen Scraps**  
Deborah Peterson

From the common carrot to the exotic cherimoya, you'll be amazed at the gardening possibilities hidden in the foods you eat.

### HANDS ON ACTIVITY

- "Grow a Container Garden" on page 25

### Literacy Enrichment Activity

- ☆ Keep an observation journal of growing your container garden for the hands on activity on the next page. Draw a picture of what you see each day.
- ☆☆ Keep an observation journal of growing your container garden for the hands on activity on the next page. Write a few words and draw a picture of what you see each day.
- ☆☆☆ Keep an observation journal of growing your container garden for the hands on activity on the next page. Write a description of what you see each day. Also make inferences as to what you expect is happening if the sprout is still underground.



## HANDS ON ACTIVITY

# Grow a Container Garden

Types of Learning: Gardening Skills, Responsibility, Sensory Learning, Patience, Persistence

### WHAT'S HAPPENING?

You will need to read your seed package for instructions on how to plant each of your seeds. Seeds have unique requirements with how far they need to be planted in the soil, and how much space, sunlight and water they need.

Once you have planted your seeds, you will need to water them and wait for them to sprout. This can take quite a few days or even weeks. There is a lot going on under the surface of the soil. Remember when you planted your seed in the mason jar? A lot of things happened before your seedling was tall enough to pop its head out of the mouth of the jar!

Your seeds will begin by growing a root, then they will shoot upwards, eventually poking out of the soil. At this time, your plant will need sunlight as well as water to grow.

Keep watering and caring for your plants, and before you know it, you will have full grown plants that are producing flowers, fruits, and seeds!

### Materials

- Rubbermaid container or tote
- Drill
- Soil
- Seeds

### Directions

1. Get a plastic Rubbermaid container or tote (the size is entirely up to you!) and drill some holes in the bottom of it.
2. Place the container either outside or in your home near a window. If you choose to have your container garden inside, place the lid of the container underneath the bin to catch any water run off.
3. Fill the bin with soil and plant some seeds!
4. Water and observe what happens as you grow your very own garden.





## TOPIC: FOUR TYPES OF PLANTS

# Types of Plants

Cut out the plant photos on the following page and paste them into the correct category below.

MOSSES AND WORTS

FERNS

GYMNOSPERMS

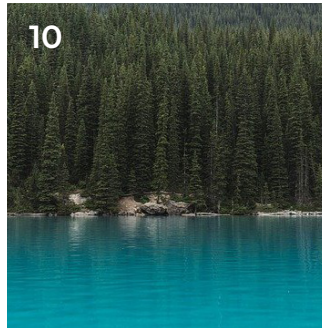
ANGIOSPERMS



## TOPIC: FOUR TYPES OF PLANTS

# Plant Photos

1. Liverwort, 2. Common Haircap Moss, 3. Resurrection Fern, 4. Ostrich Fern, 5. Spoon Leaved Moss, 6. Springy Turf Moss, 7. Horsetail Fern, 8. Eagle Fern, 9. Fir Trees (Gymnosperm), 10. (Gymnosperm), 11. Apple Tree (Angiosperm), 12. Corn (Angiosperm), 13. Redwood (Gymnosperm), 14. Spruce (Gymnosperm), 15. Palm Tree (Angiosperm), 16. Dahlia (Angiosperm)





TOPIC: PARTS OF A SEED

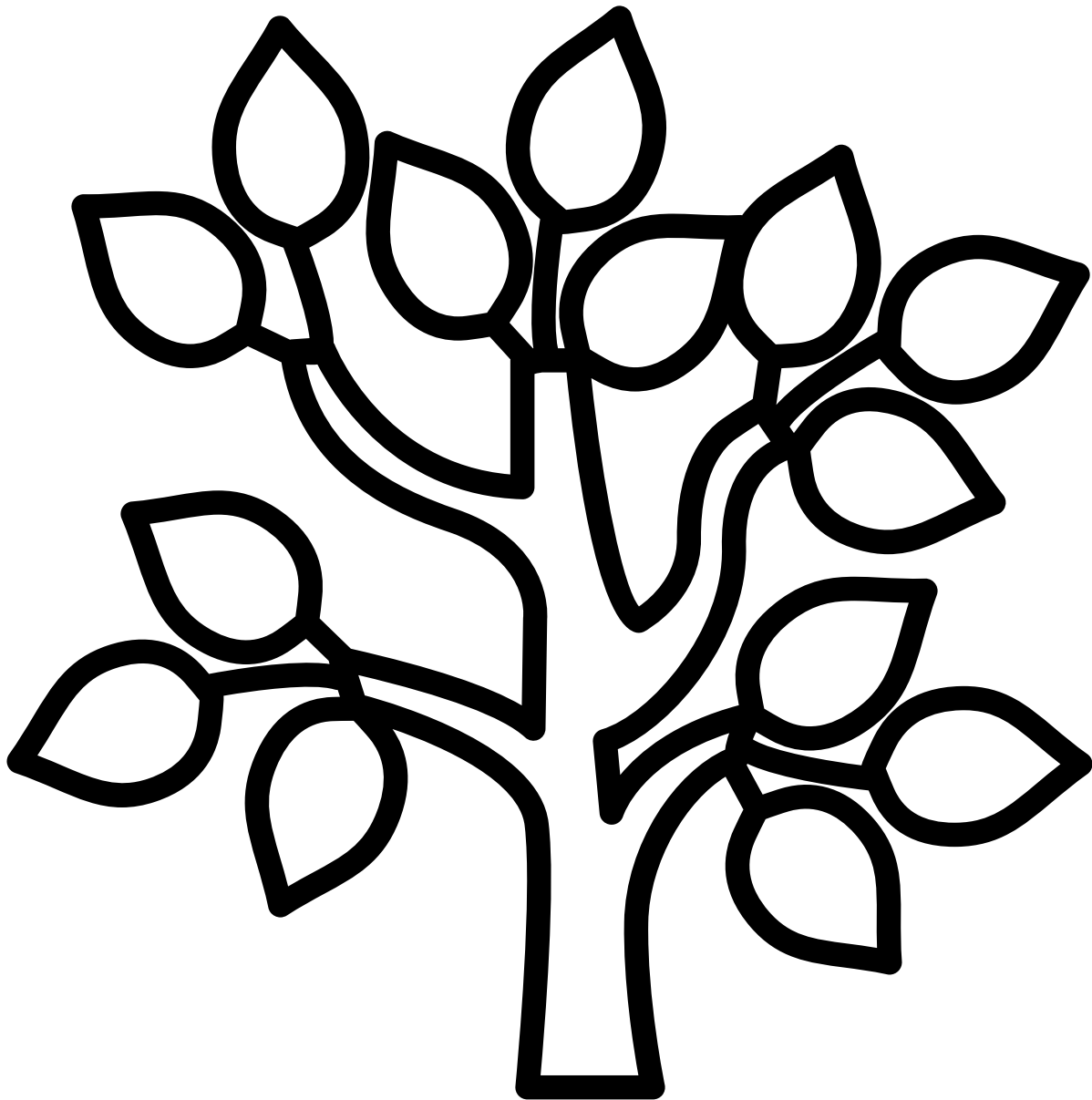
# Seed Diagram





TOPIC: PARTS OF A SEED

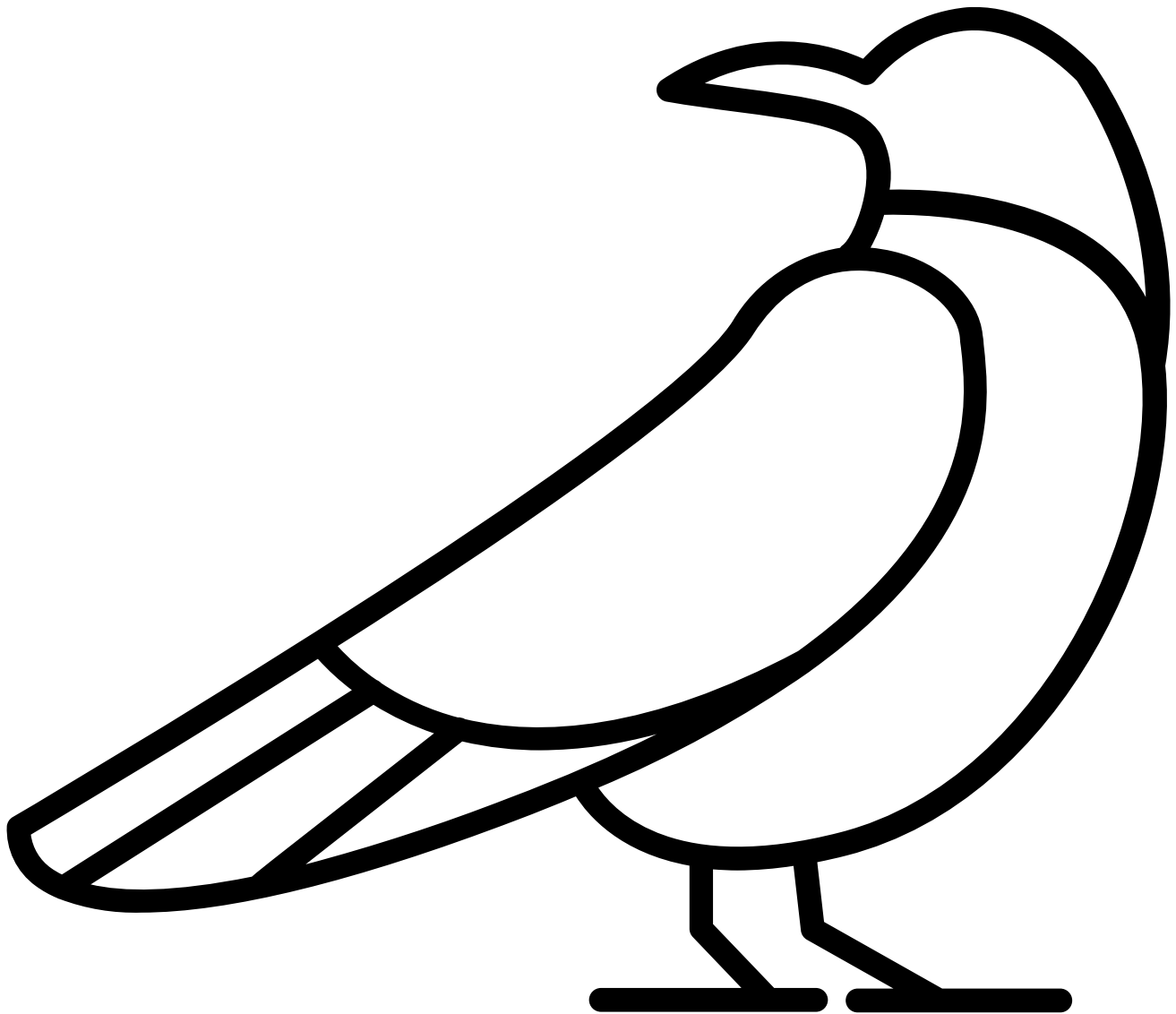
## Seed Art Template





TOPIC: PARTS OF A SEED

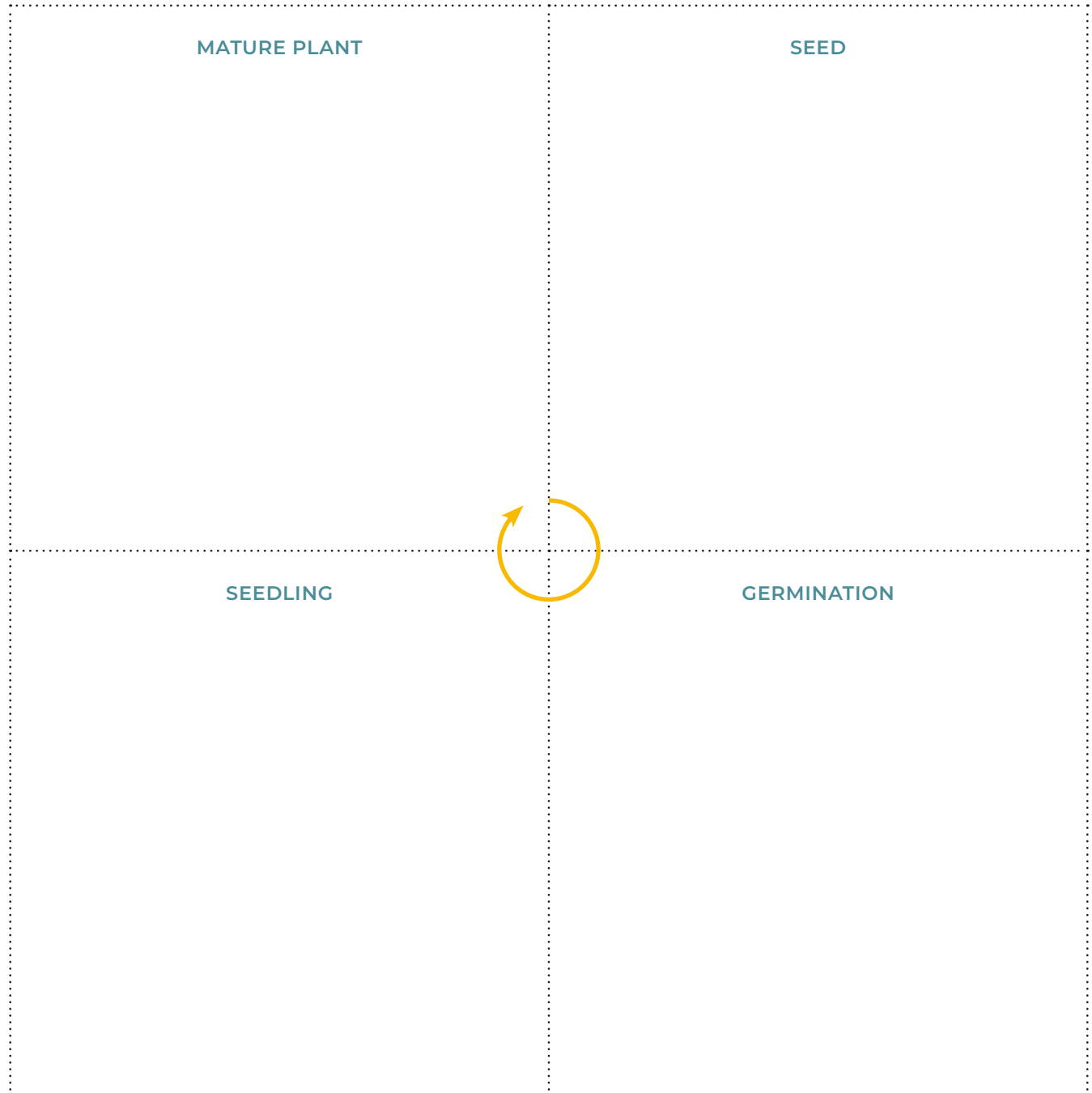
## Seed Art Template





TOPIC: THE PLANT LIFE CYCLE

# Plant Life Cycle

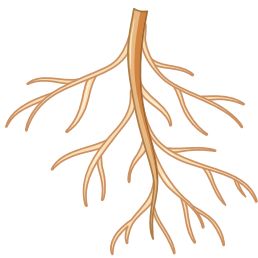




TOPIC: PARTS OF A PLANT

# Plant Parts Matching Game

Print two copies to play the Plant Parts Matching Game.



Root



Stem



Leaf



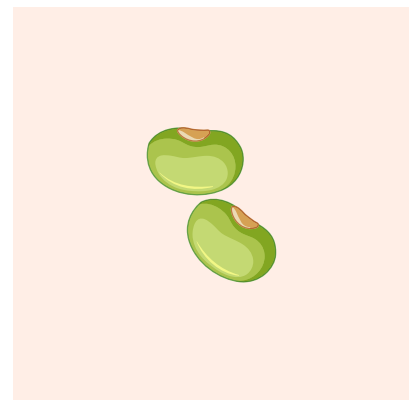
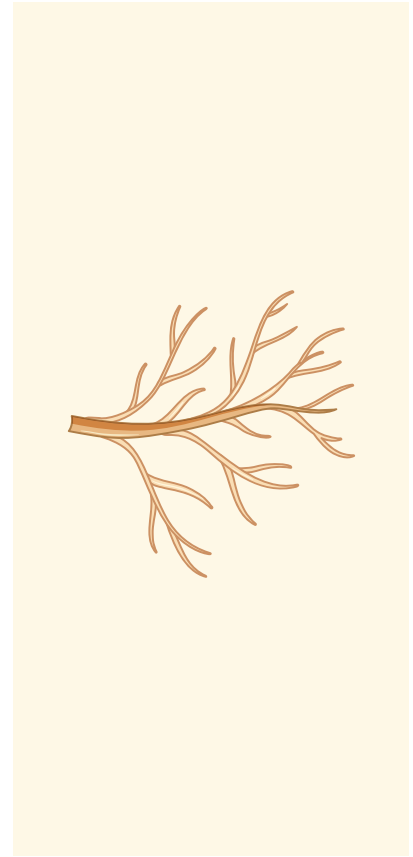
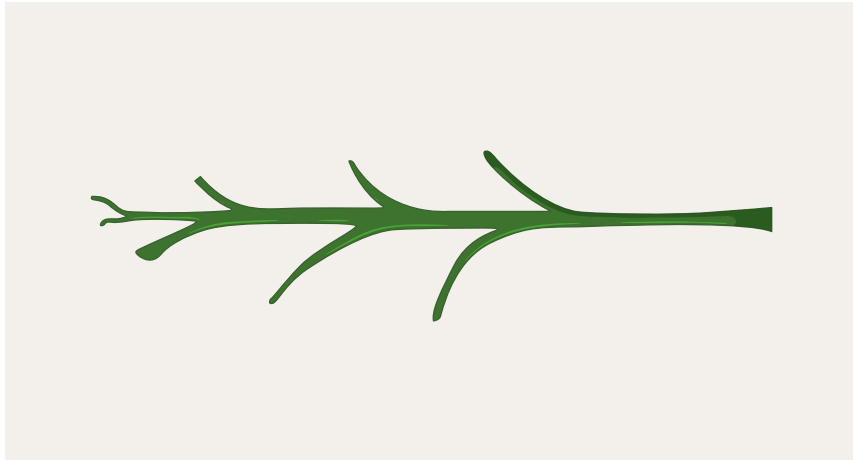
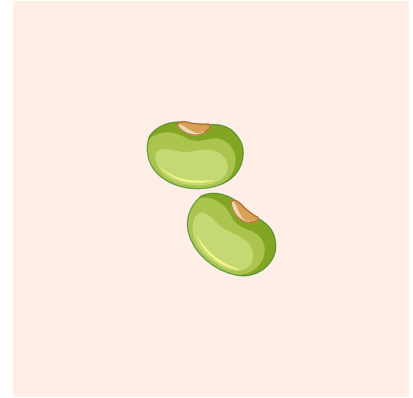
Flower



Fruit



Seed





## TOPIC: PLANT ADAPTATIONS

# Wetland vs. Desert Game Cards

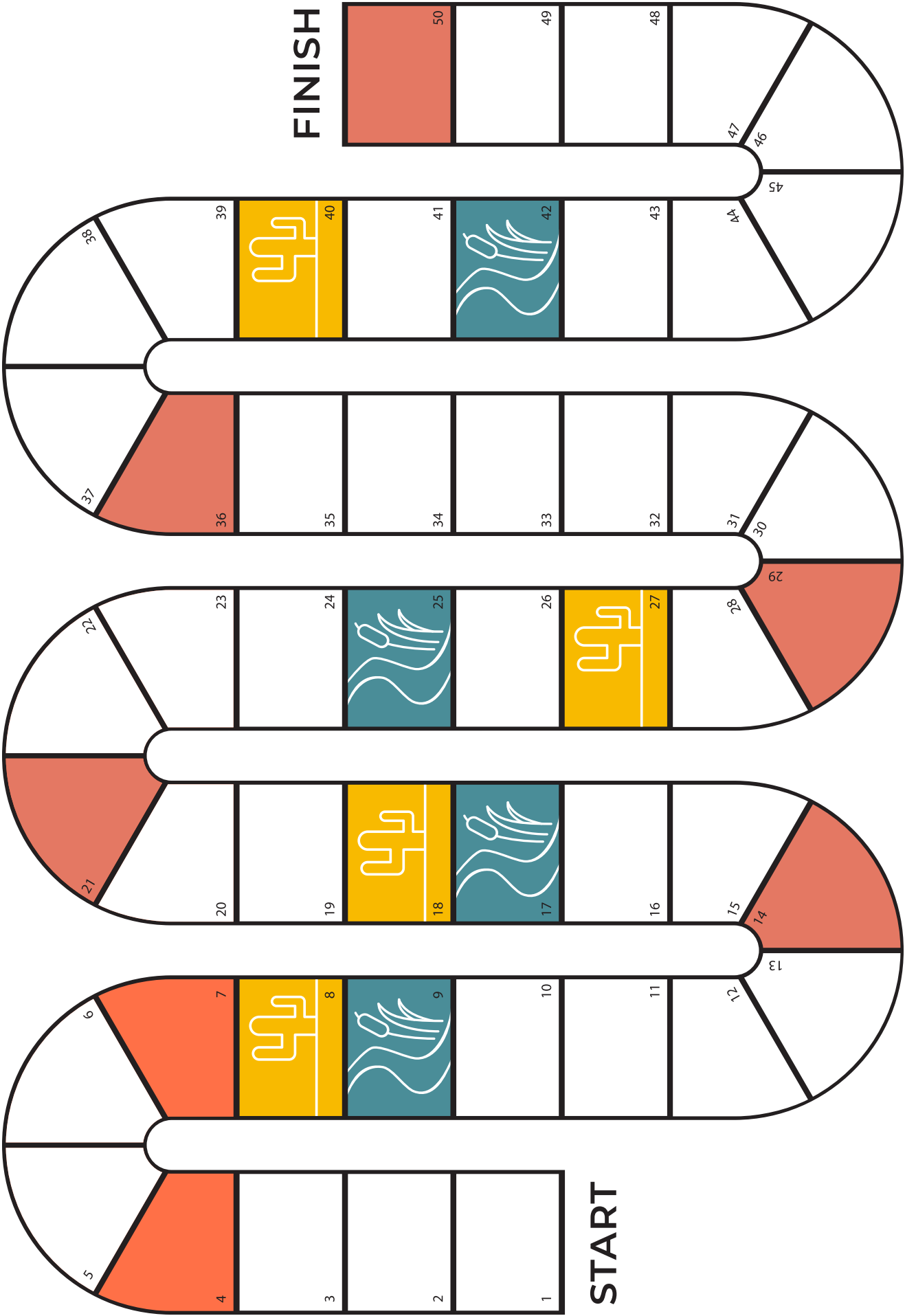
<p><b>WETLAND OR DESERT?</b></p> <p>Air pockets to allow oxygen to flow to the roots.</p> <p><b>Move to the next red space.</b></p> <p>A. Wetland Adaptation.</p>	<p><b>WETLAND OR DESERT?</b></p> <p>Adventitious roots.</p> <p><b>Move to the next red space.</b></p> <p>A. Wetland Adaptation.</p>	<p><b>WETLAND OR DESERT?</b></p> <p>Long stems.</p> <p><b>Move forward 2 spaces.</b></p> <p>A. Wetland Adaptation.</p>
<p><b>WETLAND OR DESERT?</b></p> <p>Wide shallow roots to help anchor them in place.</p> <p><b>Move forward 4 spaces.</b></p> <p>A. Wetland Adaptation.</p>	<p><b>WETLAND OR DESERT?</b></p> <p>The ability to float on top of the water's surface.</p> <p><b>Move forward 6 spaces.</b></p> <p>A. Wetland Adaptation.</p>	<p><b>BONUS!</b></p> <p><b>If you are team Wetland, move to the next green Wetland space.</b></p> <p><b>If you are team Desert, move to the next yellow Desert space.</b></p>



TOPIC: PLANT ADAPTATIONS

# Wetland vs. Desert Game Cards

<p><b>WETLAND OR DESERT?</b></p> <p>Deep tap roots or wide shallow roots for collecting water.</p> <p><b>Move to the next red space.</b></p> <p>A. Desert Adaptation.</p>	<p><b>WETLAND OR DESERT?</b></p> <p>Thorns or spikes.</p> <p><b>Move to the next red space.</b></p> <p>A. Desert Adaptation.</p>	<p><b>WETLAND OR DESERT?</b></p> <p>Waxy skin.</p> <p><b>Move forward 2 spaces.</b></p> <p>A. Desert Adaptation.</p>
<p><b>WETLAND OR DESERT?</b></p> <p>Fleshy stems to store water.</p> <p><b>Move forward 4 spaces.</b></p> <p>A. Desert Adaptation.</p>	<p><b>WETLAND OR DESERT?</b></p> <p>May lie dormant for years.</p> <p><b>Move forward 6 spaces.</b></p> <p>A. Desert Adaptation.</p>	<p><b>BONUS!</b></p> <p><b>If you are team Wetland, move to the next green Wetland space.</b></p> <p><b>If you are team Desert, move to the next yellow Desert space.</b></p>





My Unit Study Notes on Seeds and Plants

TOPIC 1: FOUR TYPES OF PLANTS

TOPIC 2: PARTS OF A SEED



My Unit Study Notes on Seeds and Plants

TOPIC 3: THE PLANT LIFE CYCLE

TOPIC 4: PARTS OF A PLANT



My Unit Study Notes on Seeds and Plants

TOPIC 5: PHOTOSYNTHESIS

TOPIC 6: POLLINATION



My Unit Study Notes on Seeds and Plants

TOPIC 7: SPREADING SEEDS

TOPIC 8: PLANT ADAPTATIONS



My Unit Study Notes on Seeds and Plants

TOPIC 9: WHY DO WE NEED PLANTS?

TOPIC 10: GET GROWING!