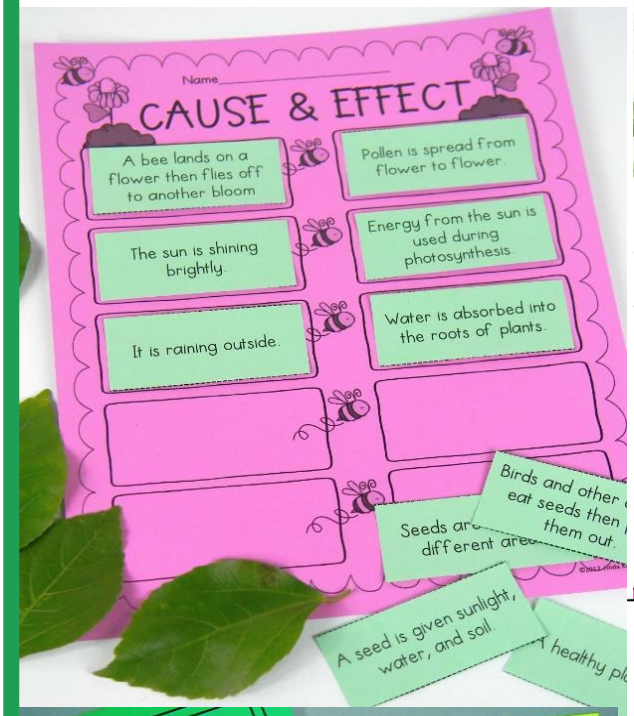
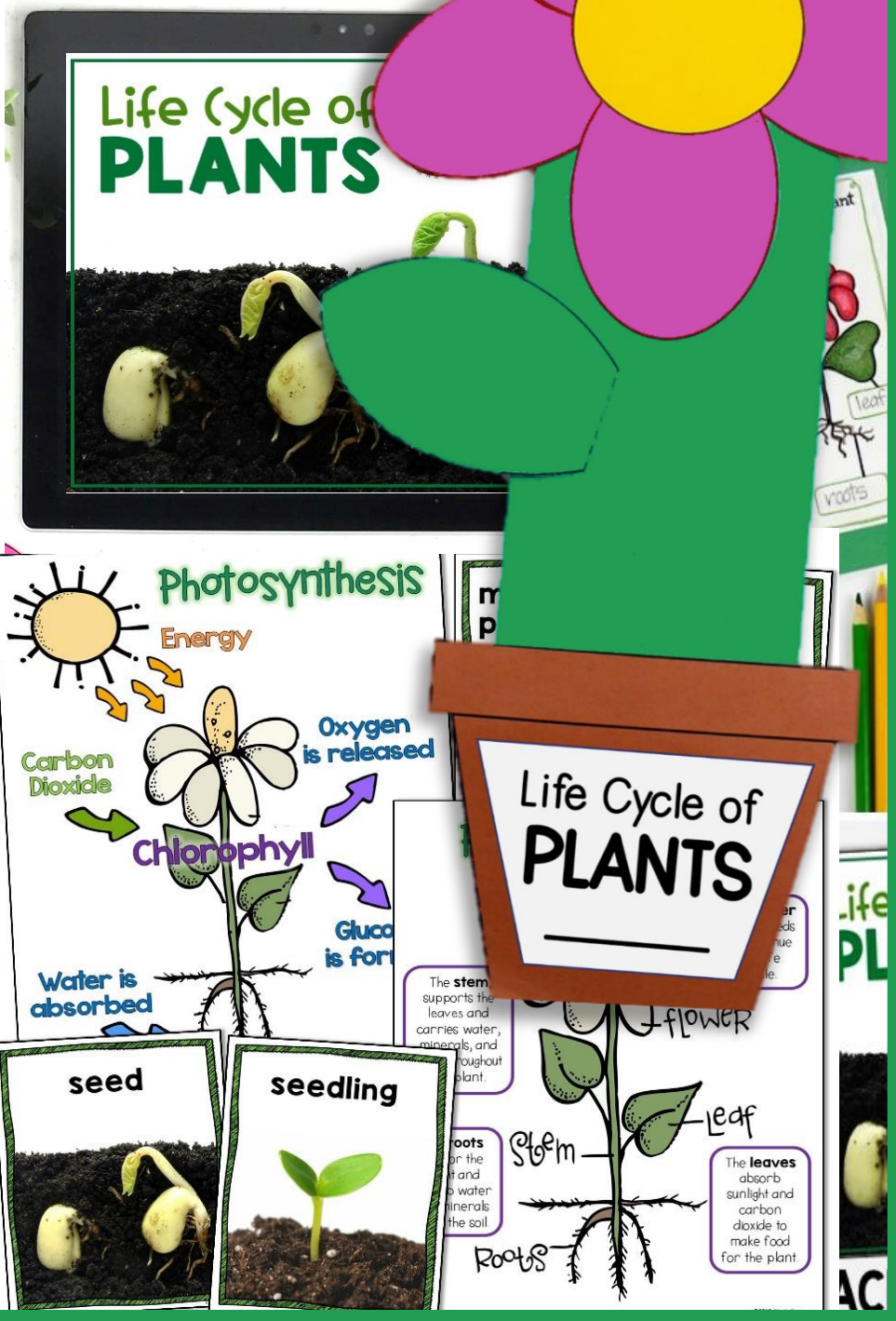
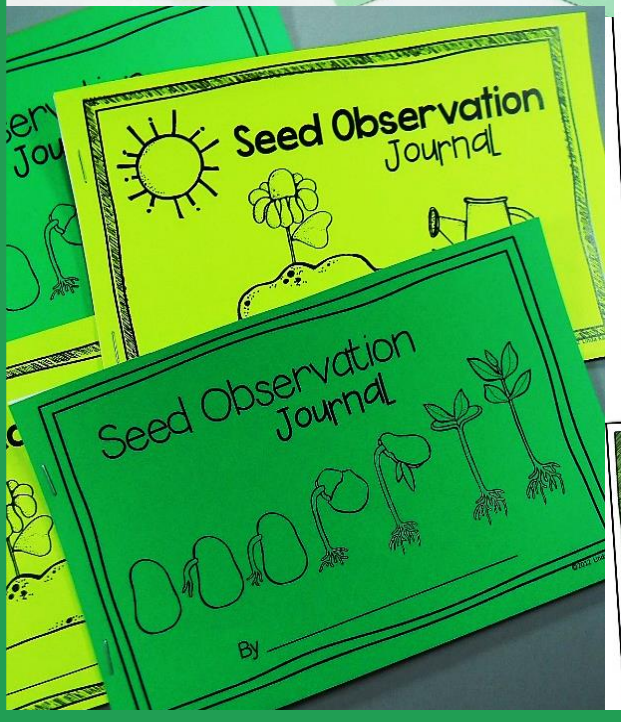
LIFE CYCLE OF PLANTS







COMPLETE SCIENCE UNIT Linda Kamp

TERMS OF USE

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Happy teaching!

Linda

PLEASE READ THESE:
Important Printing Tips

Be sure you have the latest version of Adobe Reader.
This resource contains many graphics and images which can sometimes result in black bars across the page or missing text if you are using an older version of Adobe Reader. This is not an issue with the file. It is a common problem easily fixed by installing the latest version of Adobe Reader free from Adobe.com.

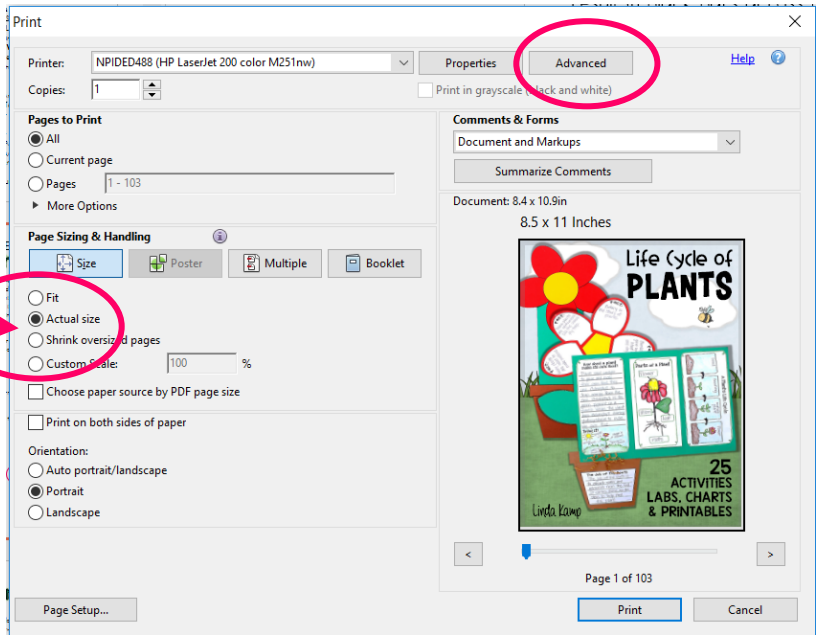
Mac Users: Issues can arise if you are trying to print after opening the file in "Preview" rather than clicking on "Open With" first. "Preview" is the default setting so be sure to check that.

If you are still experiencing difficulties here is good advice from TPT Support:

1) Open the PDF file with the most current version of Adobe Reader.
2) Click **'print'**.
3) Click on **'advanced'**.
4) Check the **'print as image'** box, and this should cover all potential issues.

Proper Printer Setting:

Be sure to set your printer on **actual size** before printing the file. This will ensure that you are printing all templates at the size they were intended and result in all of the pieces fitting together properly.



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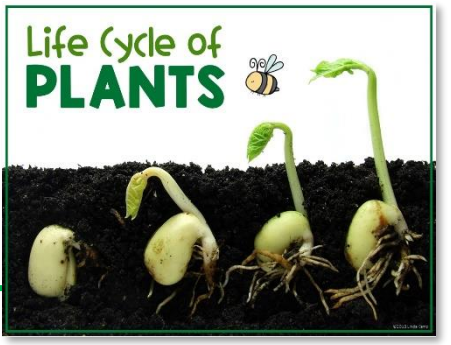
TEACHING POWER POINT
Lesson Overview



The teaching PowerPoint with lessons are located in a separate file included in this download.

LESSON 1: The Plant Life Cycle

LESSON 2: The Parts of A Seed
Observing the Inside of A Seed

LESSON 3: The Parts of a Plant

LESSON 4: Plant Needs
What Do Plants Need to Grow?

LESSON 5: Chlorophyll
How Do Leaves Help a Plant Get Light?

LESSON 6: Photosynthesis
How Do Plants Make Their Own Food?

LESSON 7: Pollination
How Do Insects Help Plants Grow?

LESSON 8: Seed Dispersal
How Do Seeds Travel?

LESSON 9: Plant Adaptations

Time Saving Management Tips

How can I fit it all in? There is a lot included in this resource. To fit it all in consider spreading out the activities, writing, and labs across your daily time blocks. My district requires us to integrate science and social studies into our literacy block so I do some of the lessons and writing whole group during our reading block and others during literacy center time. If you are fortunate enough to have a separate time in your day for science, then you would do many of the activities during that time. If not, here are some alternatives:

During your reading/writing block/literacy centers:

- Introduce vocabulary/students can complete the vocabulary mini-book using the large cards at a center.
- Teach the mini-lessons on photosynthesis and chlorophyll during this time.
- Complete the writing activities for the flower foldable during writing time or in a center.
- Have students label the plant part diagram in a center using the reference chart.
- Have students research plant facts either in books, on iPads, or online as a writing or computer center or during computer lab time.
- Have students complete graphic organizers independently in a center.
- Use the cause & effect cut & paste activity as a center

Save all the pieces for the foldable to assemble later: I have students cut out all of the completed mini-books and writing templates as they complete them and save them a quart size Ziplock bag in their folders. I break the actual assembly of the flower booklet into 2 sessions. We make the flower/plant facts piece as well as glue the writing onto the leaf and flower pot during this session. The next day, we assemble the rest of the flower foldable

LIFE CYCLE OF PLANTS

LESSON PLAN/PACING GUIDE

Day	Objective	Lesson/Lab/Activity	Materials
Day 1	-Introduce the plant life cycle -Introduce plant vocabulary -Students will illustrate and label the life cycle by using a graphic organizer.	**Lesson 1**: The Life Cycle of Plants Introduce the stages of the life cycle. -Lesson Activity 1: Draw the plant life cycle and/or complete the plant life cycle writing template for booklet.	-Teaching ppt. -Life Cycle of a Plant graphic organizer **p. 75** **OR** A Plant's Life Cycle writing template **p.107**
Day 2	-Students will label the parts of a seed. -Students will germinate seeds.	**Lesson 2**: Observing the Inside of a Seed -Lab Activity 2A: Observe the inside of a seed -Lab Activity 2B: Label the parts of a seed -Add related words to vocabulary booklet	-Teaching ppt. -Lab sheet **p.13-14** -Parts of A Seed student diagram **p.16** *See Teacher's Notes for lab materials -Vocabulary Booklet **pg. 100**
Day 3	-Students will observe and record changes as a seed grows by making an observation journal.	**Lesson 2 Continued**: Observing Changes as a Seed Grows -Lab Activity 2C: Germinate a seed -Lab Activity 2D: Observe and record changes as the seed grows	-Teaching ppt. -Seed Observation Journal **pgs.19-21**
Day 4	-Students will label the parts of a plant by using a graphic organizer. -Students will explain the job of the roots and leaves by making mini books.	**Lesson 3**: Parts of a Plant Identify and define the purpose of the parts of a plant. Lab Activity 3A: Label parts of a plant Activity 3B: Write to Explain- The jobs of the leaves and roots -Add related words to vocabulary booklet	-Teaching ppt. -Parts of a Plant diagram **p. 100** -Job of the Leaves and Roots writing templates **p.113-117** -Vocabulary Booklet **pg. 98**
Day 5	-Students will identify the needs of a plant. -Students will compare human needs with plant needs.	**Lesson 4**: What do plants need to grow? Lab Activity 4: Compare plant needs to human needs	-Teaching ppt. -Compare plant needs to human needs graphic organizer **p. 77**

LIFE CYCLE OF PLANTS

LESSON PLAN/PACING GUIDE

Day	Objective	Lesson/Lab/Activity	Materials
Day 6	-Students will explore how different leaf shapes help a plant to get more or less sunlight.	**Lesson 5**: How Do Leaves Help A Plant Get Light? Lab Activity 5: Explore how leaves help a plant get light	-Teaching ppt. -leaf types picture cards **p. 27-31** -student lab sheet **p. 32**
Day 7	-Students will understand how a plant makes its own food.	**Lesson 6**: How Do Plants Make Their Own Food? What is Chlorophyll? Lab Activity 6A: Chlorophyll Rubbings	-Teaching ppt. -Chlorophyll rubbing student page **p. 34** *See Teacher's Notes for lab materials
Day 8	-Students will explain the process of photosynthesis.	**Lesson 6 Continued**: What is Photosynthesis? Lab Activity 6B: Write to Explain- How a plant makes its own food	-Teaching ppt. -How does a plant make its own food? writing template **p. 101**
Day 9	-Students will identify how insects help plants grow by simulating pollination.	**Lesson 7**: How Do Insects Help Plants Grow? Lab Activity 7: Pollination Simulation	-Teaching ppt. -Pollination lab sheet **p. 38** *See Teacher's Notes for lab materials
Day 10	-Students will identify ways that plants disperse their seeds. -Students research interesting plant facts.	**Lesson 8**: How Do Seeds Travel? Lab Activity 8: Build a model of an exploding seed pod Students complete the Plant Facts writing	-Teaching ppt. -Plant Facts writing templates **p. 113** -Seed dispersal lab sheet p. **40-42** *See Teacher's Notes for lab materials
Day 11	-Students will compile their knowledge of the plant life cycle by making a learning portfolio.	**Lesson 9**: Plant Adaptations Lesson 9 Activity: Students write to explain an adaptation (optional) Begin assembling flower booklets See directions **pgs. 97-99**	-Flower booklet templates **pgs.97-114** -Adaptations writing template **p.106**
Day 12	Unit Assessment		-Unit Assessment & Answer Keys **pgs. 55-61**

LIFE CYCLE OF PLANTS
STANDARDS ALIGNMENT

First Grade

Common Core State Standards

SL.1.5 Add drawings or other visual displays to stories or recounts of experiences to clarify ideas, thoughts, and feelings

W.1.7 Participate in shared research and writing projects

W.1.8 Recall information from experiences or gather information from provided resources to answer a question

RI.1.1 Ask and answer questions about key details in a text.

Second Grade

Next Generation Science Standards

Ecosystems: Interactions, Energy, and Dynamics

2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.

2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants

Interdependent Relationships in Ecosystems

2-LS2.A Plants depend on water and light to grow; Plants depend on animals for pollination or to move their seeds around.

Biological Evolution: Unity and Diversity

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats. Crosscutting concept: Cause and effect

Common Core State Standards

RI.2.1 Ask and answer questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

RI 2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in a technical procedure in a text.

W.2.7 Participate in shared research and writing projects

W.2.8 Recall information from experiences or gather information from provided resources to answer a question

SL.2.5 Add drawings or other visual displays to stories or recounts of experiences to clarify ideas, thoughts, and feelings

LIFE CYCLE OF PLANTS
STANDARDS ALIGNMENT

Third Grade

Next Generation Science Standards

3-LS1-1 From Molecules to Organisms: Structures and Processes

Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death.

3-LS1.B Growth and Development of Organisms

Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

Common Core State Standards

RI 3.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in a technical procedure in a text.

RI.3.7 Use information gained from illustrations, maps, and photographs and the words in a text to demonstrate understanding of the text. (Where, when, why, and how key events occur.)

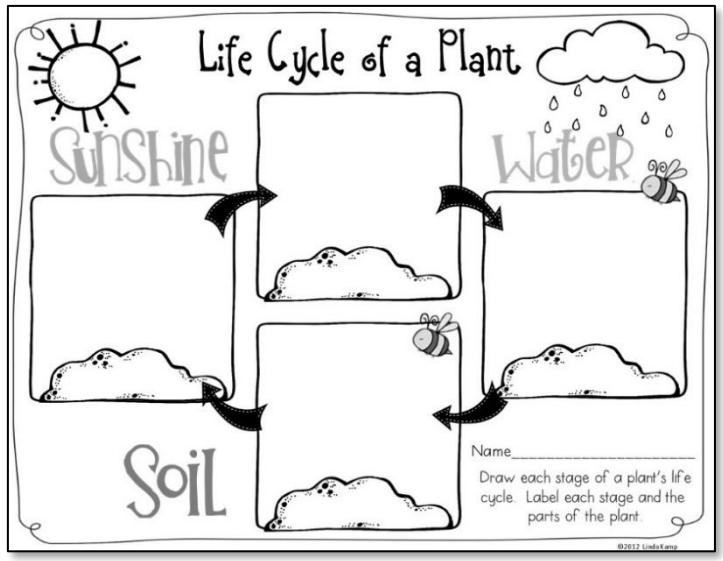
W.3.2 Write informative/explanatory texts t examine a topic and convey ideas and information clearly.

SL.3.4 Report on a topic or text, tell a story, or recount and experience with appropriate facts and relevant, descriptive details.

Lesson Activity 1 DRAW A DIAGRAM: STAGES OF THE LIFE CYCLE

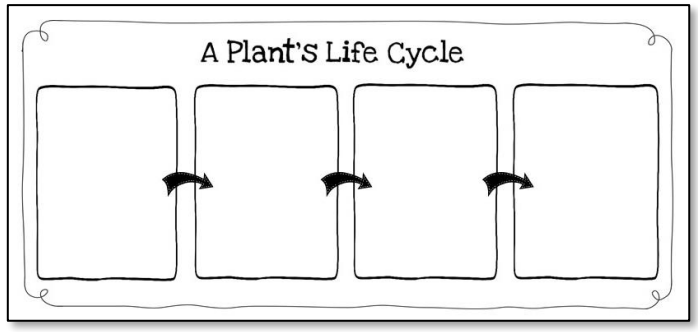
Objective: Students will draw and label a diagram depicting the stages of a plant's life cycle.

Materials per student:
-Life Cycle of a Plant graphic organizer on **page 75**
OR
-A Plant's Life Cycle template on **page 107** to add to the flower booklet.



located on page 75

OR



located on page 107

1. After teaching lesson 1, project the plant life cycle diagram slide in the PowerPoint.

2. Students draw the stages of a plant's life cycle using science vocabulary to label each stage.

3. Save the completed graphic organizer to add to the Thinking About Plants book or if using the smaller template, save these to add to the flower booklet.

*See assembly directions for the flower booklets.

Lab Activity 2A SEED DISSECTION: OBSERVING THE INSIDE OF A SEED

Objective: Students will measure, make predictions, and observe the inside of a seed.

Materials per student:
2 lima beans-1 dry, 1 soaked
hand lens
ruler
paper towels
recording sheet

1. Soak lima beans for 15-20 minutes. (It's a good idea to soak extras as some will split open.)
2. On a paper towel, give each student a wet and a dry bean as well as a hand lens.
3. Students then observe their dry seed and complete the describe, measure, and predict portion on their recording sheet.
4. Students carefully open their wet seed, observe the inside and compare their prediction to what they actually observed.
5. Students draw and label the inside of the seed.

CLICK HERE to see this experiment in action in my classroom!

Name_____

Lab Activity:

Dissecting A Seed

1. Observe

Use a hand lens to observe the outside of your dry seed. Describe what you see.

_____

_____

_____

_____

2. Measure

Measure your seed. Will you use inches or centimeters to measure its length? Circle one.

inches in. centimeters cm.

_____ _____

Dry seed measurement | Wet seed measurement

3. Predict

Draw what you think you will see inside the seed.

4. Check

Open your wet seed. Observe it with your hand lens and draw what you see.

5. Compare

Compare your prediction with what you actually observed inside your seed. Write what was the same and what is different.

_____

_____

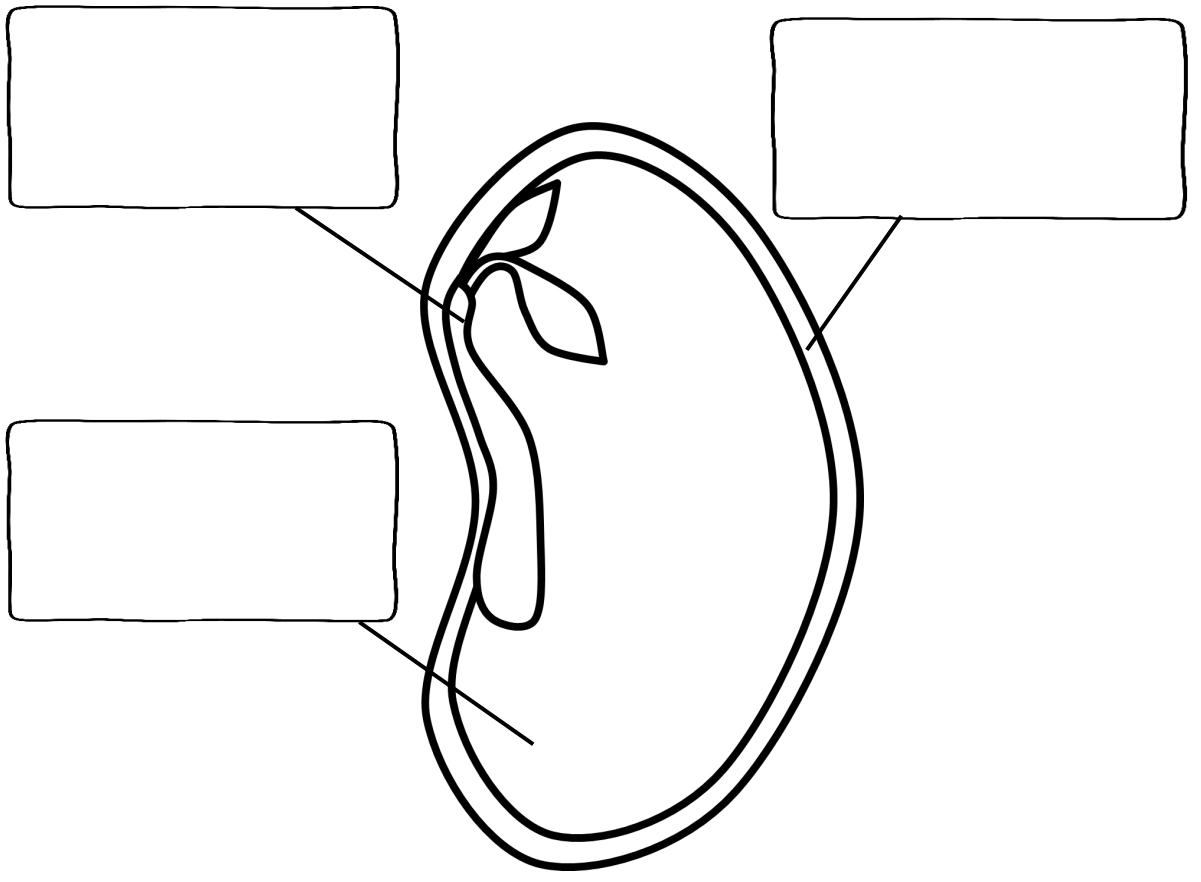
_____

6.
Draw

Use a hand lens to magnify the inside of your seed. Draw your seed and its parts.

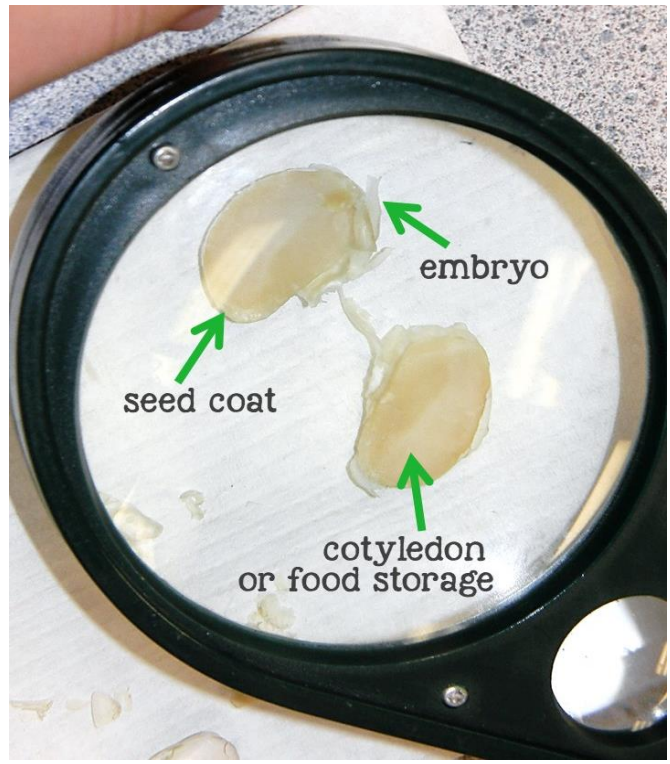
7.
Label

Label the Parts of a Seed



Lab Activity 2B
LABELING THE PARTS OF A SEED

Objective: Students will use a hand lens to observe and label the inside of a seed.



Materials:

1 soaked lima bean (soak for 20-30 min.)
1 paper towel
hand lens
Parts of a Seed recording sheet
Parts of a Seed lesson
*OPTIONAL-document camera

Procedure:

1. Have students carefully open the soaked seed by wedging their fingernail between the most curved sides.

2. Place the opened seed on a paper towel and observe with a hand lens.

3. Ask student to use the hand lens to locate the seed coat, embryo (baby plant), and cotyledon (seed leaf). You may wish to place an opened seed under a document camera if you have one available.

4. Project or display the Parts of a Seed lesson visual and guide students in identifying each part of the seed and its purpose.

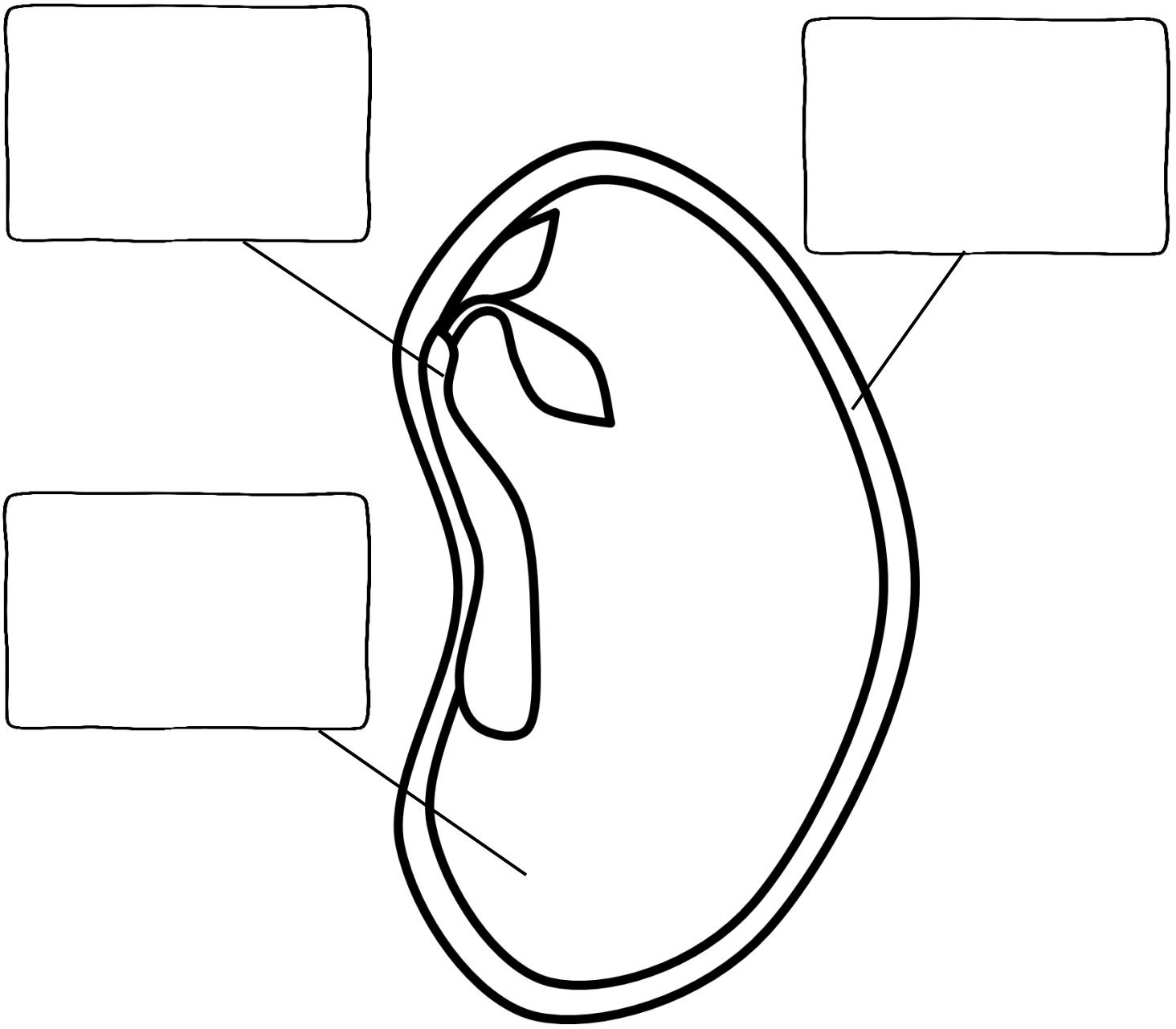
5. Students then label the diagram on their recording sheet.

PREP TIP: You may wish students to save and use the same seed from the Observing the Inside of a Seed activity

Name_____

Lab Activity:

LABELING THE PARTS OF A SEED

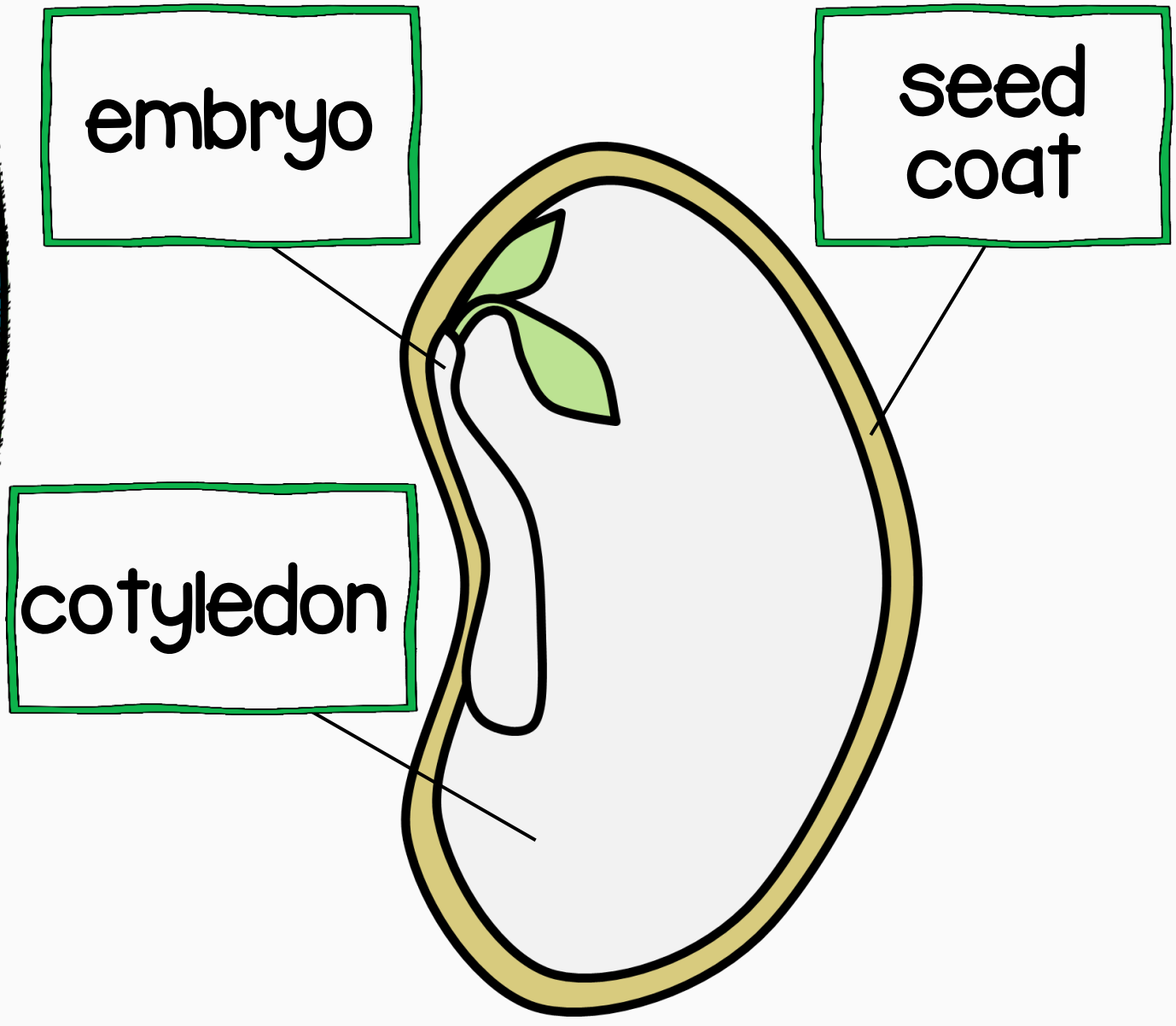


embryo-the tiny plant protected by the seed coat.

seed coat-protects the embryo and keeps moisture inside.

cotyledon-the food for the plant embryo

PARTS OF A SEED



embryo-the tiny plant protected by the seed coat.
seed coat-protects the embryo and keeps moisture inside.
cotyledon-the food for the plant embryo.

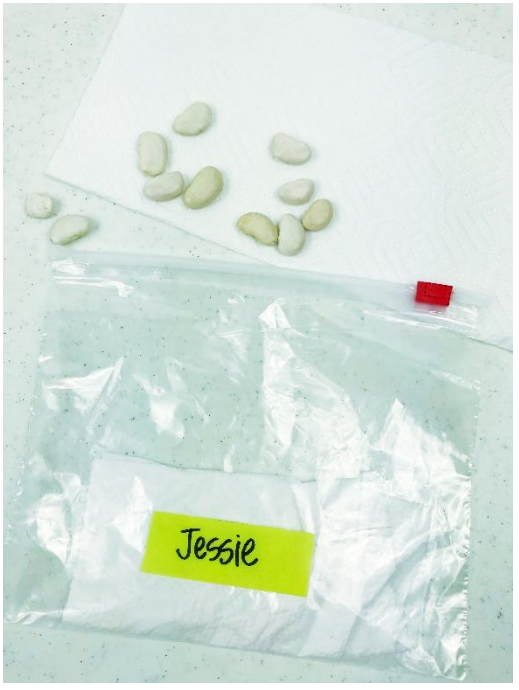
Lab Activity 2C & D GERMINATION: OBSERVING CHANGES AS A SEED GROWS

Objective: Students will germinate seeds to observe and record changes as the seed grows.

Materials:

1-2 lima beans
a sandwich size bag
paper towel
a few drops of bleach (optional)
a spray bottle of
seed observation journal with 6-8 recording pages

Procedure: Soak lima beans for 5 min. in a bowl of water with a few drops of bleach to prevent mold. Give each student 1 or 2 beans folded in a damp paper towel. Place the paper towel in an **open** sandwich bag to allow air to circulate. Tape the bags to a window, wall or clip to a clothesline. (I've even left them on a counter in a basket.) Spray the paper towels lightly to keep them damp if they begin to dry out. Once the seed begins to germinate (It usually takes 3-5 days) it will change quickly for a few days. Have students check their seeds daily and record any changes. After the initial days of germination, have students check their seeds, observe the changes and record them every 2-3 days. As the plants begin to grow to the top of the bag, you may wish to plant them in a cup with soil for students to take home.



CLICK HERE to see seed experiments in my classroom!

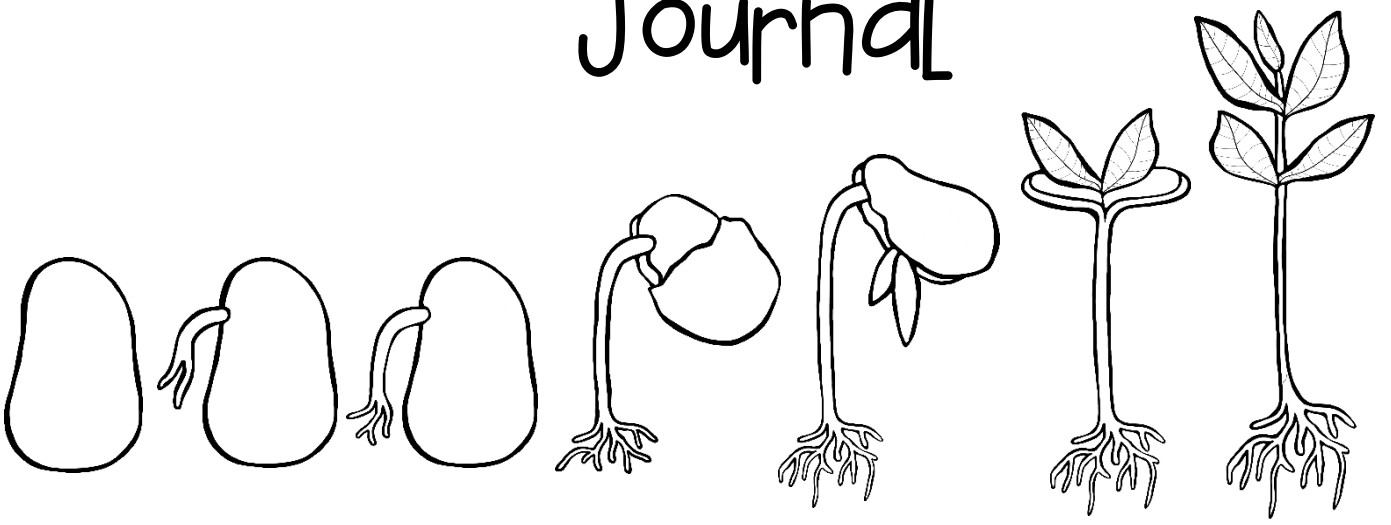
Seed Observation Journal

By _____

Seed Observation Journal

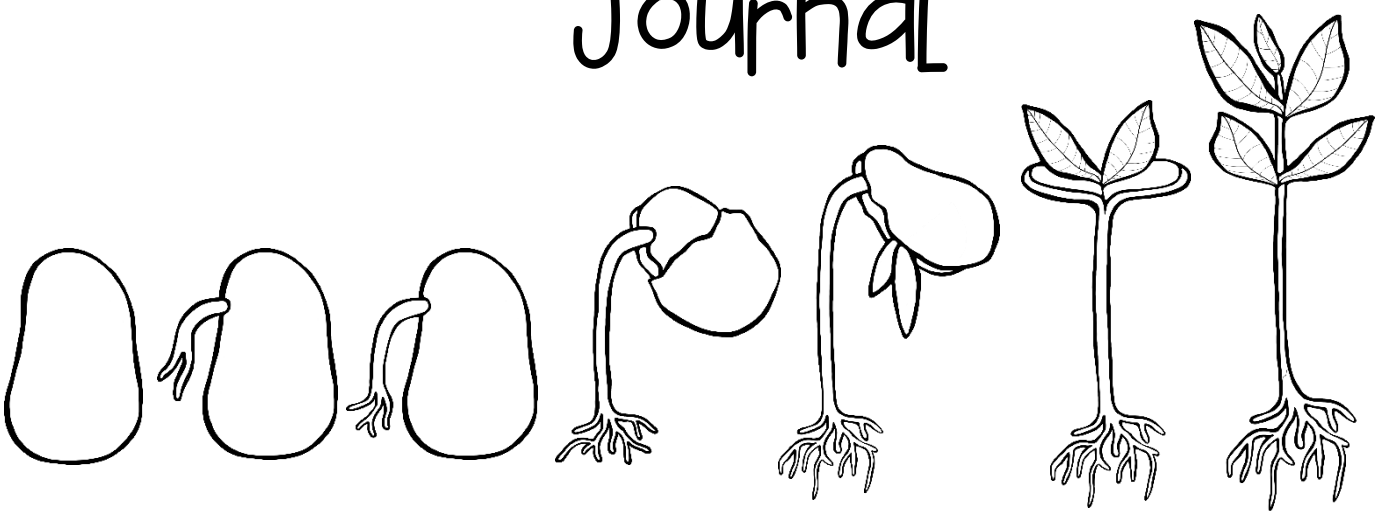
By _____

Seed Observation Journal



By _____

Seed Observation Journal



By _____

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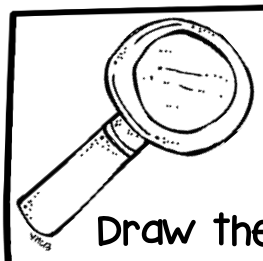
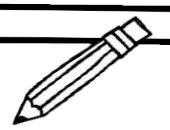


Day _____

Draw the changes you observe.

My plant measures _____



Write about the changes you observe.

_____

_____

_____

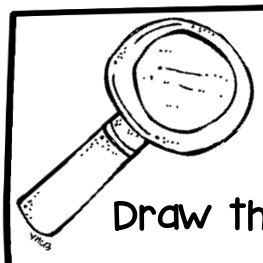
_____

_____

What care did you give your plant today?

_____

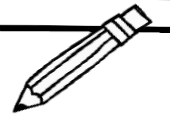
_____



Day _____

Draw the changes you observe.

My plant measures _____



Write about the changes you observe.

_____

_____

_____

_____

_____

What care did you give your plant today?

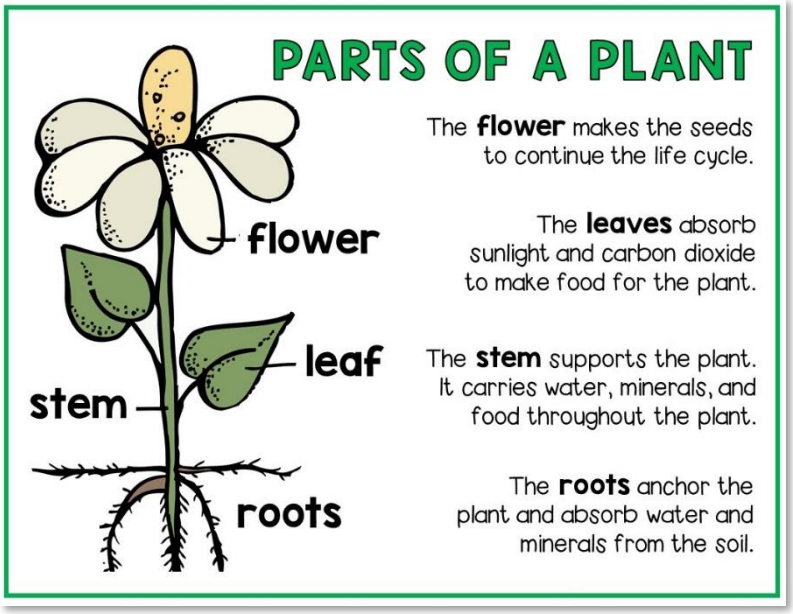
_____

_____

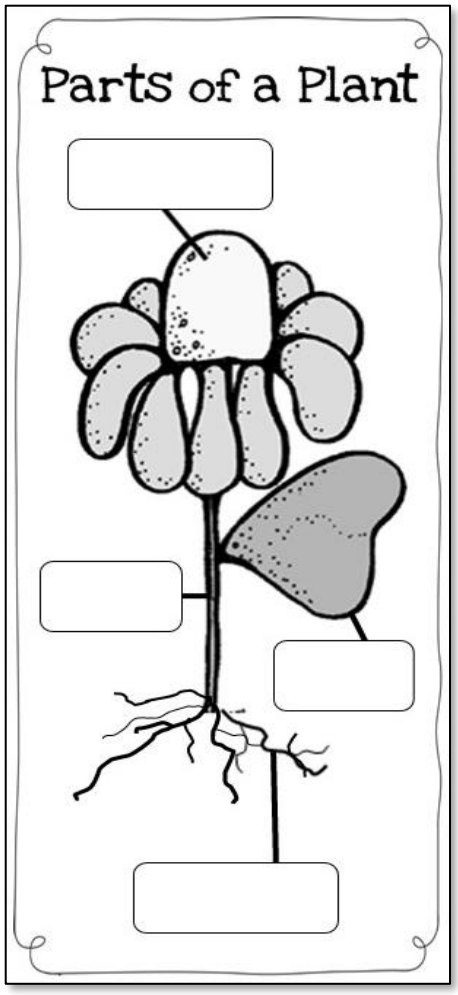
Lab Activity 3A
LABEL THE PARTS OF A PLANT

Objective: Students will identify and label the parts of a plant on a diagram.

Materials:
-Parts of a plant diagram located in PowerPoint lesson 3
-Parts of a plant writing template



1. After teaching the parts of a plant and their functions in lesson 3, project the parts of a plant diagram in the PowerPoint.
2. Students identify the plant parts and label the diagram.
3. Save the completed diagrams to add to the foldable flower booklets.



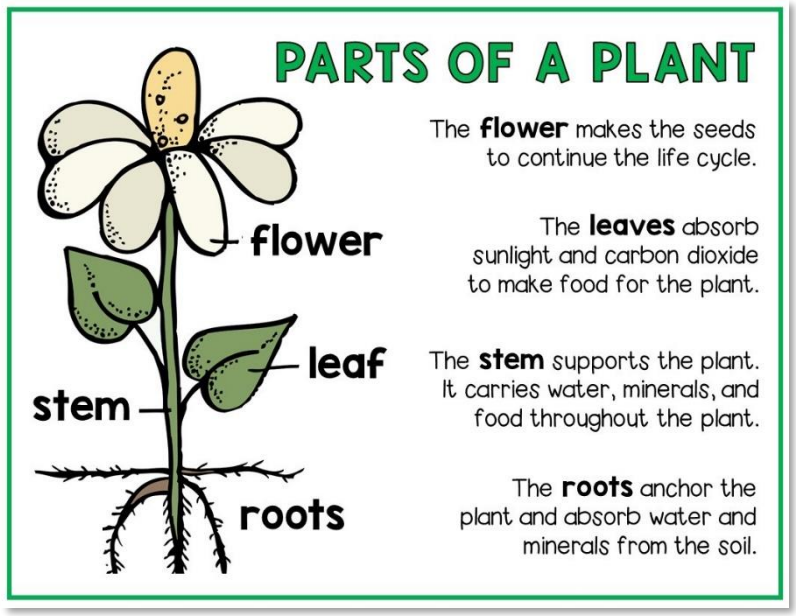
The diagram is intended to be cut out and glued to the front of the vocabulary booklet as a cover.

***See assembly directions for the flower booklets.**

Lab Activity 3B WRITE TO EXPLAIN: THE JOB OF THE ROOTS AND LEAVES

Objective: Students will identify and label the parts of a plant on a diagram.

Materials:
-Parts of a plant diagram in PowerPoint lesson 3
-Parts of a plant writing template

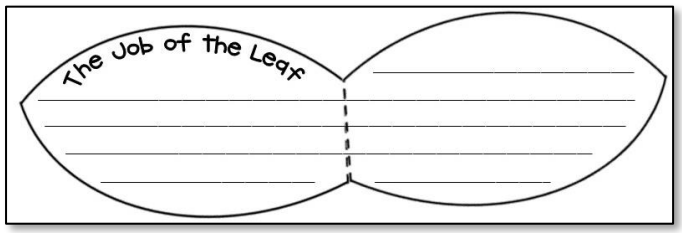


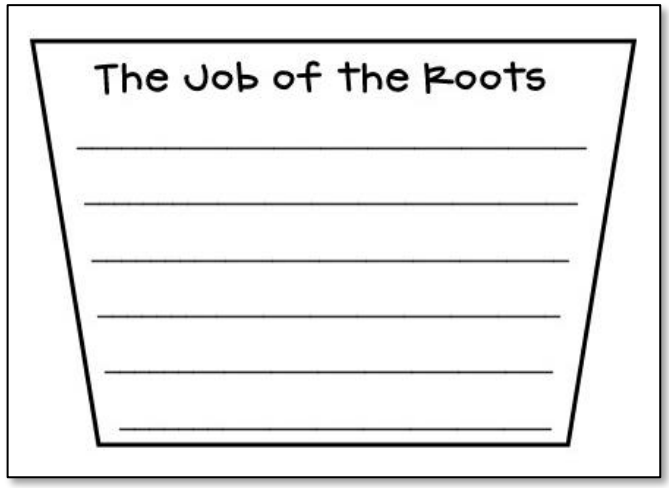
1. After teaching the parts of a plant and their functions in lesson 3, project the parts of a plant diagram in the PowerPoint.

2. Students write to explain the job of the roots and leaves on the templates.

3. Save the completed templates to be added to the flower booklets.

*See assembly directions for the flower booklets.

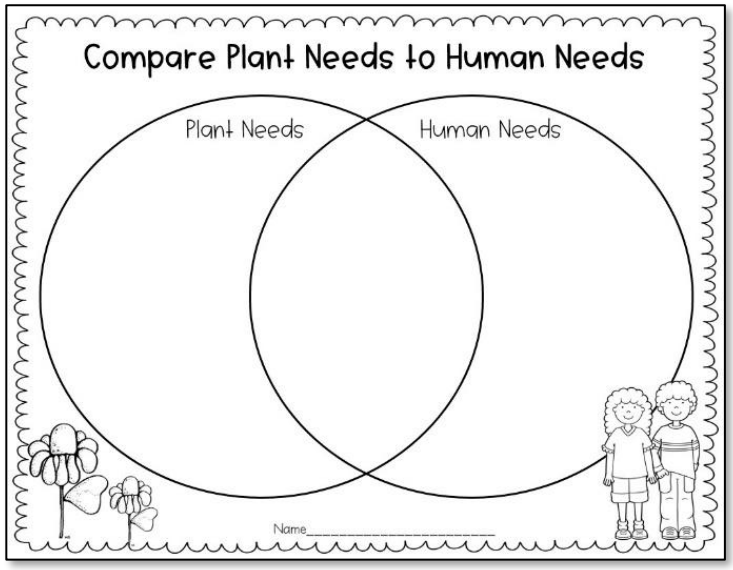




Lab Activity 4 COMPARE/CONTRAST: PLANT NEEDS TO HUMAN NEEDS

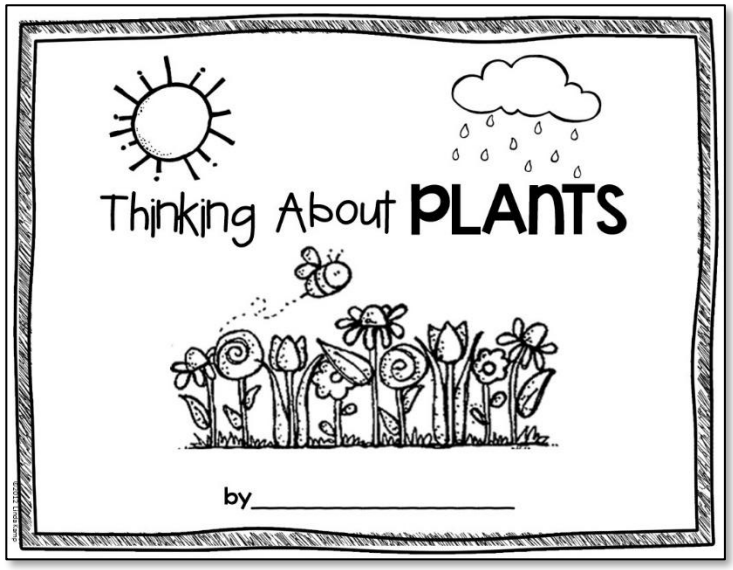
Objective: Students will compare plant needs to human needs using a graphic organizer.

Materials:
-Compare plant needs to human needs graphic organizer



1. Ask students to think about things humans need to survive and compare them to the needs of plants.

2. Students use the graphic organizer to compare how these needs are alike and different.



3. This organizer can be stapled together with the additional graphic organizers and booklet cover located on pages to make a **Thinking About Plants** booklet.

Lab Activity 5 HOW DO LEAVES HELP A PLANT GET LIGHT?



Objective: Students will learn how different leaf shapes help a plant to get more, or less sunlight.

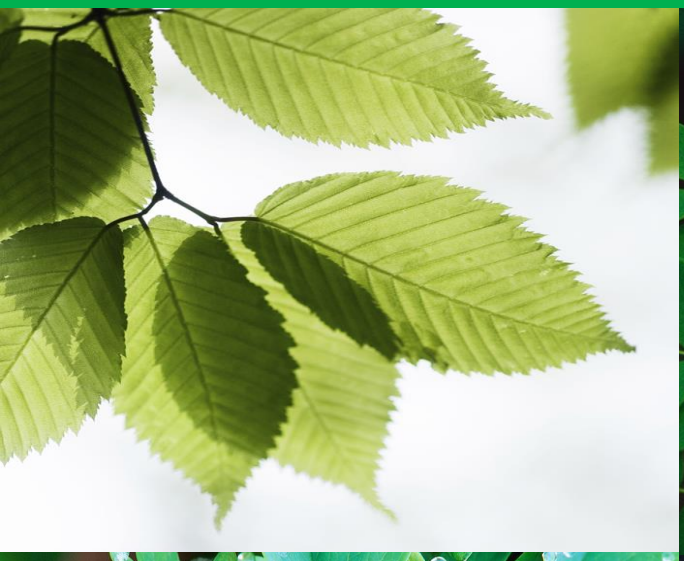
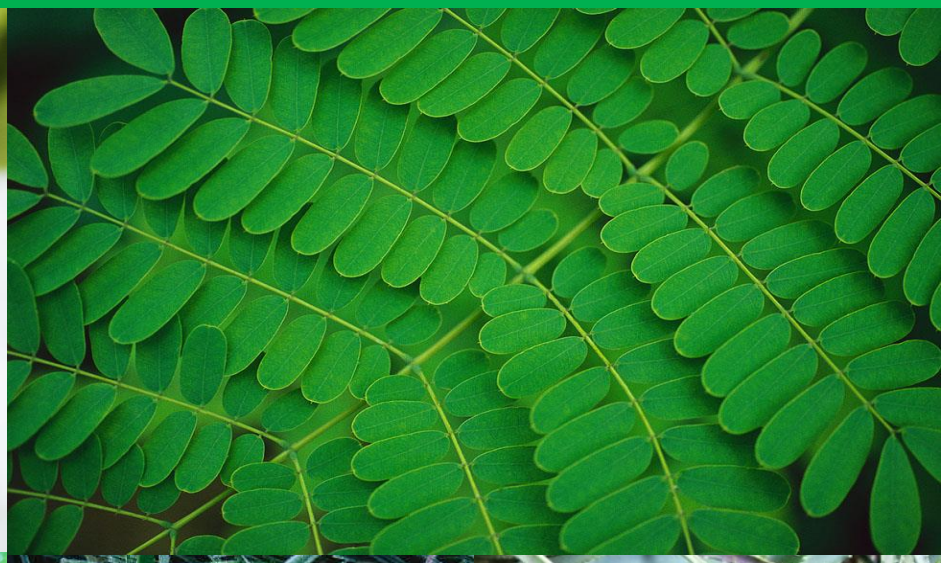
Materials:
Projectable chart or leaf picture cards
A class set of student recording sheets

Procedure:

1. Project the lesson visual on the following page or use the pictures in Lesson 5 of the Power Point.
2. Discuss with students the different shapes and textures of various types of plant's leaves. Ask students to think about how different types of plants require more or less sunlight to grow in various habitats. Ask students to predict how the shape of its leaves help a plant get sunlight. Next, compare pictures of different types of leaves and discuss how they think the different leaf shapes help the plant. Ask students to complete the **Observe** and **Compare** sections of their recording page.
3. Students then go outside or to a sunny location and complete the **Predict** portion of their page. Ask students to observe their hands in the sunlight. Students should note how different positions of their hands provide more or less sunlight much like a plant's leaves.
4. Students then compare the shape of a leaf to the shape of their hands and record.

CLICK HERE to see this experiment in action in my classroom!

HOW DO LEAVES HELP A PLANT GET LIGHT?

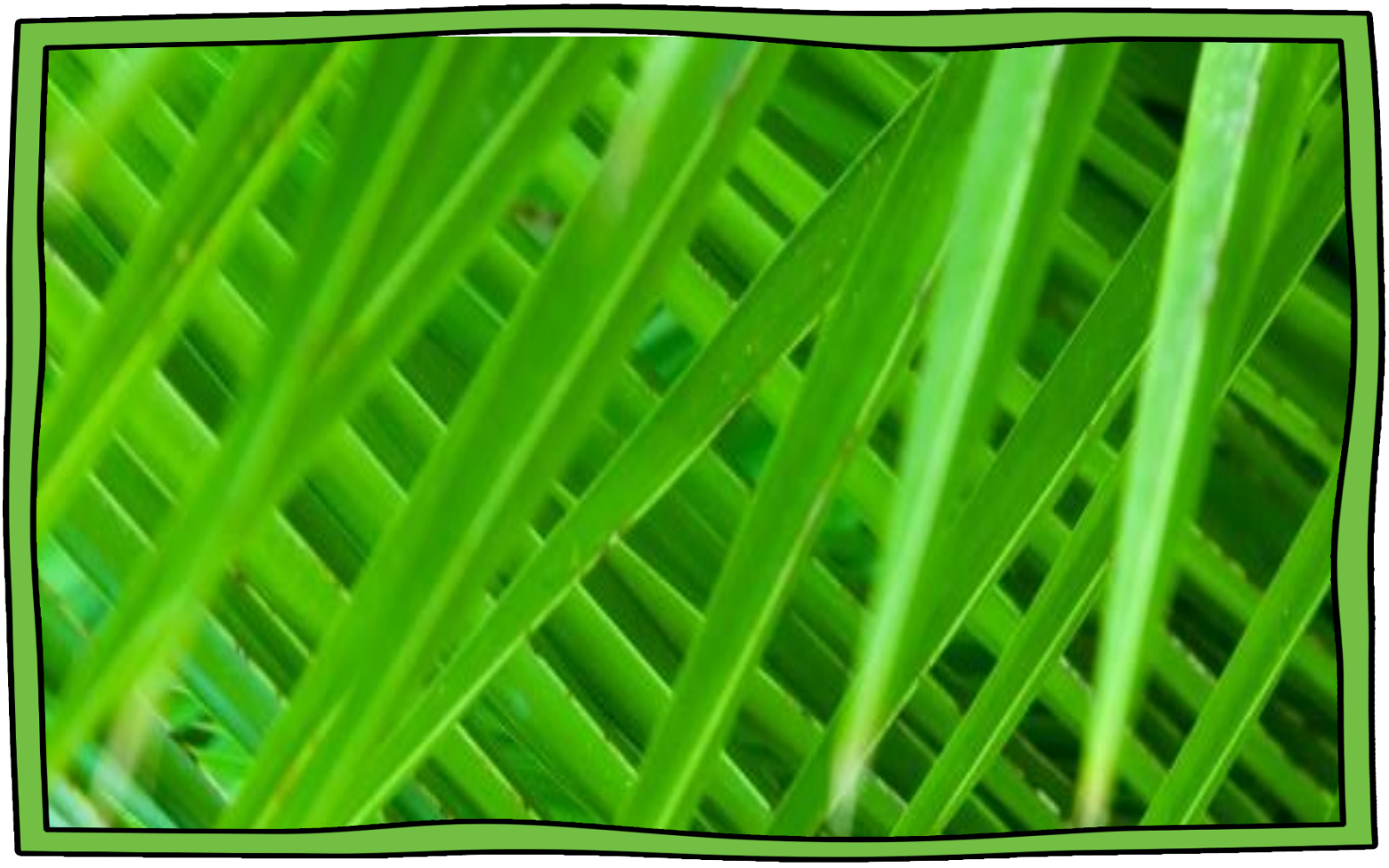





Leaf Type Picture Cards

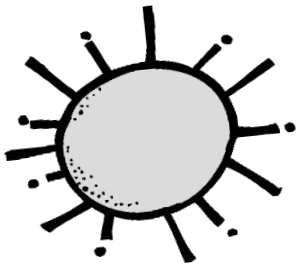
Leaf Type Picture Cards

Leaf Type Picture Cards



Leaf Type Picture Cards

Leaf Type Picture Cards



Name_____

Lab Activity:

HOW DO LEAVES HELP A PLANT GET LIGHT?

Observe

How do you think the shape of a plant's leaves help it get sunlight?

Compare

Look at the pictures and compare the leaves. How are they alike and different?

Predict

Hold out your hand in a sunny spot. Open and close your hand. Turn it from side to side. How do you need to hold your hand to get the most sunlight?

Record

Compare the shape of a leaf to the shape of your hand when you hold it flat. How do the shapes of leaves help plants get sunlight?

Lab Activity 6A
CHLOROPHYLL RUBBINGS



Objective: Students will press leaves to extract chlorophyll and create a chlorophyll leaf rubbing.

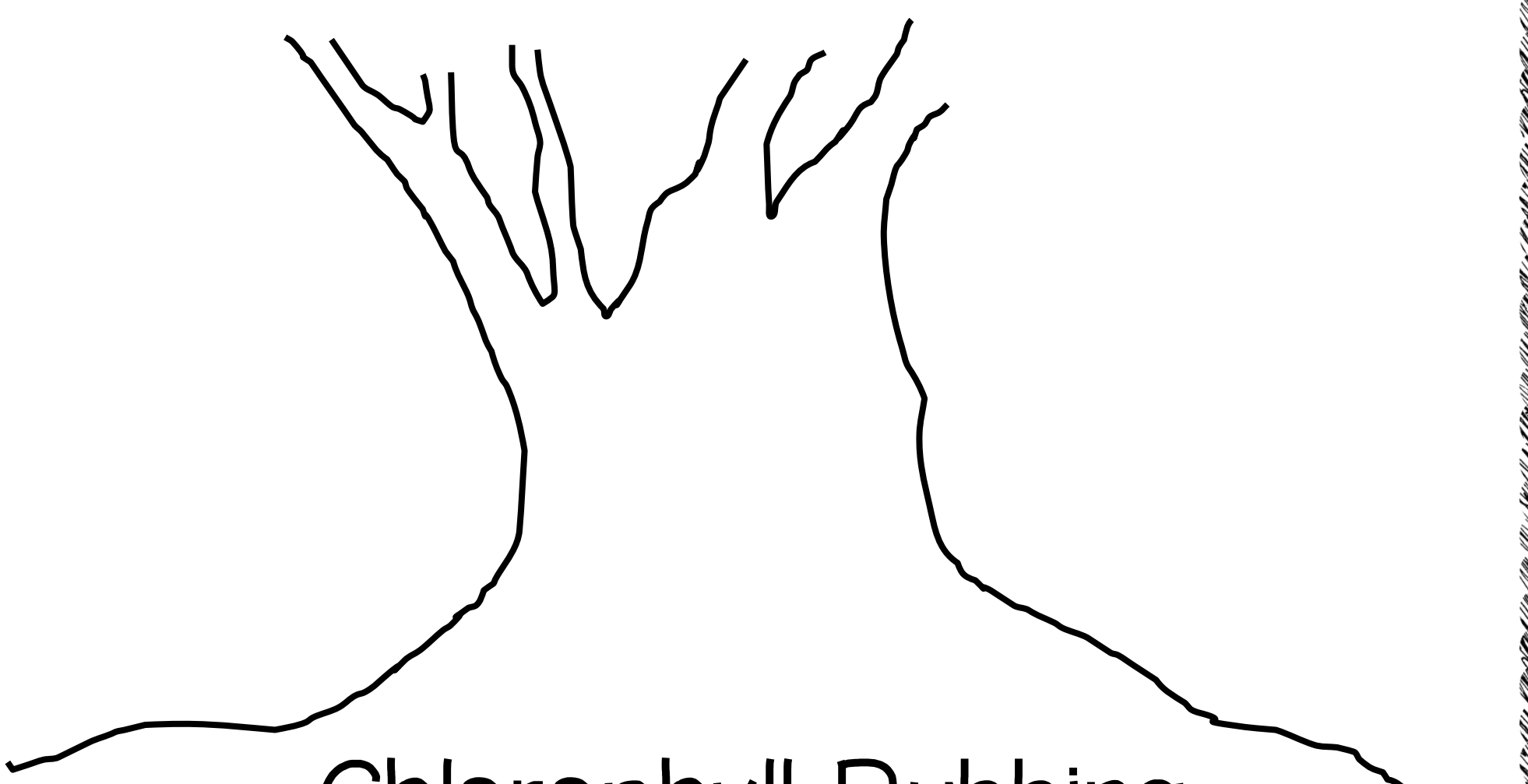
Materials:
Lots of green leaves (thinner skinned leaves work best)
1 metal spoon per student
A class set of chlorophyll rubbing student pages

1. Fold the student page in half and crease.
2. Open the sheet and place a leaf on one side of the paper so it is flat and facing down. Fold the other half of the paper over the leaf.
3. Press firmly against the paper using the bottom of the metal spoon. Rub the spoon vigorously over the surface of the paper. The leaf's chlorophyll will be transferred to the paper.

Management Tip:

My students quickly discovered that once their leaves were broken down, they could then the leaves to "paint" directly onto the paper.

CLICK HERE to see chlorophyll painting in action in my classroom!



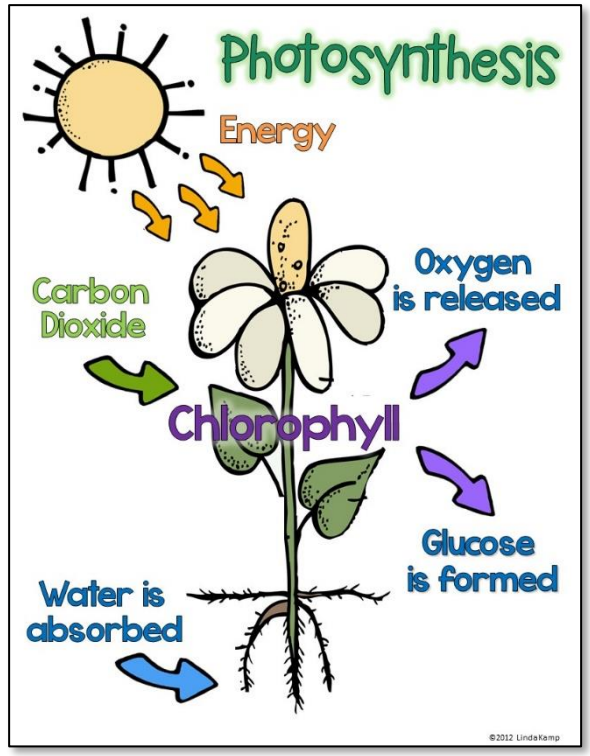
Chlorophyll Rubbing

By_____

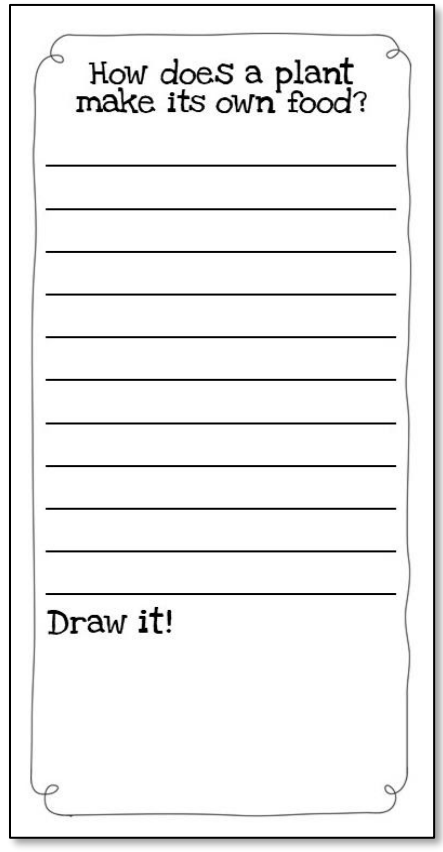
Lab Activity 6B WRITE TO EXPLAIN: HOW DO PLANTS MAKE FOOD?

Objective: Students will write to explain how a plant makes its own food by describing the process of photosynthesis.

Materials:
-How does a plant make its own food writing template.
-Photosynthesis poster or project the photosynthesis diagram slide in lesson 6.



1. Project the photosynthesis diagram slide in lesson 6 or display the printable poster.
2. Students write, in their own words, to explain how a plant makes its own food.
3. Encourage students to use the science vocabulary in their writing.
4. Students draw a diagram of the process of photosynthesis.
5. Save the completed writing to be added to the flower booklet.



Lab Activity 7: POLLINATION: HOW DO INSECTS HELP PLANTS GROW?

Objective: Students will build a model that simulates an insect pollinating a flower.

Materials per student:
1 die cut flower (or flower card)
1 small juice box
3 or 4 cheese puffs
paper towel
student recording page
hand lens (optional)

Procedure:

1. Give the following material to each student on a paper towel: juice box, a die cut flower or flower card, and a few cheese puffs

2. Die cut flowers can be placed over the straw on the juice box. Flower cards can be placed on the table.

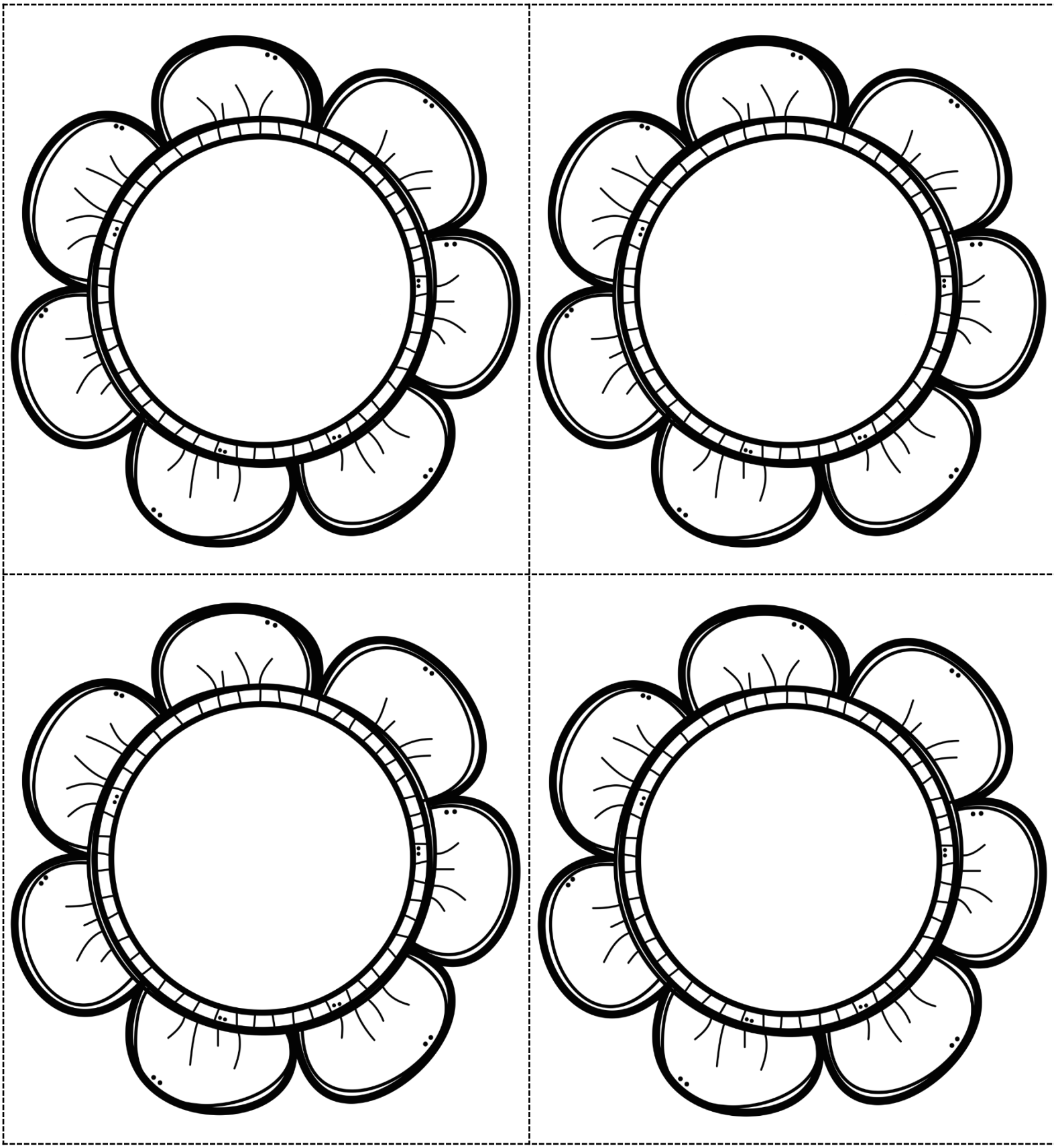
3. Explain to students that the cheese puffs represent balls of pollen, the juice box and flower represent a plan and that they represent an insect or butterfly.

4. Students pretend to land on a pollen-filled flower by rubbing their fingers over the cheese puffs.

5. Next, students "fly" to the next plant. They should gently land on the flower on their juice boxes sipping the nectar (juice) from the flower and rubbing their fingers on the flower. Students can do this a few times if necessary to make the "pollen" visible.

6. Students explain on the recording sheet how this activity simulates pollen sticking to the legs and bodies of an insect and transferring to the next flower as they fly from plant to plant.

Flower cards Use in place of die cut flowers. Copy 1 per student on colored paper.



How do insects help plants grow?

Lab Activity 7A

Name_____

Use a hand lens to observe the balls of pollen. Draw what you see.

Write a sentence describing your picture.

_____

_____

_____

Imagine that you are a hungry butterfly. Land on the balls of pollen rubbing your fingers over them. Use your proboscis (straw) to drink your nectar (juice). Draw what your feet look like after touching the pollen.

Write a sentence describing your picture.

_____

_____

_____

Next, "walk" on your flower as you drink your nectar. Gently tap your butterfly feet on it. Draw what happens to your flower.

Write a sentence describing your picture.

_____

_____

_____

How is this like pollination?

_____

_____

_____

Lab Activity 8 SEED DISPERSAL: BUILD AN EXPLODING SEED POD

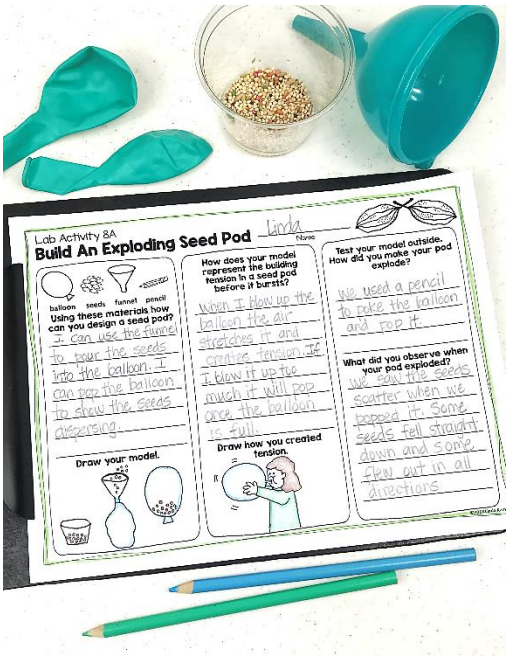
Objective: Students will build a model that simulates how some plants disperse their seeds.

Materials per student:
round balloon
funnel
seeds
sharp pencil or paper clip
recording page
small paper or plastic cup

NOTE: Funnels, cups, and 14" balloons can be found at the dollar store in the kitchen and party sections. A small box of parakeet seed is less than $2.00 at Walmart in the pet section. I recommend using bird seed without sunflower seeds in it.

Procedure:

1. Give pairs of students the above materials
2. and the recording page.
3. Have students consider their materials and complete the part I of the recording page.
4. Blow the balloon up slightly to stretch it out a bit. Allow the air to release. Placing the funnel into the open end of the balloon, carefully pour a small cup of bird seed into the funnel so the seeds fall into the balloon. Use about a ½ in. of seed in the cup.
5. Blow the balloon up fully and tie off the end.
6. Have students complete the middle section of the recording page.
7. **In an outdoor space**, have one student hold the balloon firmly while the other student pops the balloon with a pencil or a paper clip.



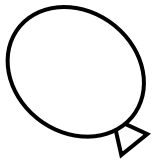
8. Students observe the results of popping the balloon and complete the rest of the recording pages. *Use the optional second page for students to measure the distance their seeds dispersed.

CLICK HERE to see this experiment in action in my classroom!

Lab Activity 8A

Build An Exploding Seed Pod

Name _____


balloon


seeds


funnel


pencil

How can you design a seed pod using these materials?

Draw your model.

How does your model represent the building tension in a seed pod before it bursts?

Draw how you created tension.

Test your model outside. How did you make your pod explode?

What did you observe when your pod exploded?

Lab Activity 8A

Build An Exploding Seed Pod

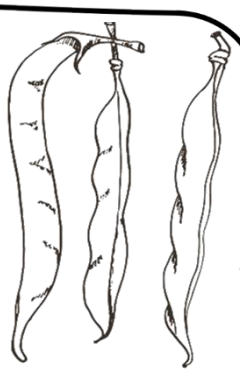
Draw what you observed. Label your drawing.

Did your seeds all fall onto the paper or disperse farther than the paper?

Measure the distance your seeds traveled from the pod. Label your drawing with the distance.

Name _____

How do seeds travel?



Write wind, animals, gravity, or explosion to tell how each seed is dispersed.

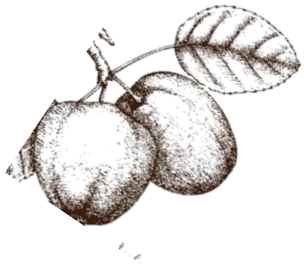
bean

_____

cattail

_____

apple

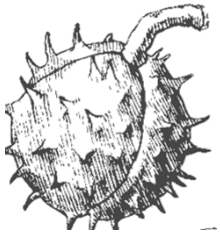


_____

thistle

_____

chestnut



_____

oak tree

_____

raspberry

_____

sunflower

_____

dandelion

_____

poppy

_____

maple tree

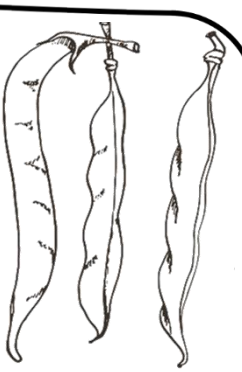
_____

milkweed

_____

Name _____

How do seeds travel?



Write wind, animals, gravity, or explosion to tell how each seed is dispersed.

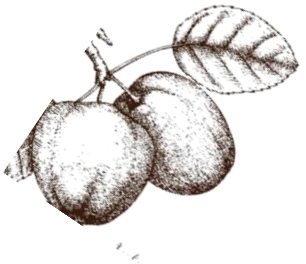
bean

gravity

cattail

wind

apple

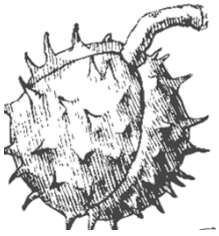


animals

thistle

explosion

chestnut



animals

oak tree

animals

raspberry

animals

sunflower

animals

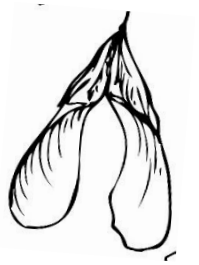
dandelion

wind

poppy

gravity

maple tree



wind

milkweed

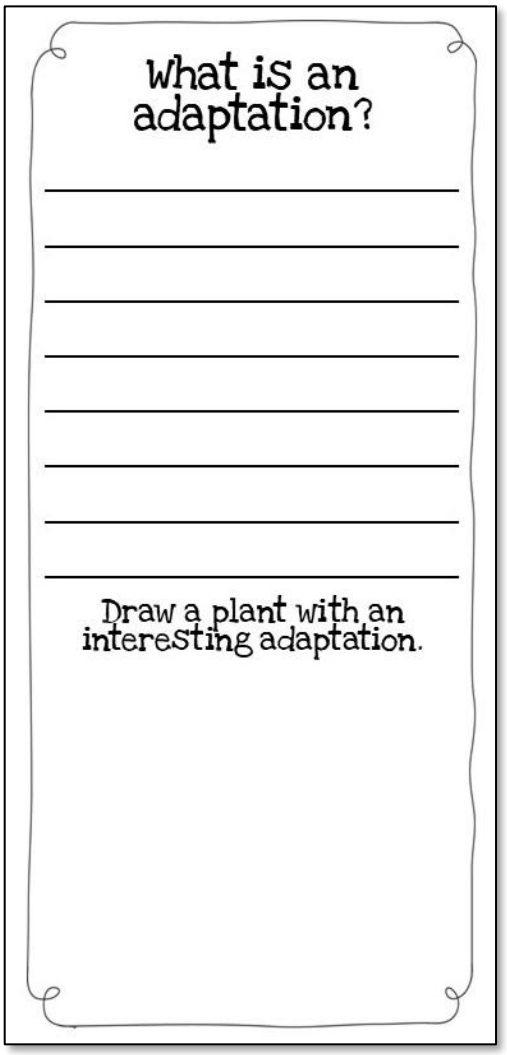
explosion

Lesson Activity 9 WRITE TO EXPLAIN: WHAT IS AN ADAPTATION?

Objectives: Students will write to explain a plant adaptation. Students will draw and label a plant adaptation.

Materials:
What is an adaptation? writing template

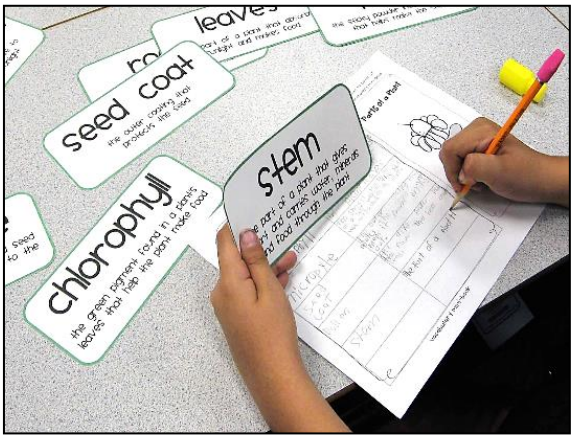
1. Ask students to think about plant adaptations they have learned.
2. Students write to explain why plants need to adapt to their habitats.
3. Students draw a plant to depict an adaptation, then label the adaptation in the drawing.



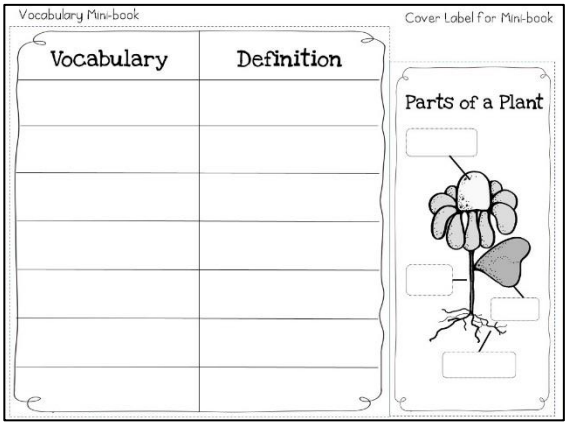
NOTE: This is one writing option for the flower booklets. If you choose to do more than one writing activity, staple the pages together at the top. Students glue the back page into the flower booklet.
***See booklet assembly directions.**

Working with Vocabulary

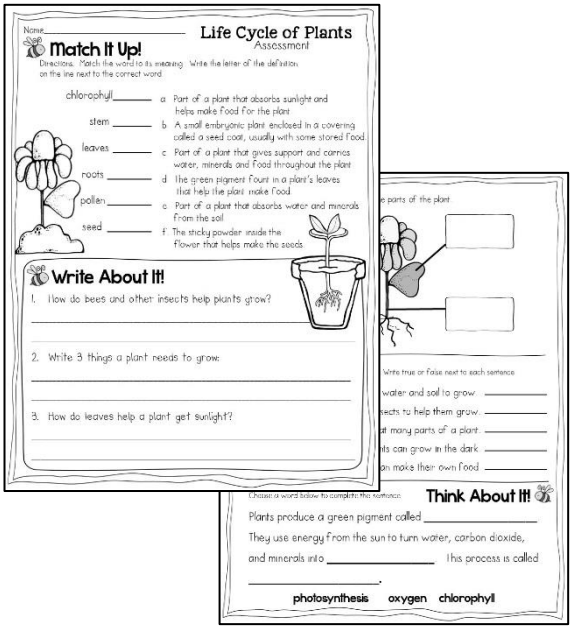
Use slide 2 of the teaching Power Point and the large word cards with definitions to introduce the unit vocabulary. Display the cards in a pocket chart for the duration of the unit so students can use them as a reference. The small word and definition cards can be used as a matching activity in a literacy center.



Students match the words to their definitions then write both in the vocabulary mini-book to later be added to the foldable flower booklet. The pocket chart with the larger cards can serve as a self-checking tool.



Students' vocabulary knowledge is assessed as they match words to definitions. Students also apply the vocabulary while answering questions and completing sentences frames.



seed

A small embryonic plant enclosed in a covering called a seed coat, usually with some stored food.

flower

The part of a plant that makes seeds which continues the life cycle.

stem

The part of a plant that gives support and carries water, minerals and food throughout the plant.

leaves

The part of a plant that absorbs sunlight and makes food for the plant.

roots

The part of a plant that absorbs water and minerals from the soil.

chlorophyll

The green pigment found in a plant's leaves that help the plant make food.

pollen

The sticky powder inside the flower that helps make the seeds.

oxygen

The type of gas that plants release after photosynthesis.

photosynthesis

The process that plants use to make energy and food from sunlight.

seed coat

The outer coating that protects the seed.

carbon dioxide

The type of gas needed by plants for photosynthesis.

hilum

The small scar on the side of a seed where the seed was attached to the plant.

pollination

The process which allows plants to make seeds.

germination

The growth of a seed into a young plant.

seed dispersal

The way seeds get away from the parent plant to a new place.

seed	A small embryonic plant enclosed in a covering called a seed coat, usually with some stored food.
flower	The part of a plant that makes seeds which continues the life cycle.
stem	The part of a plant that gives support and carries water, minerals and food throughout the plant.
leaves	The part of a plant that absorbs sunlight and makes food for the plant.

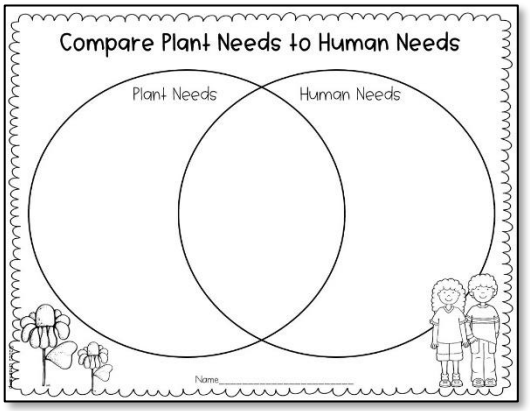
roots	The part of a plant that absorbs water and minerals from the soil.
chlorophyll	The green pigment found in a plant's leaves that help the plant make food.
pollen	The sticky powder inside the flower that helps make the seeds.
oxygen	The type of gas that plants release after photosynthesis.

photosynthesis	The process that plants use to make energy and food from sunlight.
seed coat	The outer coating that protects the seed.
carbon dioxide	The type of gas needed by plants for photosynthesis.
hilum	The small scar on the side of a seed where the seed was attached to the plant.

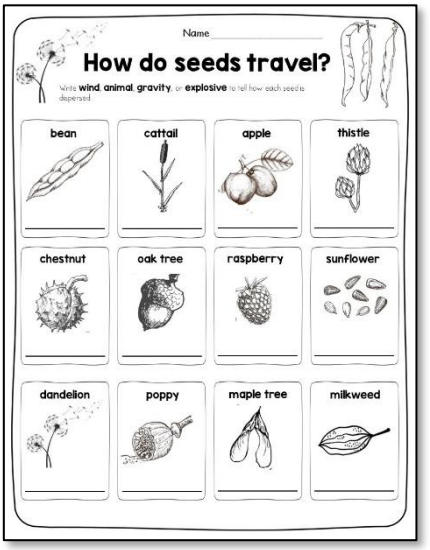
pollination	The process which allows plants to make seeds.
germination	The growth of a seed into a young plant.
seed dispersal	The way seeds get away from the parent plant to a new place.

Unit Assessments

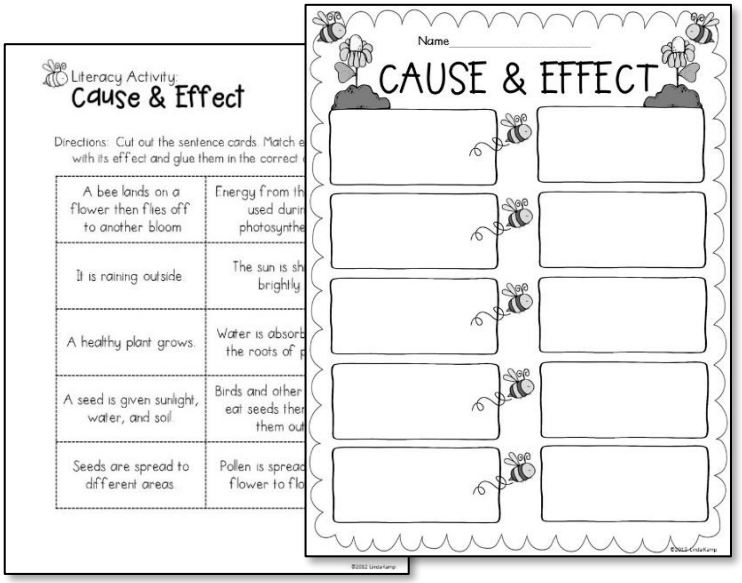
Use the following pages to assess portions of the unit.



Plant needs

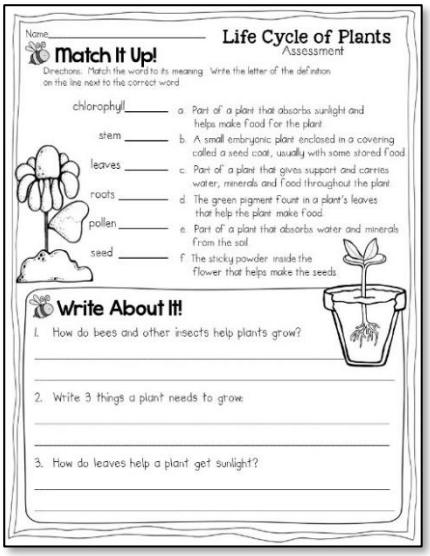


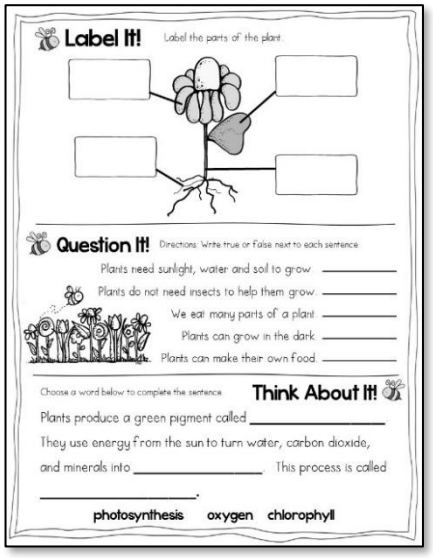
Seed Dispersal



Understanding the process

Final Unit Assessment





Name_____

Life Cycle of Plants

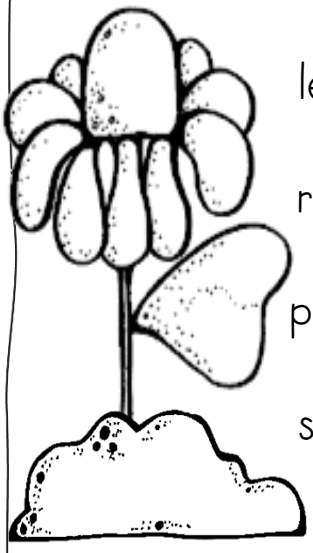
Unit Assessment

Match It Up!

Directions: Match the word to its meaning. Write the letter of the definition on the line next to the correct word.

chlorophyll_____ a. Part of a plant that absorbs sunlight and helps make food for the plant.

stem _____ b. A small embryonic plant enclosed in a covering called a seed coat, usually with some stored food.

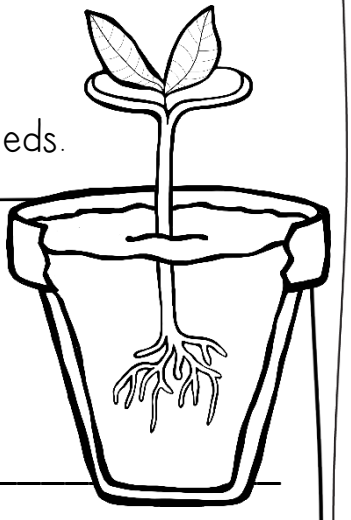


leaves _____ c. Part of a plant that gives support and carries water, minerals and food throughout the plant.

roots _____ d. The green pigment found in a plant's leaves that help the plant make food.

pollen _____ e. Part of a plant that absorbs water and minerals from the soil.

seed _____ f. The sticky powder inside the flower that helps make the seeds.



Write About It!

1. How do bees and other insects help plants grow?

_____

_____

2. Write 3 things a plant needs to grow:

_____

_____

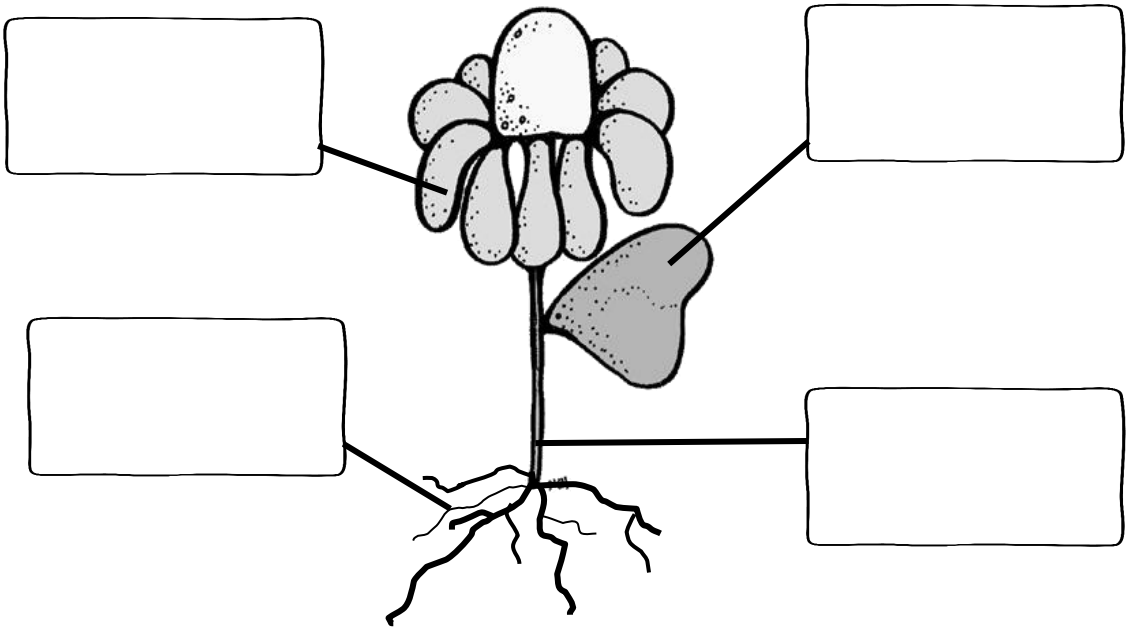
3. How do leaves help a plant get sunlight?

_____

_____

Label It!

Label the parts of the plant.

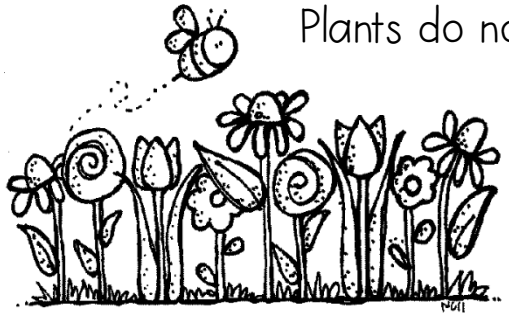


Question It!

Directions: Write true or false next to each sentence.

Plants need sunlight, water and soil to grow. _____

Plants do not need insects to help them grow. _____



We eat many parts of a plant. _____

Plants can grow in the dark. _____

Plants can make their own food. _____

Think About It!

Choose a word below to complete the sentence.

Plants produce a green pigment called _____.

They use energy from the sun to turn water, carbon dioxide,

and minerals into _____. This process is called

_____ .

photosynthesis **oxygen** **chlorophyll**

Name 4 ways a seed travels away from the parent plant.

_____

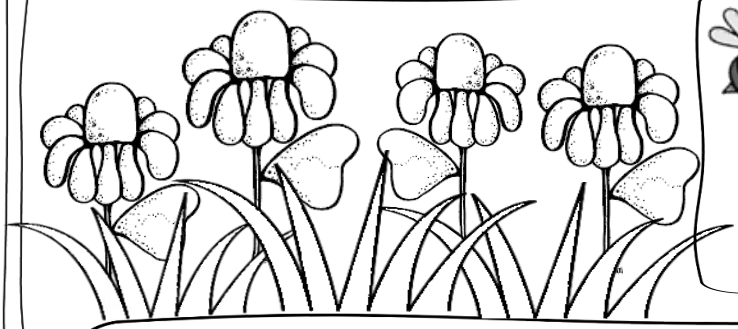
_____

_____

_____

Draw a type of seed that travels with the help of the wind.

Draw a type of seed that travels with the help of an animal.



Name 2 things that both humans and plants need to survive

_____

Explain how a plant makes its own food.

_____

_____

_____

_____

_____

_____

_____

Name **Answer Key**

Life Cycle of Plants
Unit Assessment

Match It Up!

Directions: Match the word to its meaning. Write the letter of the definition on the line next to the correct word.

chlorophyll **d**

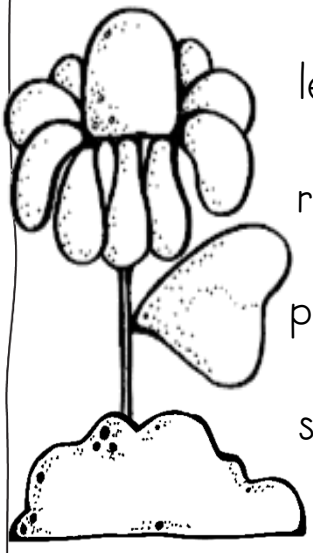
stem **c**

leaves **a**

roots **e**

pollen **f**

seed **b**



a. Part of a plant that absorbs sunlight and helps make food for the plant.

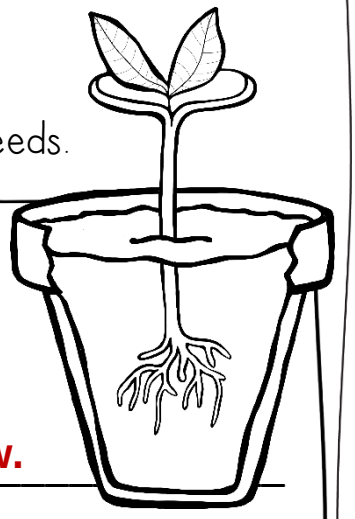
b. A small embryonic plant enclosed in a covering called a seed coat, usually with some stored food.

c. Part of a plant that gives support and carries water, minerals and food throughout the plant.

d. The green pigment found in a plant's leaves that help the plant make food.

e. Part of a plant that absorbs water and minerals from the soil.

f. The sticky powder inside the flower that helps make the seeds.



Write About It!

1. How do bees and other insects help plants grow?

Plants need sunlight water, sunlight, and soil to grow.

2. Write 3 things a plant needs to grow:

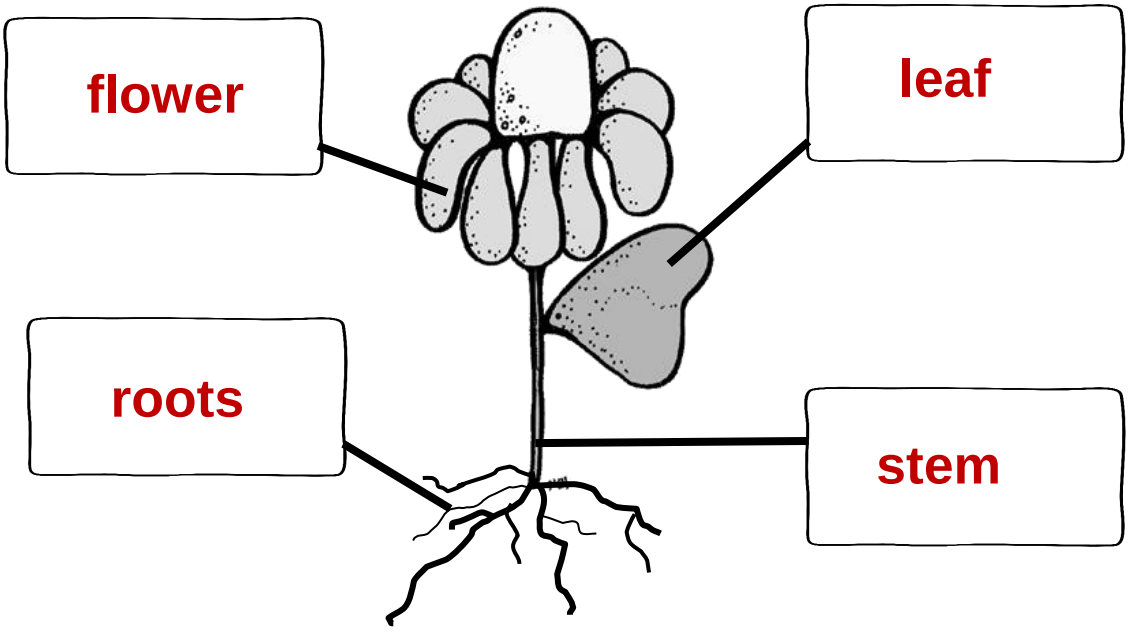
Bees and other insects help plants grow by transferring pollen that sticks to their feet and legs.

3. How do leaves help a plant get sunlight?

Leaves absorb sunlight. The different shapes and types of leaves absorb the amount of sunlight it needs.

Label It!

Label the parts of the plant.

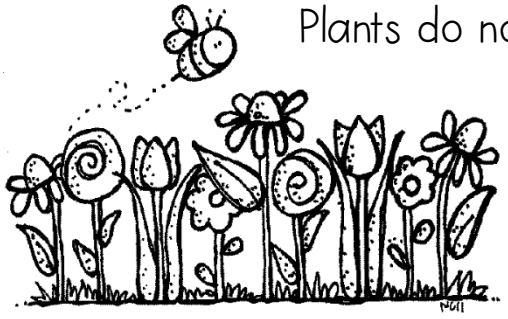


Question It!

Directions: Write true or false next to each sentence.

Plants need sunlight, water and soil to grow. T

Plants do not need insects to help them grow. F



We eat many parts of a plant. T

Plants can grow in the dark. F

Plants can make their own food. T

Think About It!

Choose a word below to complete the sentence.

Plants produce a green pigment called chlorophyll.

They use energy from the sun to turn water, carbon dioxide, and minerals into oxygen. This process is called photosynthesis.

photosynthesis **oxygen** **chlorophyll**

Name 4 ways a seed travels away from the parent plant.

gravity

wind

animals

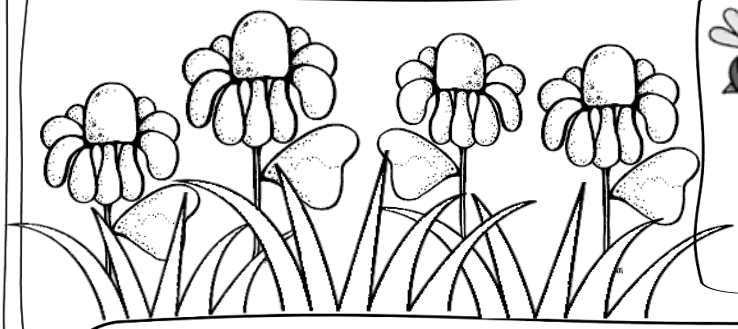
explosion

Draw a type of seed that travels with the help of the wind.

possible drawings:
dandelion seed
maple seed
cattail

Draw a type of seed that travels with the help of an animal.

possible drawings:
chestnut
nettles



Name 2 things that both humans and plants need to survive

Any 2 of the following: water, sunlight, food

Explain how a plant makes its own food.

A variation of the following is correct:

Plants use energy from the sun to make their own food. The chlorophyll in the leaves helps to capture sunlight and convert it into the food the plant needs. This process is called photosynthesis.

Name_____

CAUSE & EFFECT

Literacy Activity:

Cause & Effect

Directions: Cut out the sentence cards. Match each cause with its effect and glue them in the correct column.:

A bee lands on a flower then flies off to another bloom	Energy from the sun is used during photosynthesis.
It is raining outside.	The sun is shining brightly.
A healthy plant grows.	Water is absorbed into the roots of plants.
A seed is given sunlight, water, and soil.	Birds and other animals eat seeds then pass them out.
Seeds are spread to different areas.	Pollen is spread from flower to flower.

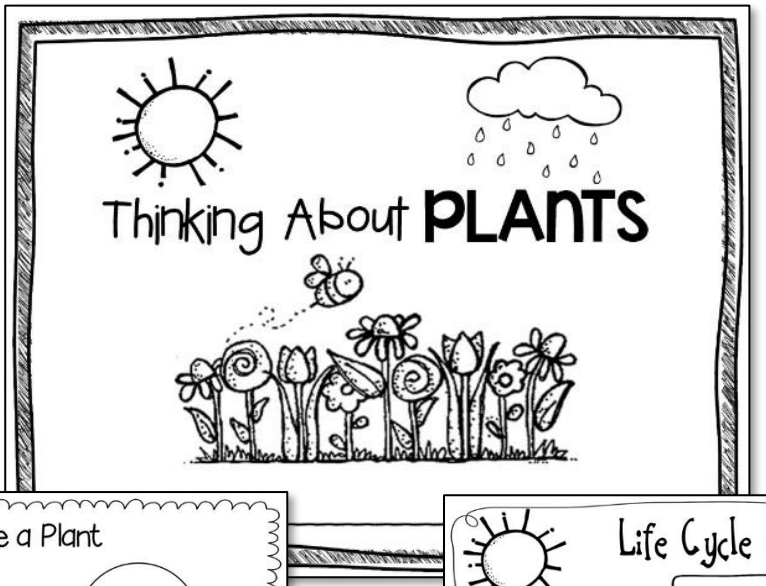
Literacy Activity:

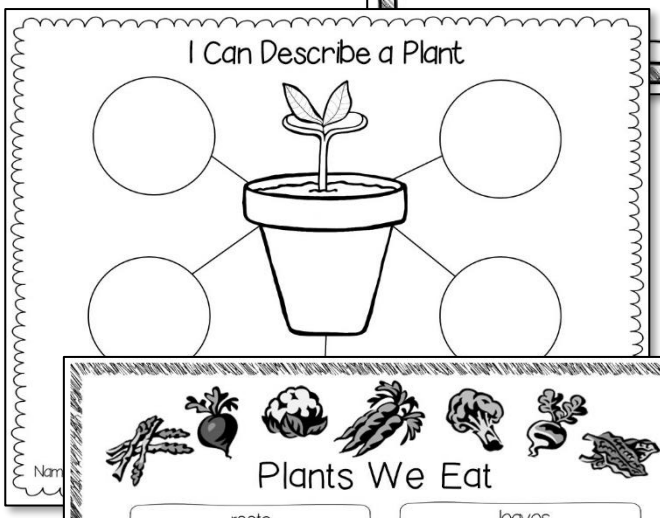
Cause & Effect

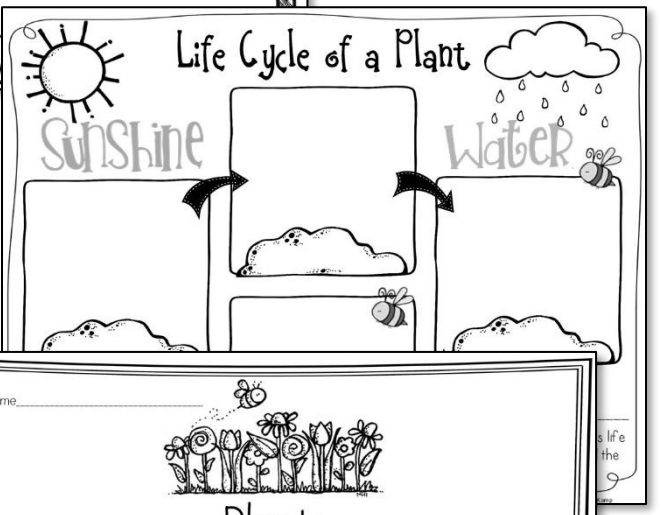
Answer Key

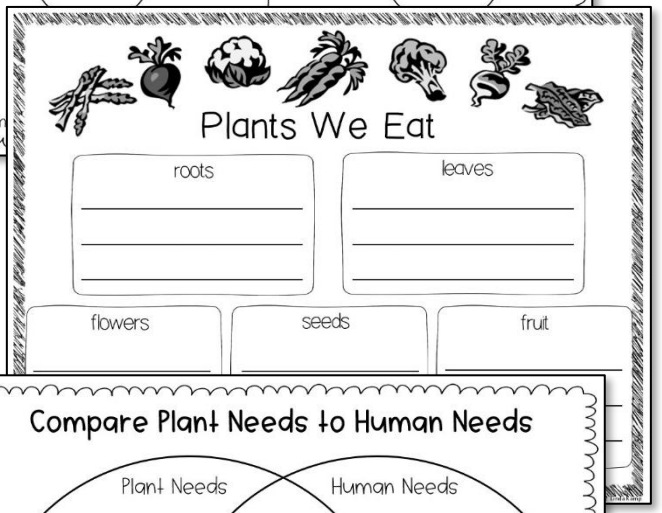
Causes	Effects
A bee lands on a flower then flies off to another bloom	Pollen is spread from flower to flower
The sun is shining brightly	Energy from the sun is used during photosynthesis
It is raining outside	Water is absorbed into the roots of plants.
A seed is given sunlight, water, and soil.	A healthy plant grows
Birds and other animals eat seeds then pass them out.	Seeds are spread to different areas.

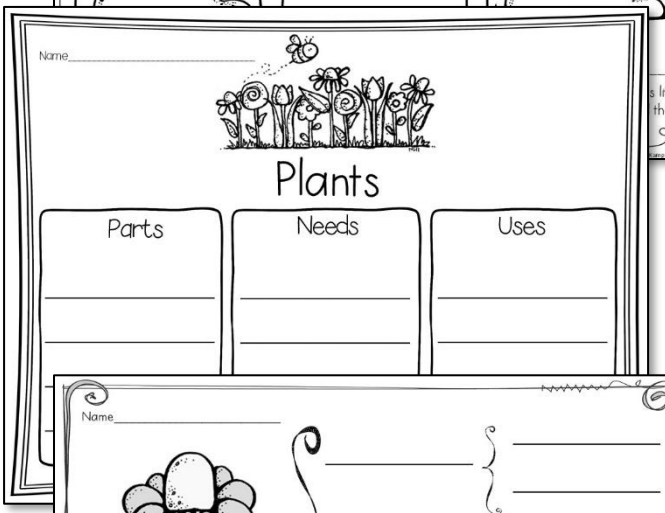
Graphic Organizers

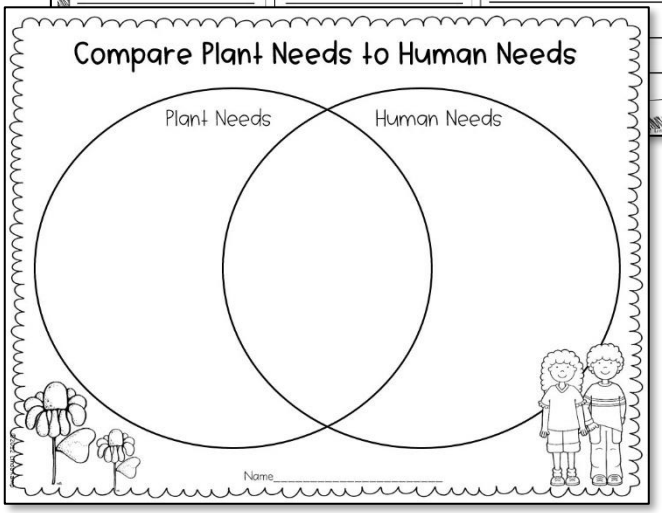


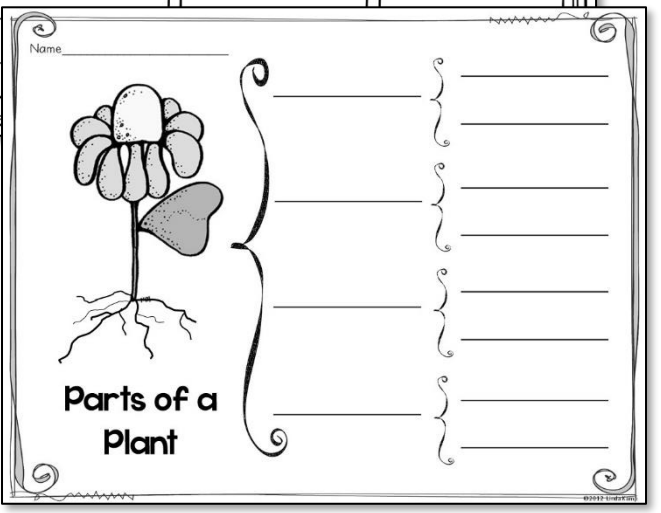


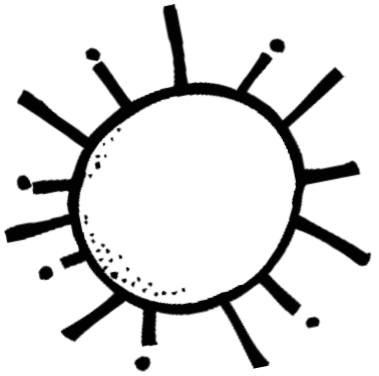












Thinking About **PLANTS**

by_____

Plants We Eat

roots

_____

_____

_____

leaves

_____

_____

_____

flowers

_____

_____

_____

seeds

_____

_____

_____

fruit

_____

_____

_____

Plants We Eat

roots

carrot

beet

radish

leaves

spinach

lettuce

collard greens

flowers

broccoli

cauliflower

artichoke

seeds

corn

peas

beans

fruit

squash

cucumber

tomato

Name_____

Plants

Parts	Needs	Uses
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

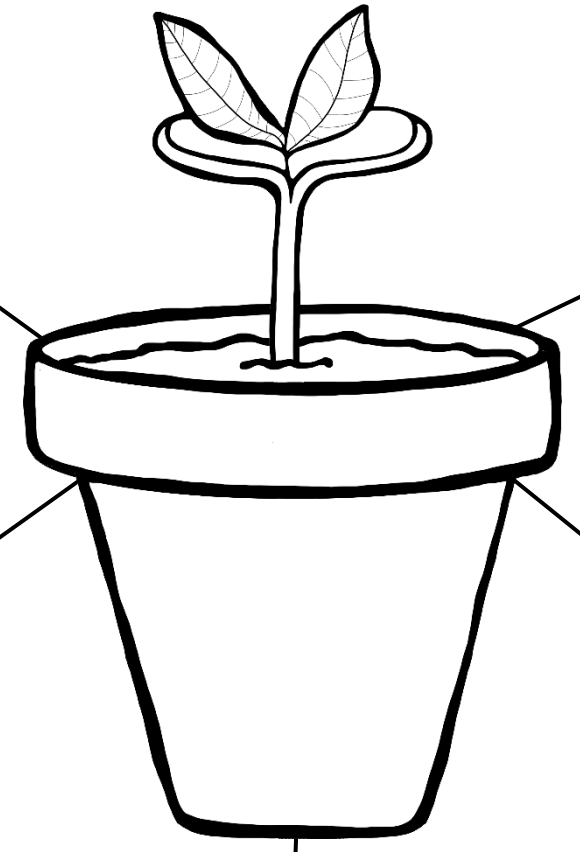
Name_____

Answers may vary

Plants

Parts	Needs	Uses
root	water	food
stem	sunlight	medicine
leaves	soil	fuel
flower	minerals	fiber for clothing

I Can Describe a Plant

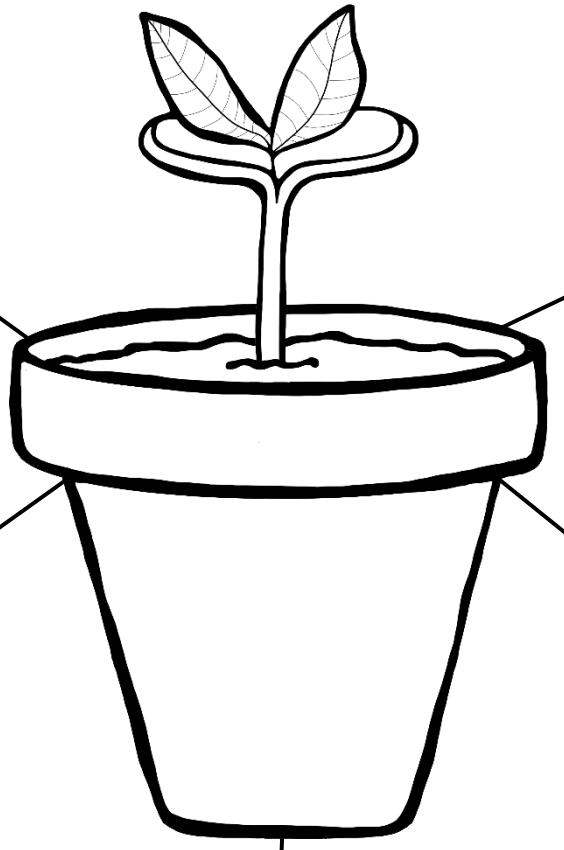


Name_____

I Can Describe a Plant

edible

useful



Write an adjective in each circle to describe a plant. Answers may vary.

Examples: aromatic, leafy, bushy, annual, perennial, succulent, wild, hardy

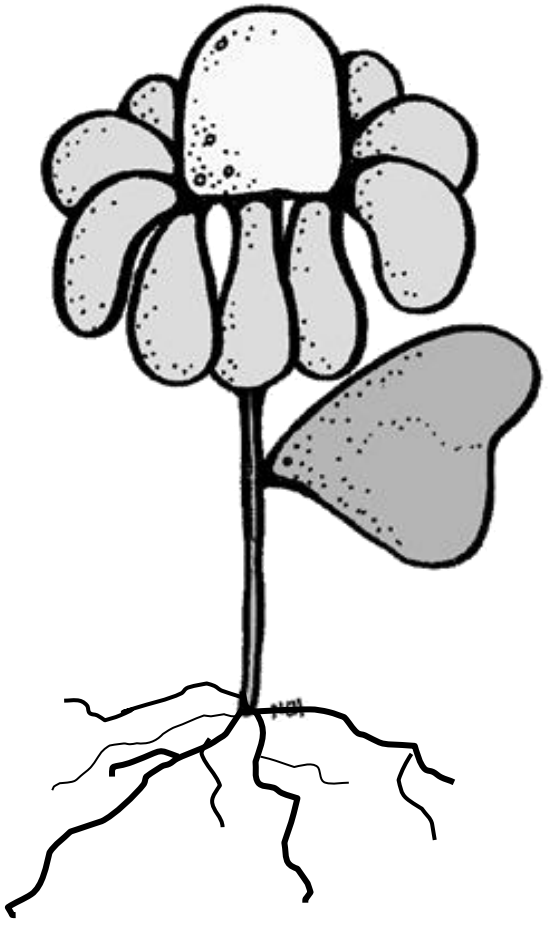
beautiful

important

living

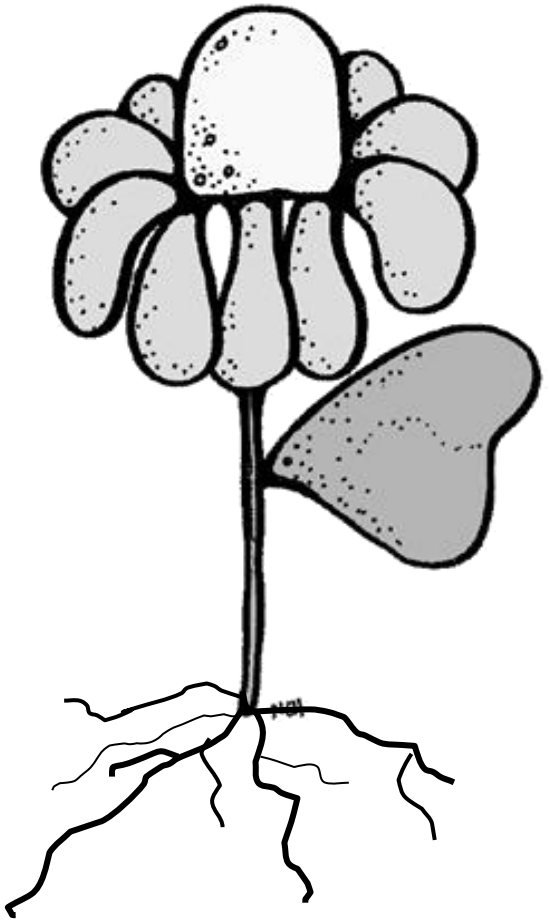
Name_____

Name_____



Parts of a Plant

Name_____



Parts of a Plant

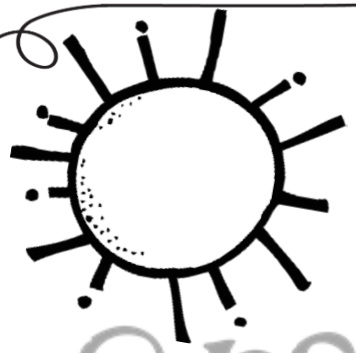
flower
- petals
- pollen

stem
- xylem (carries water and minerals upwards)
- phloem (carries food downward)

leaf
- veins
- chlorophyll

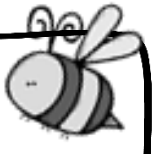
roots
- tap root
- root hairs

Life Cycle of a Plant



Sunshine

Water

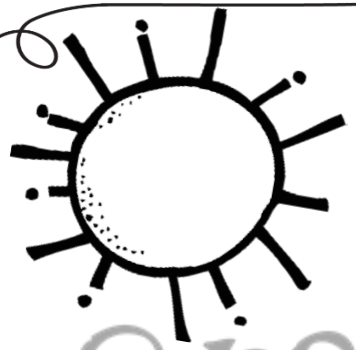


Soil

Name_____

Draw each stage of a plant's life cycle. Label each stage and the parts of the plant.

Life Cycle of a Plant



Sunshine

Water

seedling

seed

mature plant

flower

Soil

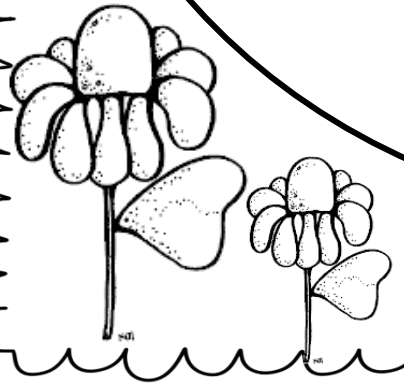
Name_____

Draw each stage of a plant's life cycle. Label each stage and the parts of the plant.

Compare Plant Needs to Human Needs

Plant Needs

Human Needs



Name_____

Compare Plant Needs to Human Needs

Plant Needs

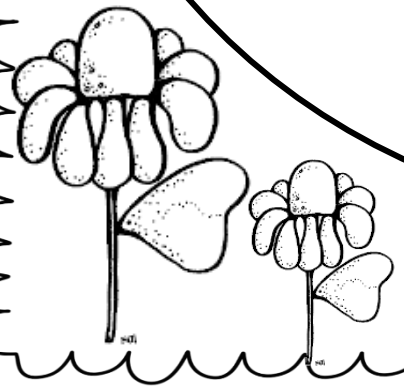
soil
sunlight-energy from the sun
carbon dioxide

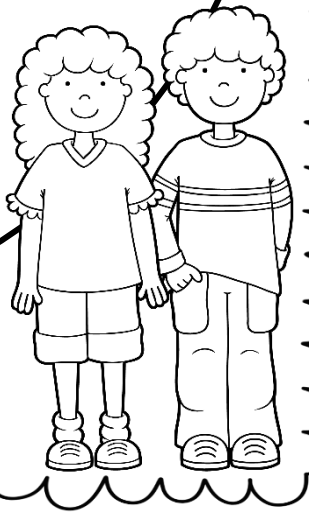
water
nutrients
minerals
space

appropriate temperatures

Human Needs

oxygen
food
shelter
light



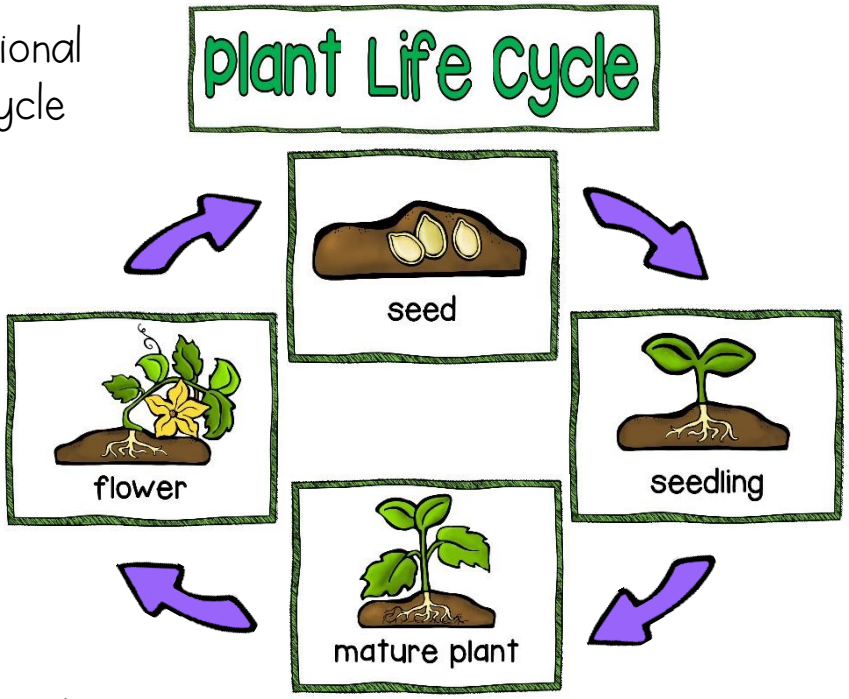


Name_____

Printable

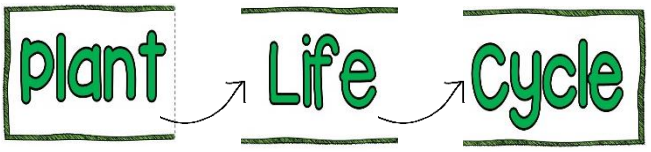
Charts & Bulletin Board Set

The following pages include additional reference charts & a plant life cycle bulletin board set.

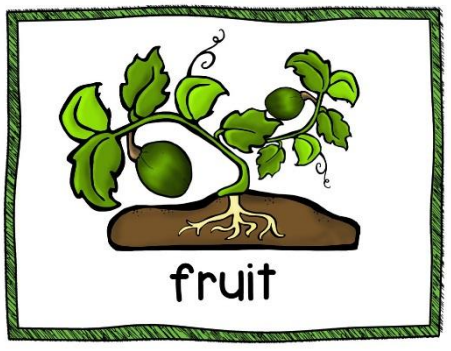


Prepping the Bulletin Board Set:

Copy the pages on white cardstock and laminate for durability. Trim around the edges of the arrows and picture cards. Trim around the green frames and on the dotted lines. Overlap each word card to form the title card as you staple in place on your board. You may also wish to glue these cards together before laminating then cut them out as one piece.



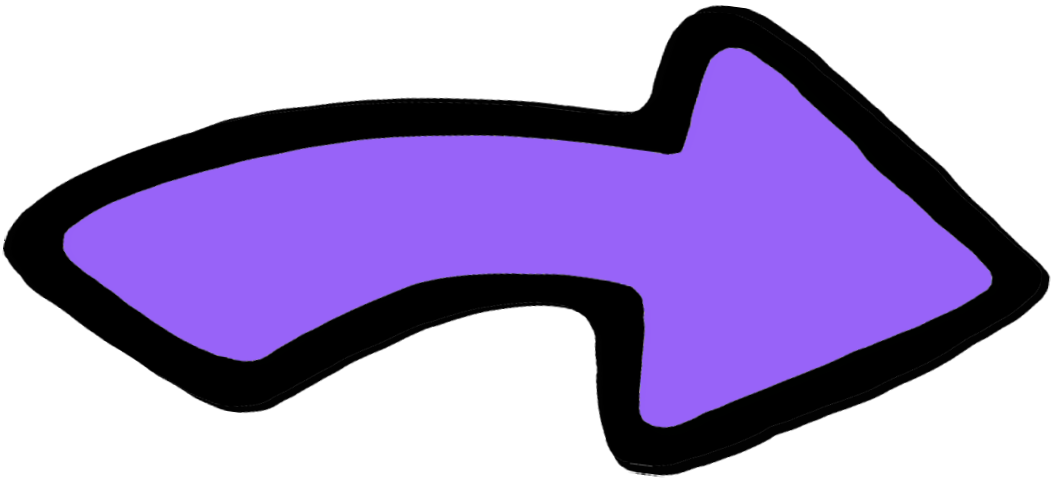
(Overlap before hanging or laminating)



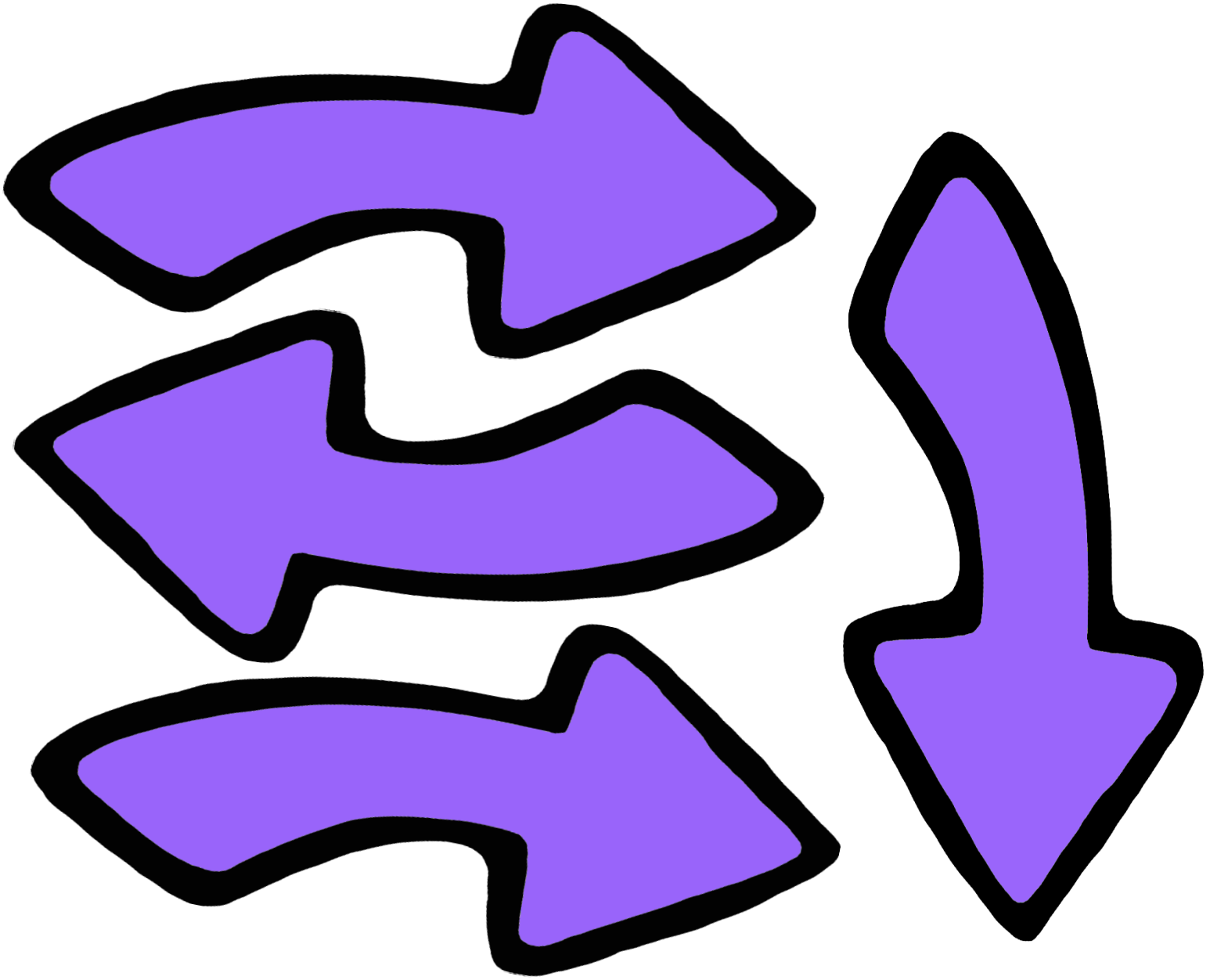
I've included this additional life cycle stage card and an extra arrow in case you would like to include this stage on your board.

Plant

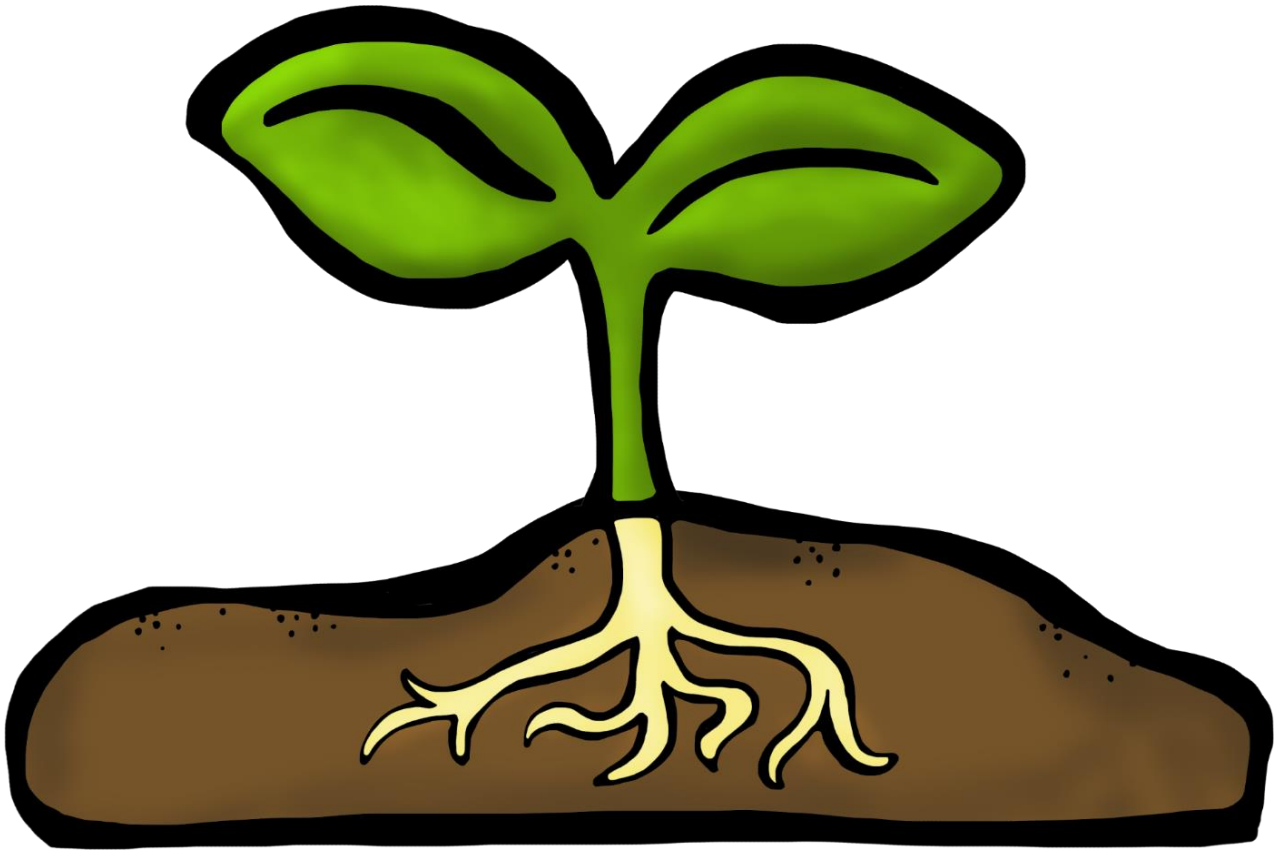
Life



Cycle



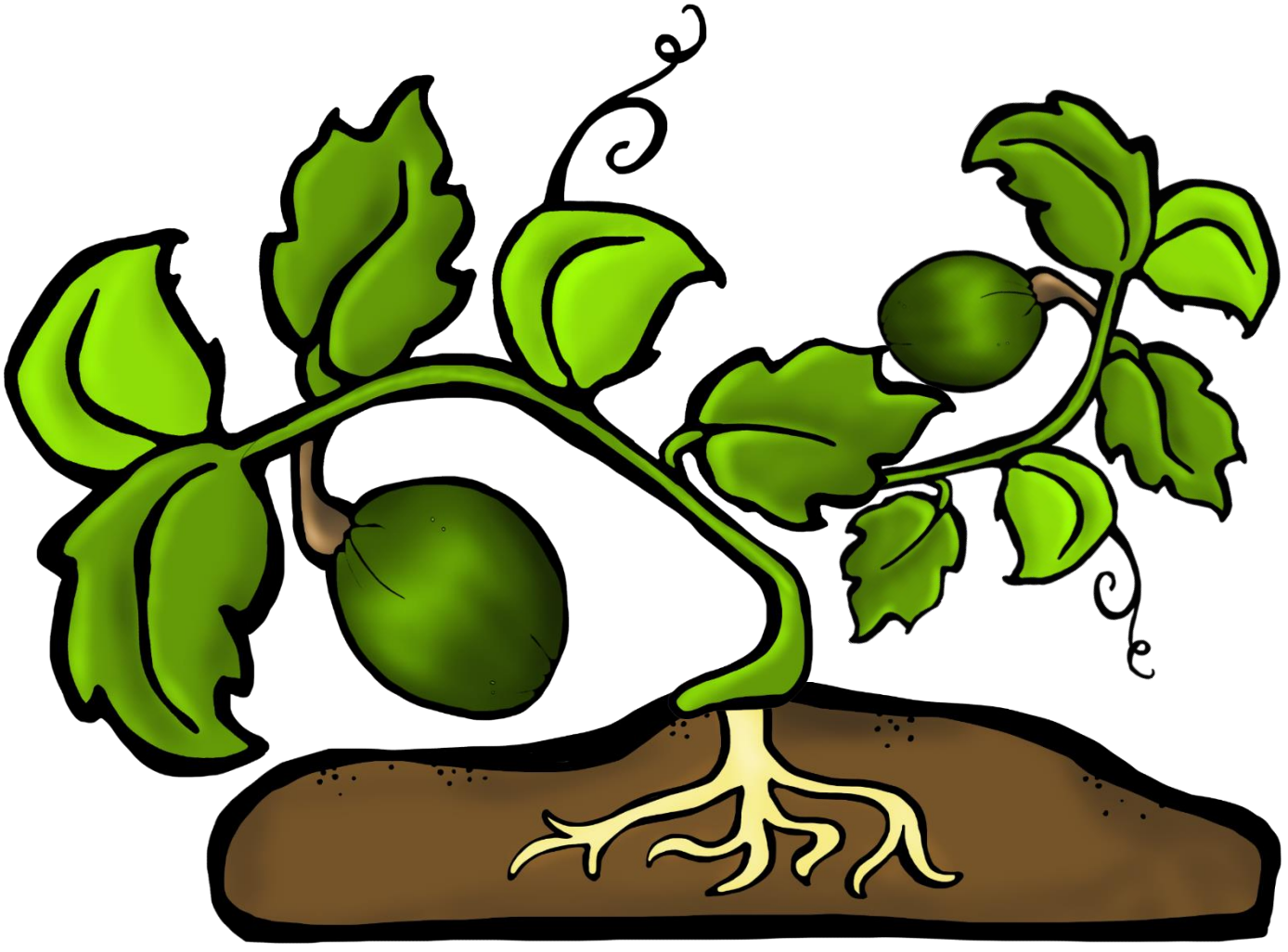
seed



seedling

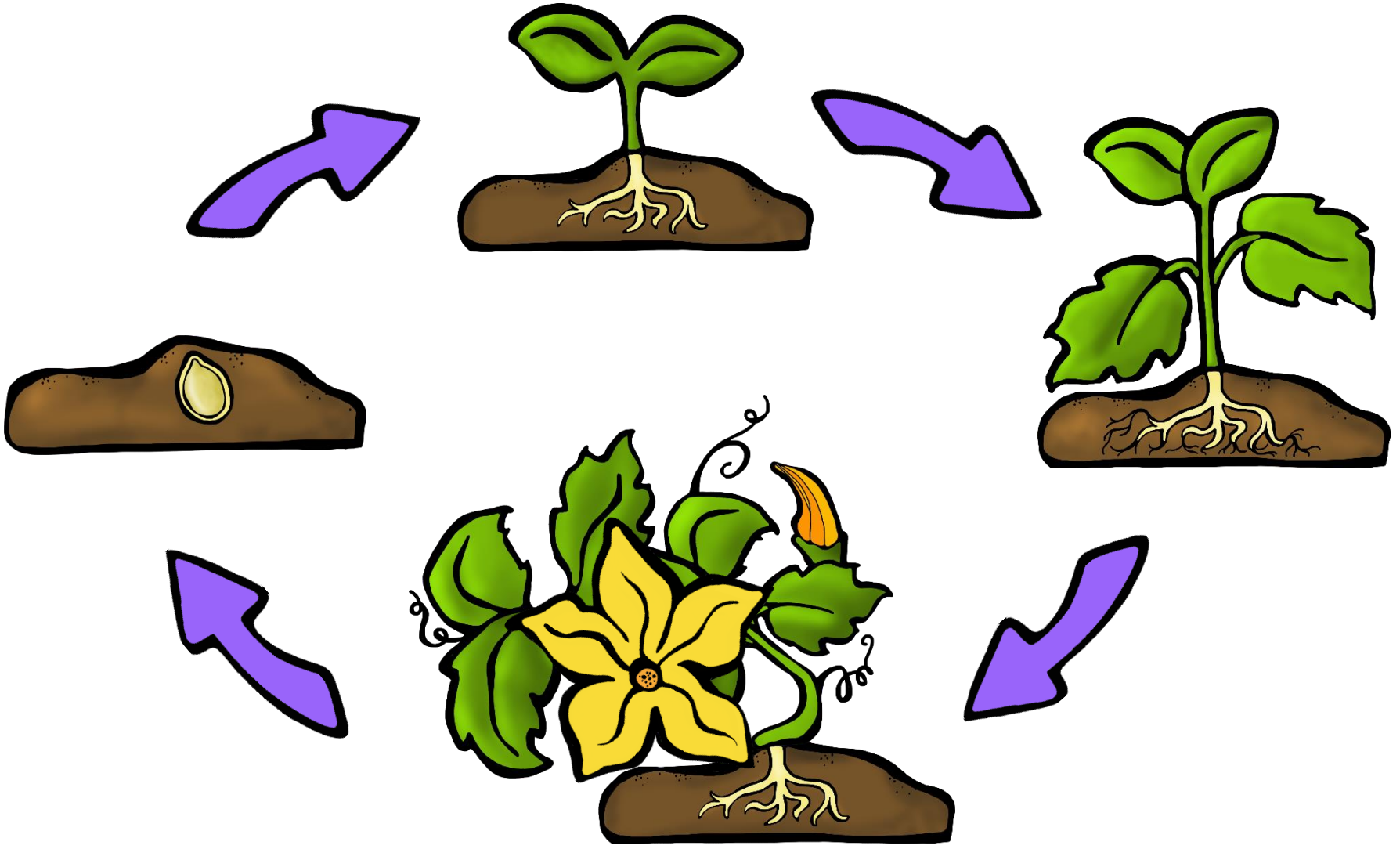
mature plant

flower



fruit

Plant Life Cycle



seed

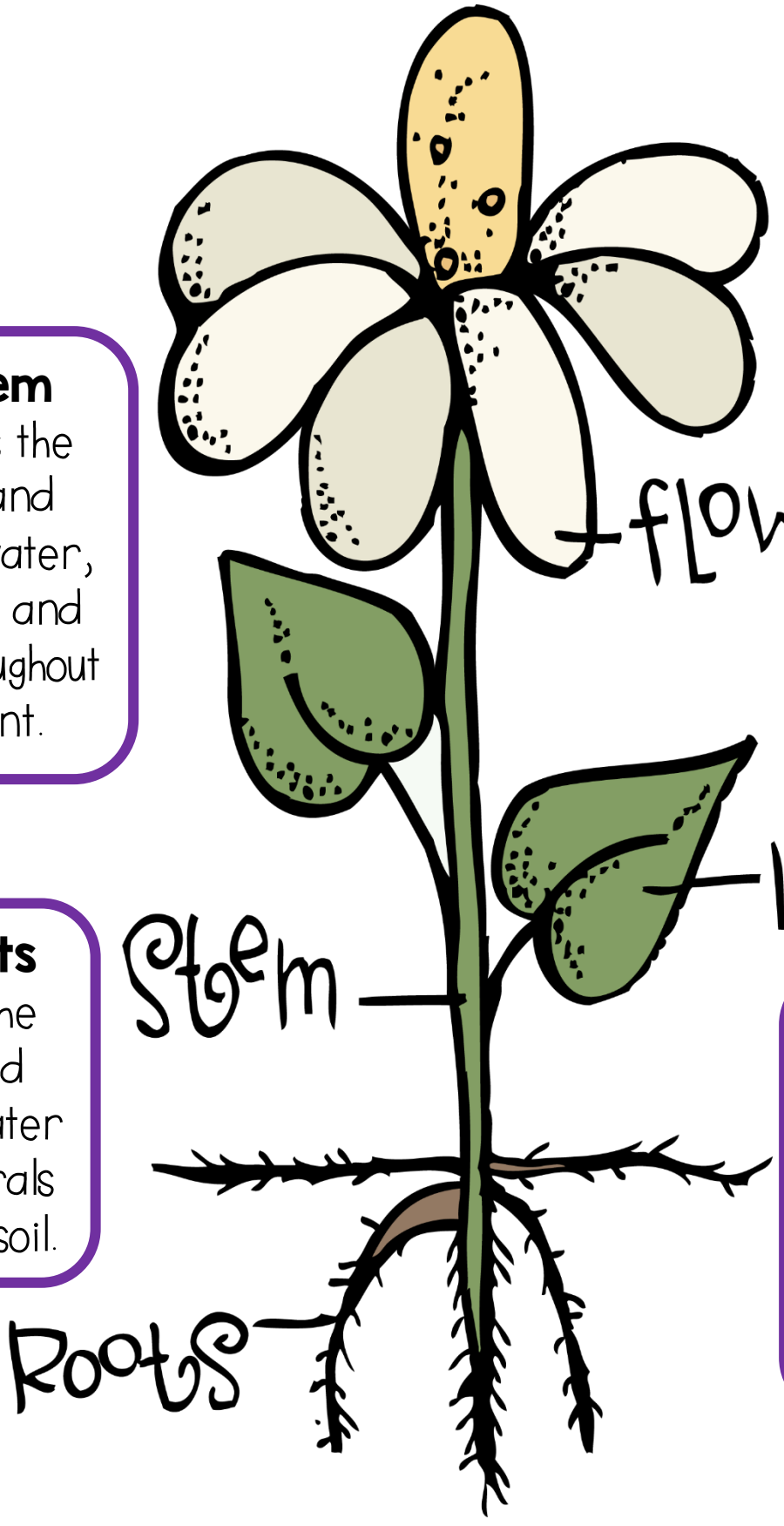
seedling

mature plant

flower

fruit

Parts of A Plant



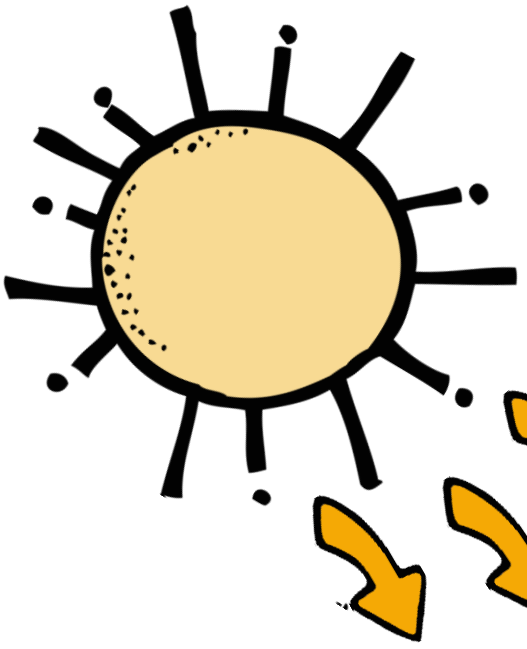
The **flower** makes seeds to continue the life cycle.

The **stem** supports the leaves and carries water, minerals, and food throughout the plant.

The **roots** anchor the plant and absorb water and minerals from the soil.

The **leaves** absorb sunlight and carbon dioxide to make food for the plant.

Photosynthesis



Energy

Carbon Dioxide

Oxygen is released

Chlorophyll

Glucose is formed

Water is absorbed

What is chlorophyll?

chlorophyll-n. chlor·o·phyll

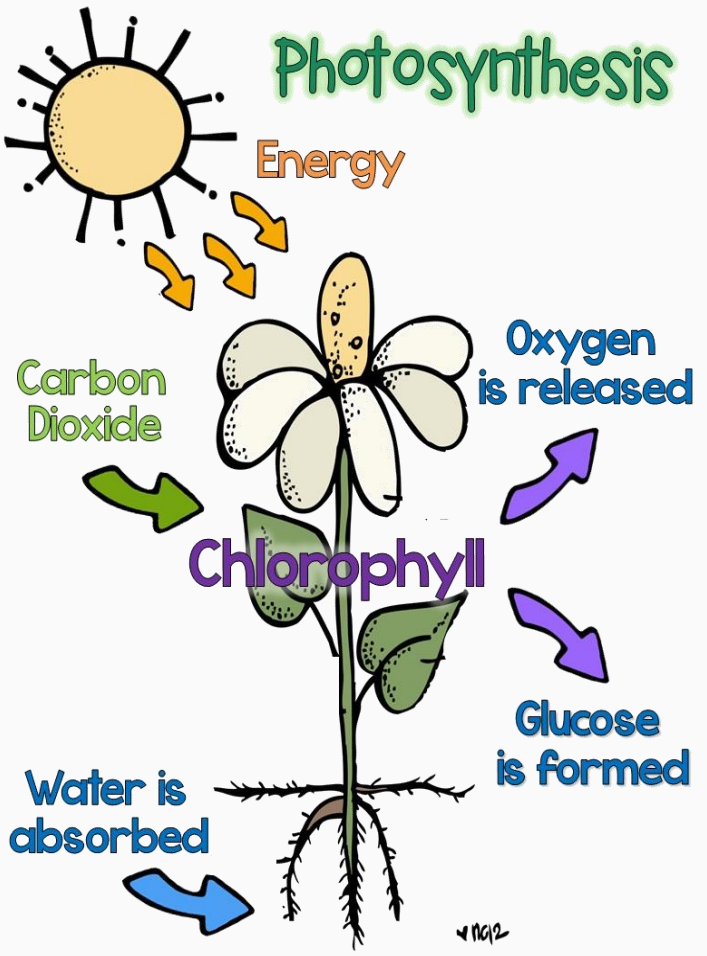
Plants require light as a form of energy to develop and grow. This energy transfer happens by using chlorophyll. Chlorophyll is the green pigment in plants that is used to trap energy from the sun. Each green part of a plant has chlorophyll. This green pigment helps plants absorb light and convert it into sugar through photosynthesis. Chlorophyll serves a key purpose in the food chain, not only by making food for plants, but by creating energy in plants for animals and humans to eat.

What is photosynthesis?

photosynthesis-n. pho·to·syn·the·sis

The word photosynthesis is made up of photo meaning "light" and synthesis meaning "to put together". Photosynthesis means to put together with light.

Photosynthesis is a process by which green plants use energy from the sun to transform water, carbon dioxide, and minerals into oxygen. Photosynthesis gives us most of the oxygen we need in order to breathe. We, in turn, exhale carbon dioxide that is needed by plants.



Culminating Project:

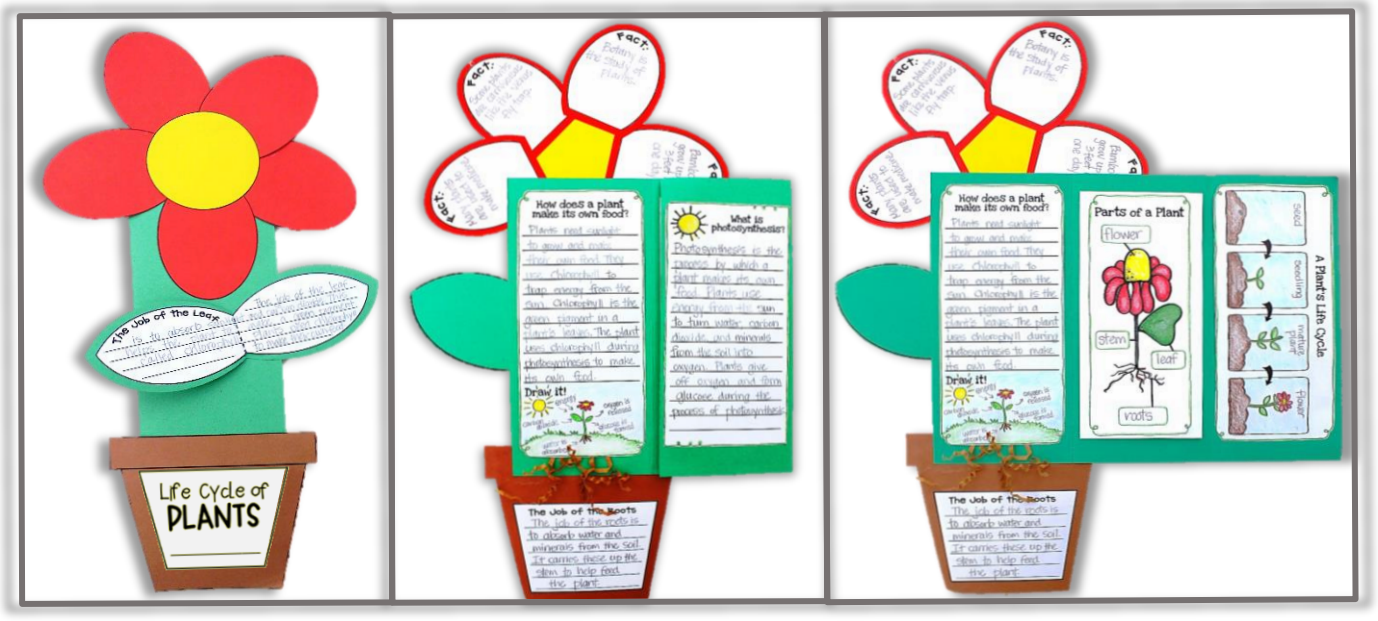
Foldable Flower Booklet

You will need per student:

To make the flower booklet:
class set of 9 x 12 green construction paper
5 petals on colored construction paper
1 flowerpot on brown paper
1 leaf on green paper
1 flower middle on yellow paper
3 3 in. pieces of tan or white yarn

Writing inserts per student:

1 leaf insert
4 petal inserts
1 vocabulary mini-book
1 Parts of a Plant insert
1 How Does A Plant Make Its Own Food insert
1 What is Photosynthesis? insert
1 Plant Life Cycle insert



Foldable Flower Booklet
Directions for Assembly

Glue petals around flower middle overlapping slightly. (This will be the back of the flower.)

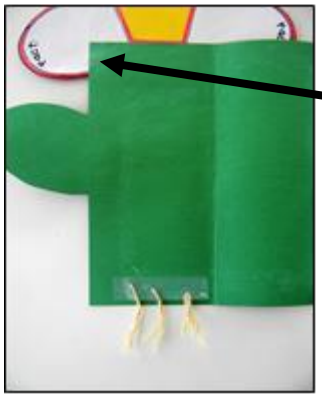
Fold 9 x 12 green construction paper into thirds to create the "stem". Firmly press the folds to crease.

Glue leaf writing insert on to the leaf cutout centering to create a green border around edges.

Glue petal writing inserts on to four of the petal cutouts centering towards the top of the petal to create a colored border around edges.

Apply glue to the fifth petal (the one without the insert).

Turn flower over and attach it to the front of the folded booklet/stem.



Open the folded stem. Add a bit of glue to fasten the left corner of the stem to the petal underneath.

Tape or glue yarn "roots" to the far left section of the opened stem about an inch from the bottom.

Foldable Flower Booklet

Directions for Assembly Cont.

Refold the stem so the booklet is closed and glue the leaf to the front cover.

Glue the flowerpot writing insert to one side of the pot.

Glue the completed *How Does a Plant Make Its Own Food?* writing insert to the far left section so that it covers the top of the yarn.

Glue the completed *Parts of a Plant* insert to the front cover of the folded *Vocabulary Mini-book*.

Glue the back of the Vocabulary mini-book to the middle section of the stem so that it opens to reveal the completed vocabulary.

Glue *A Plant's Life Cycle* to the far right section of the stem.

Refold the flower booklet and apply a line of glue across the bottom of the front of the stem. Turn stem over and attach the pot with the writing insert facing up, lining up the bottom of the stem to the line on the pot.

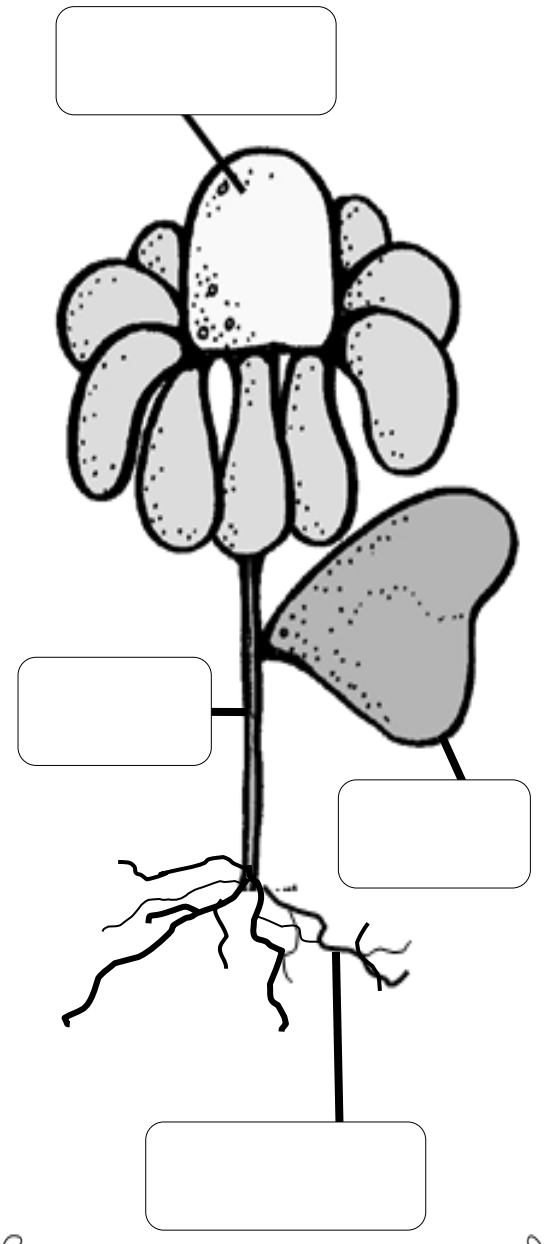
Glue the *What is Photosynthesis?* writing template to the back of the far right section.

Vocabulary Mini-book

Vocabulary	Definition

Cover Label for Mini-book

Parts of a Plant



How do plants make their own food?

Draw it!

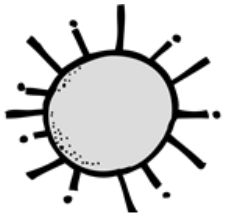
How do plants make their own food?

Draw it!

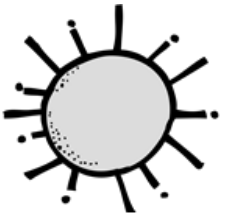
Blank templates Additional pages for longer writing

Staple the pages at the top. glue the back of the bottom page into the flower booklet

Additional prompt options for writing

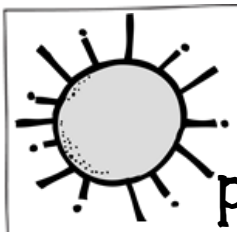


What is chlorophyll?

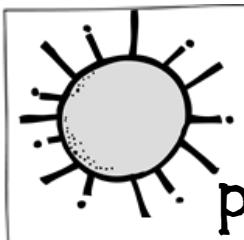


What is chlorophyll?

Additional prompt options for writing

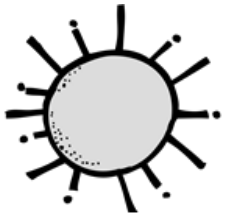


What is photosynthesis?

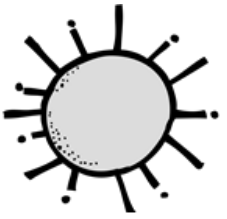


What is photosynthesis?

Additional prompt options for writing



What is pollination?



What is pollination?

Additional prompt options for writing

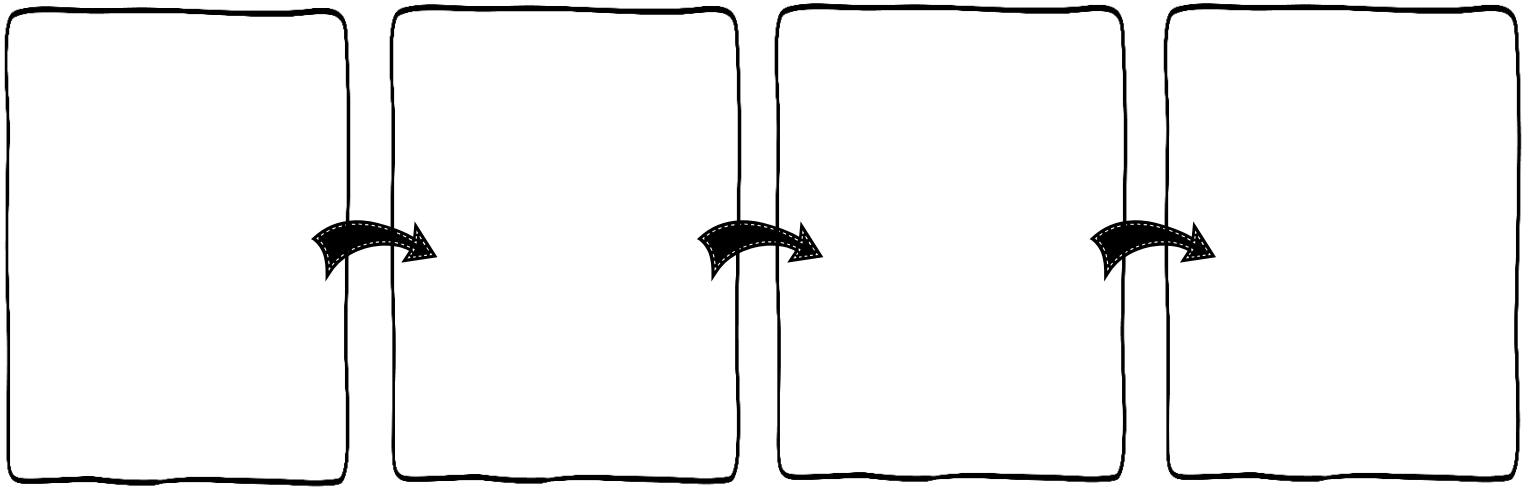
What is an adaptation?

Draw a plant with an interesting adaptation.

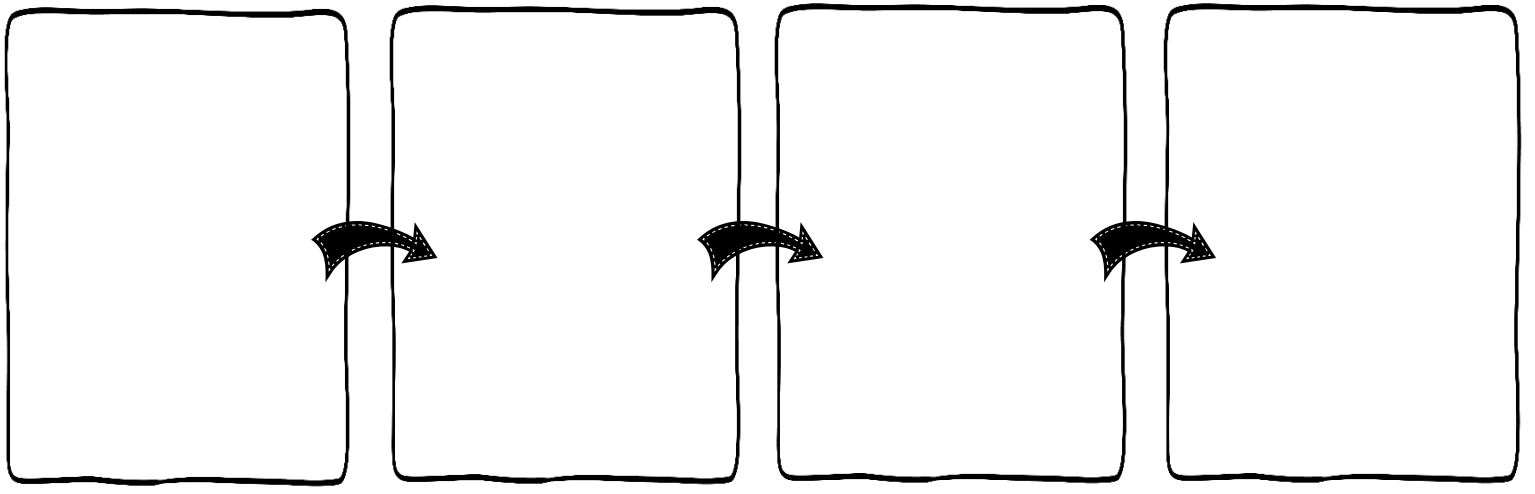
What is an adaptation?

Draw a plant with an interesting adaptation.

A Plant's Life Cycle

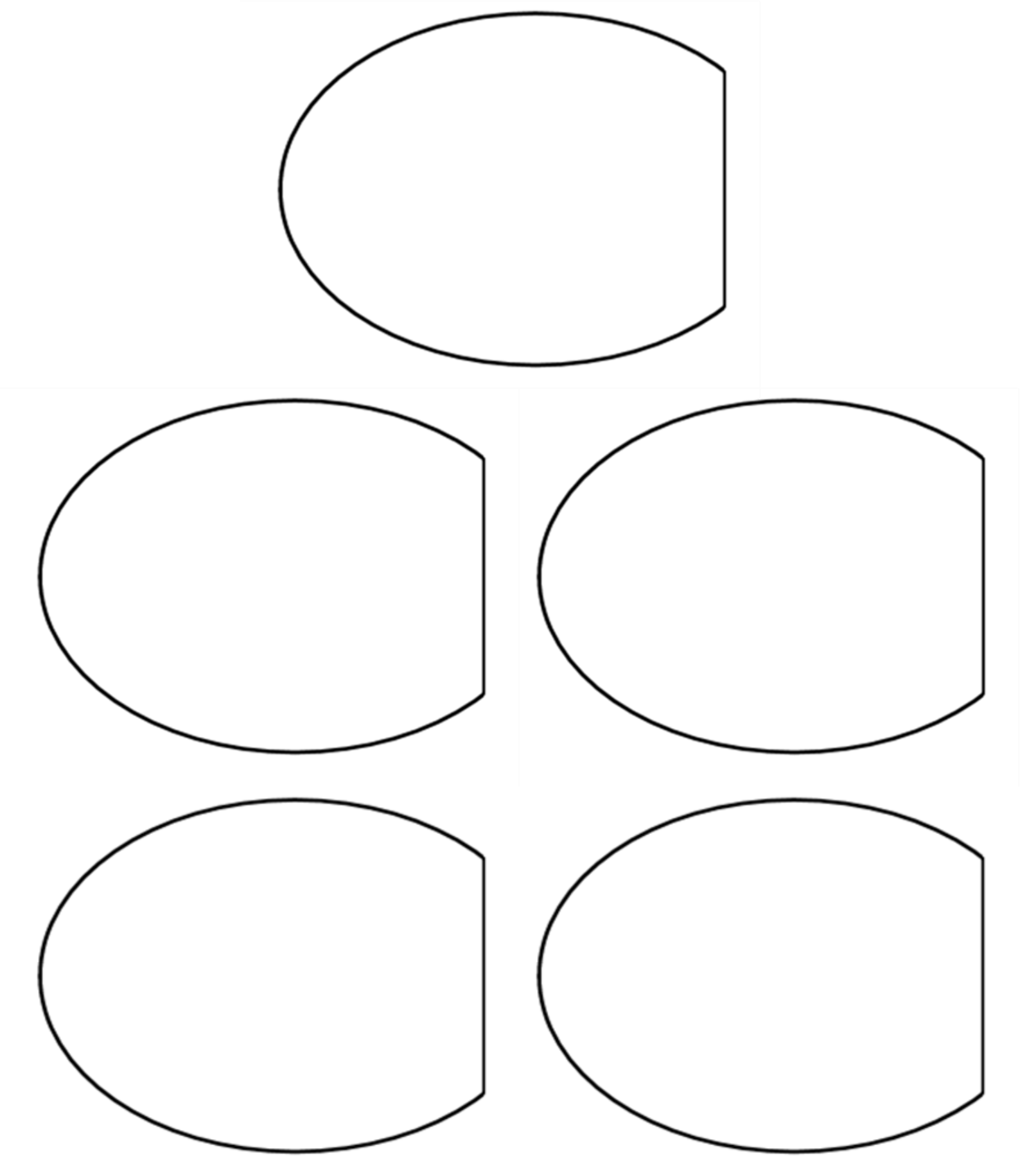


A Plant's Life Cycle



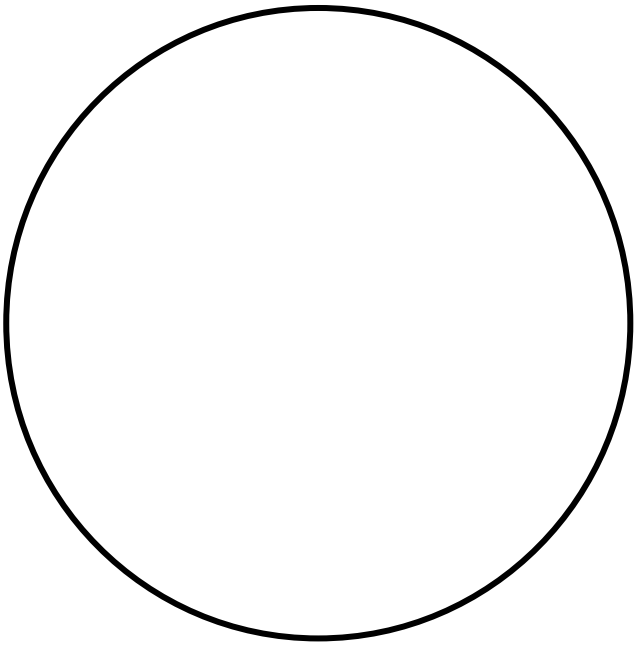
Flower Petals

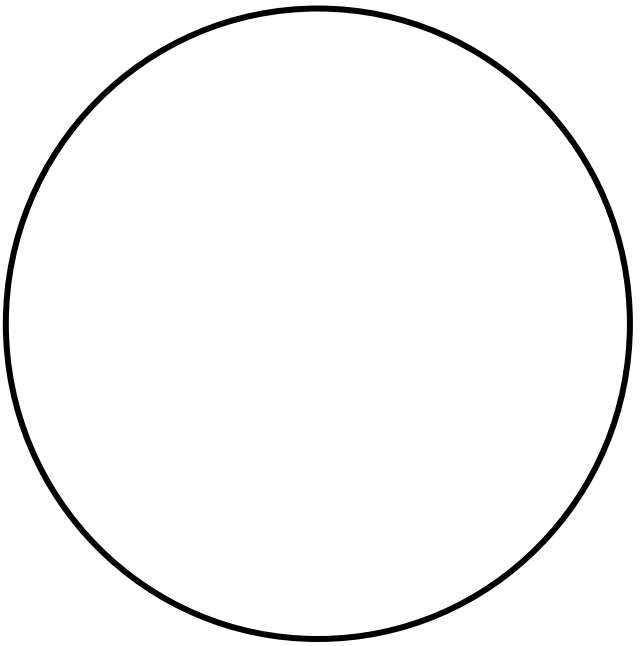
Copy 5 per student on colored paper

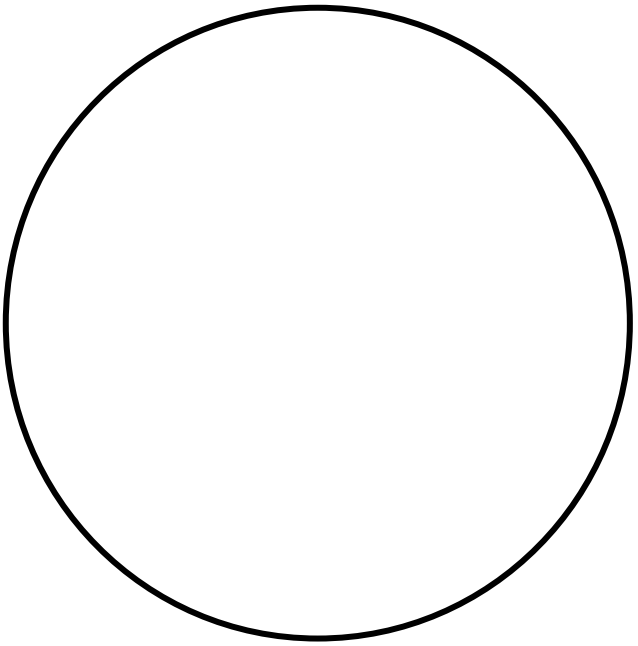


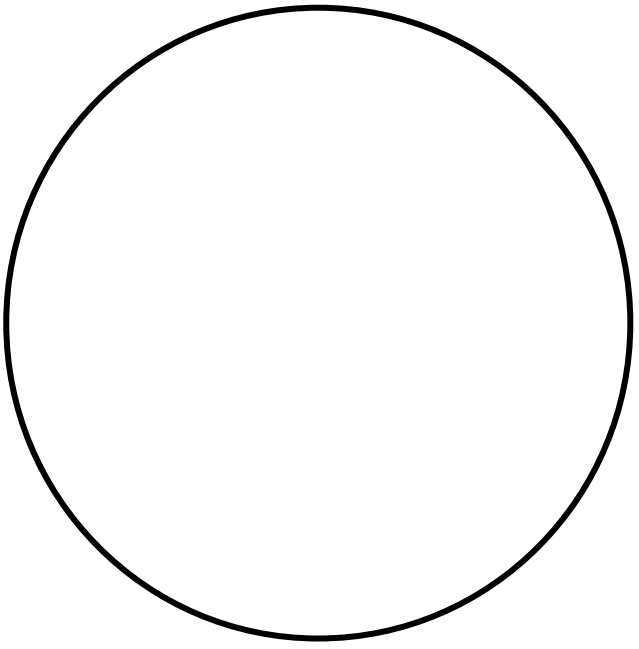
Flower Middle Section

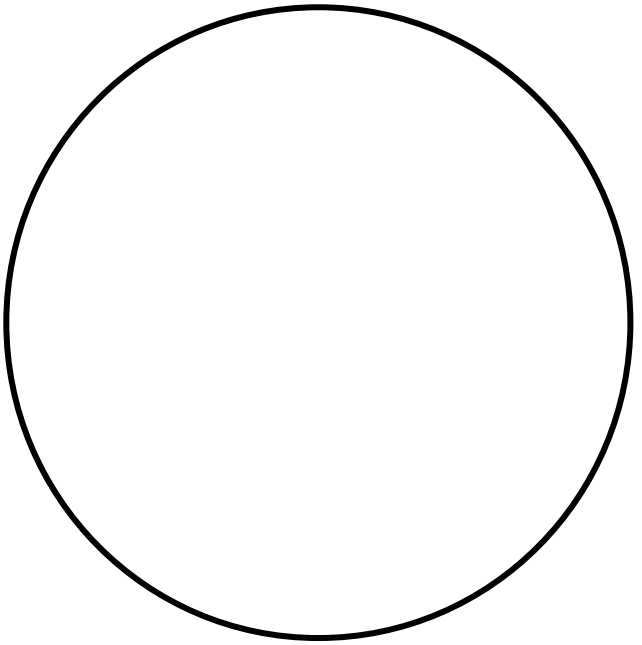
Copy 1 per student on yellow paper





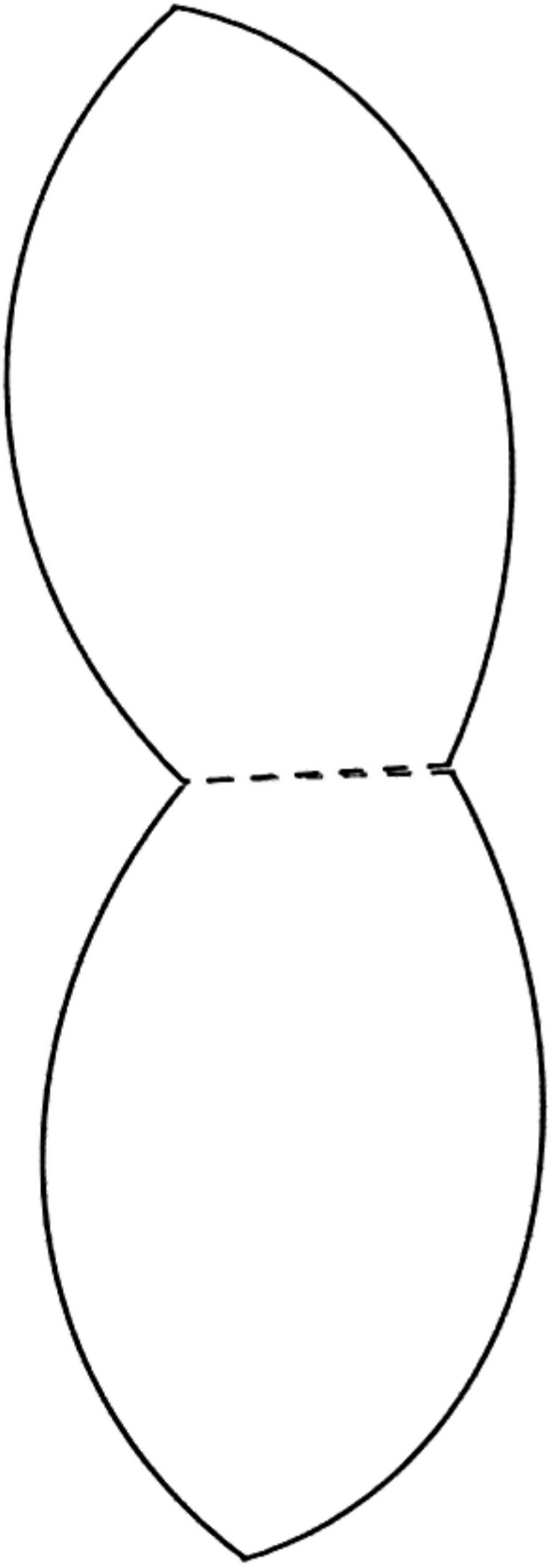


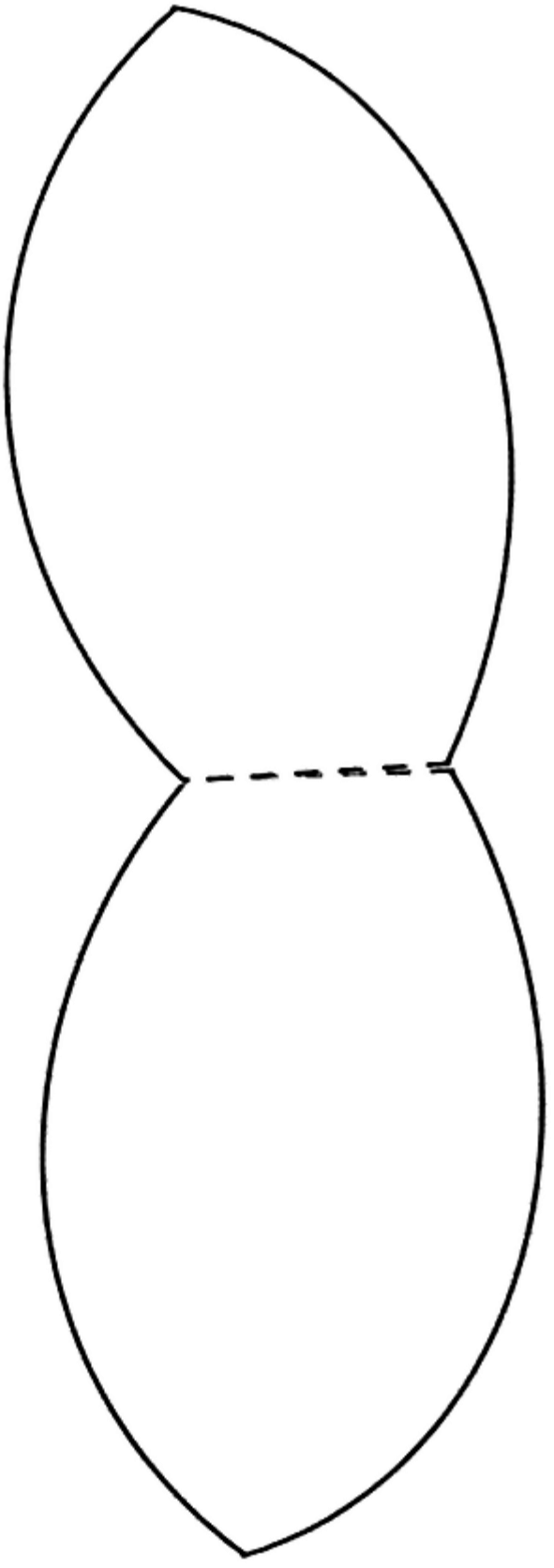




Leaf

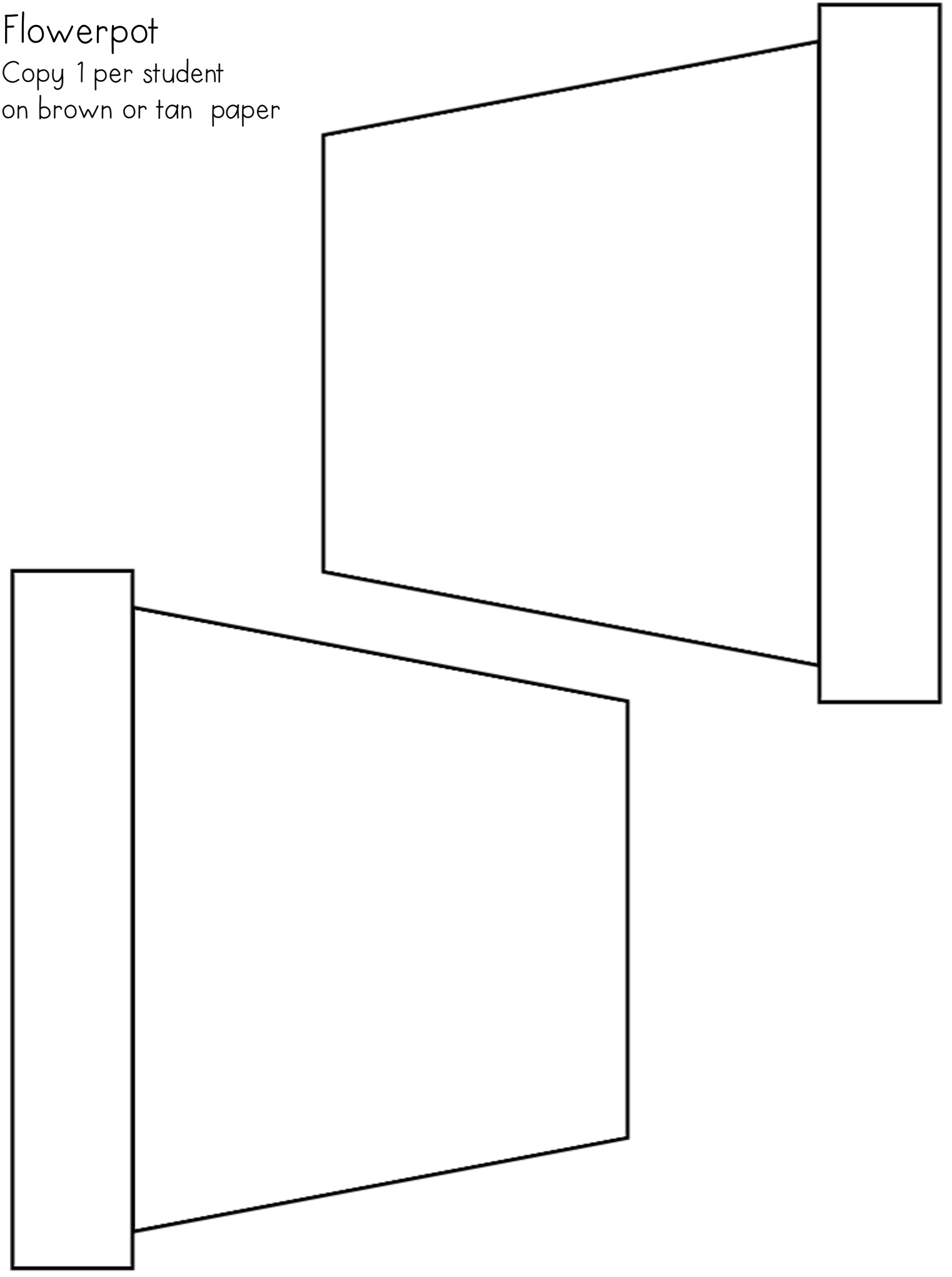
Copy 1 per student on green paper





Flowerpot

Copy 1 per student
on brown or tan paper



Flowerpot Labels

Copy 1 per student on white

Life Cycle of
PLANTS

_____

Life Cycle of
PLANTS

_____

Life Cycle of
PLANTS

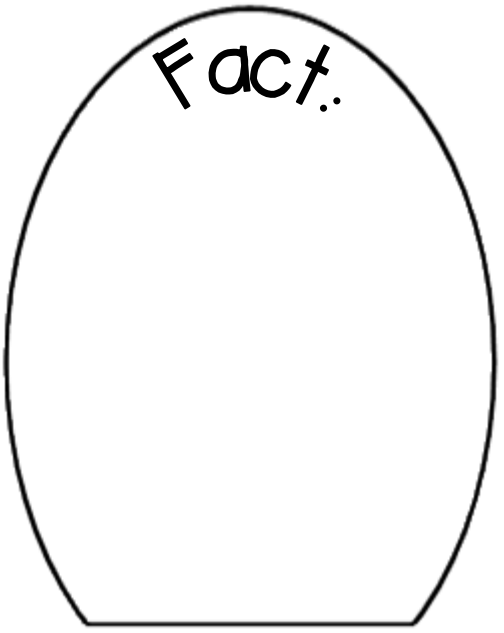
_____

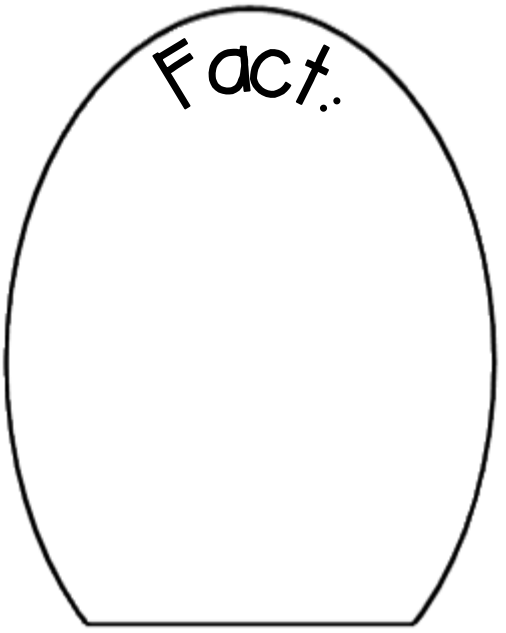
Life Cycle of
PLANTS

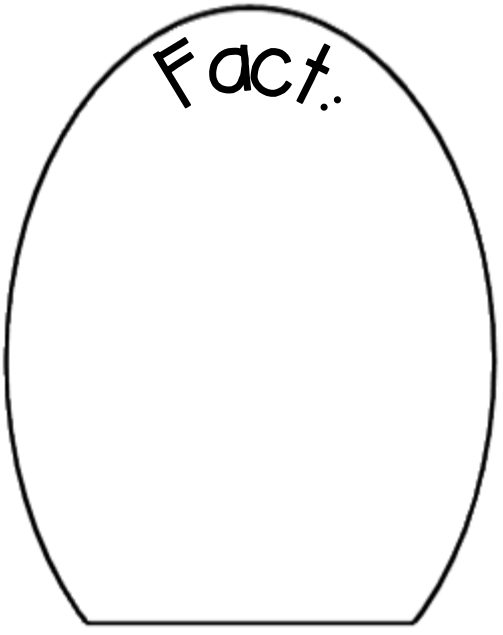
Life Cycle of
PLANTS

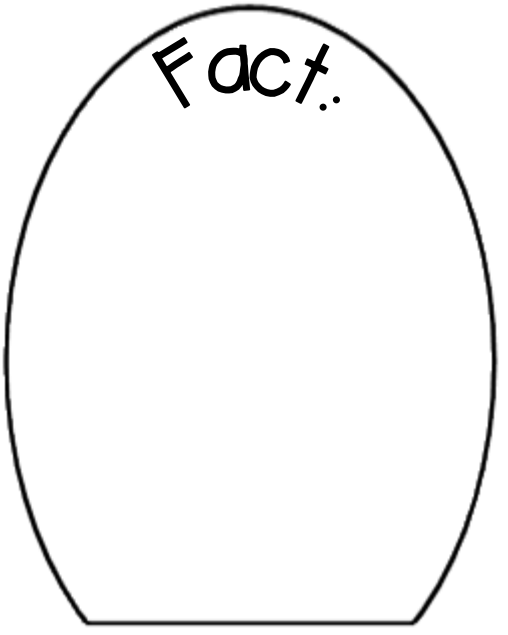
Petal Inserts for Plant Facts

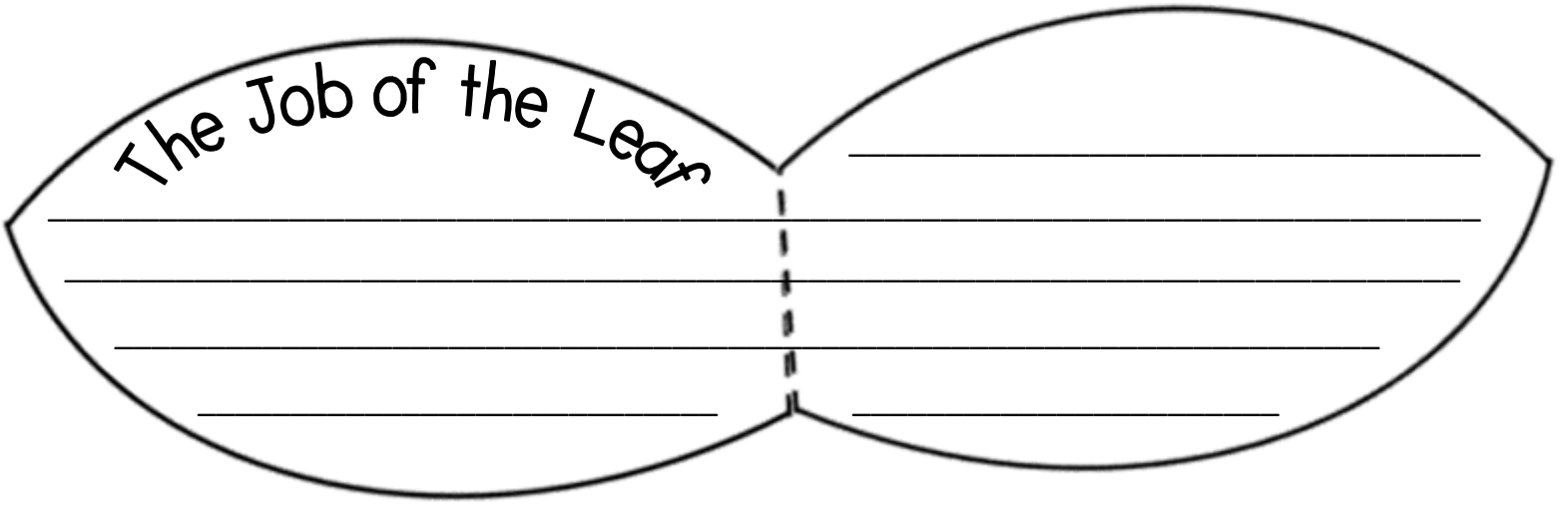
Copy 1 set per student on white paper





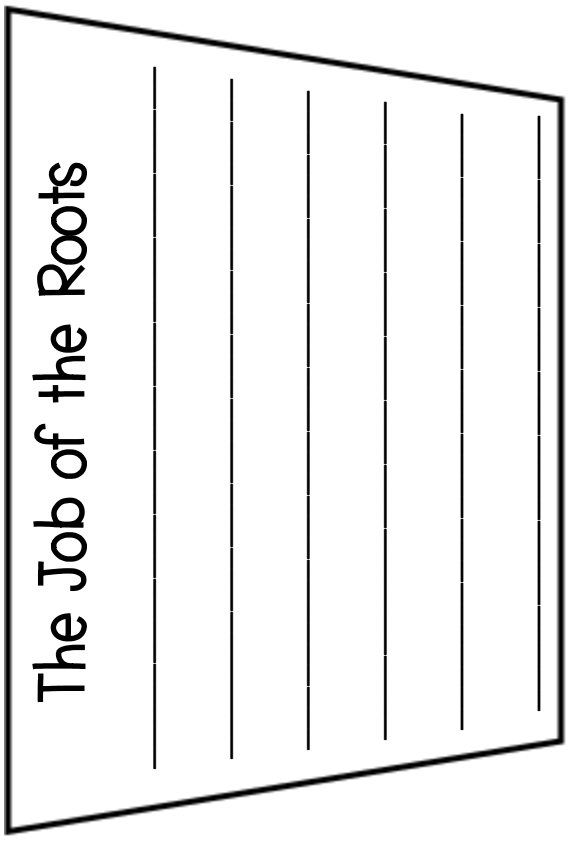


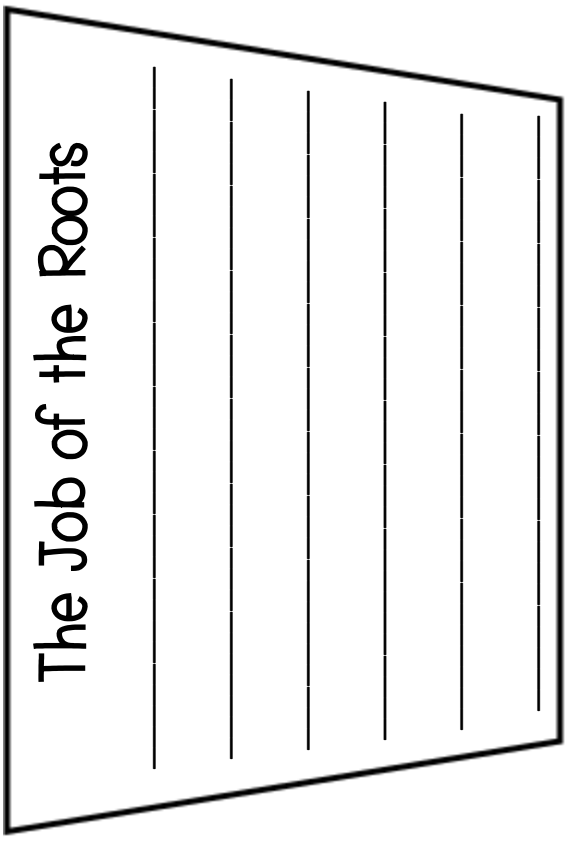


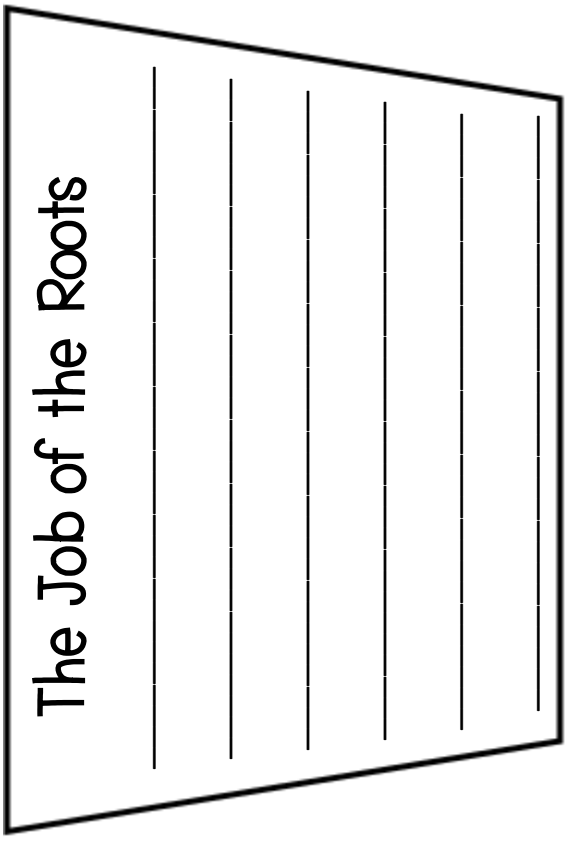


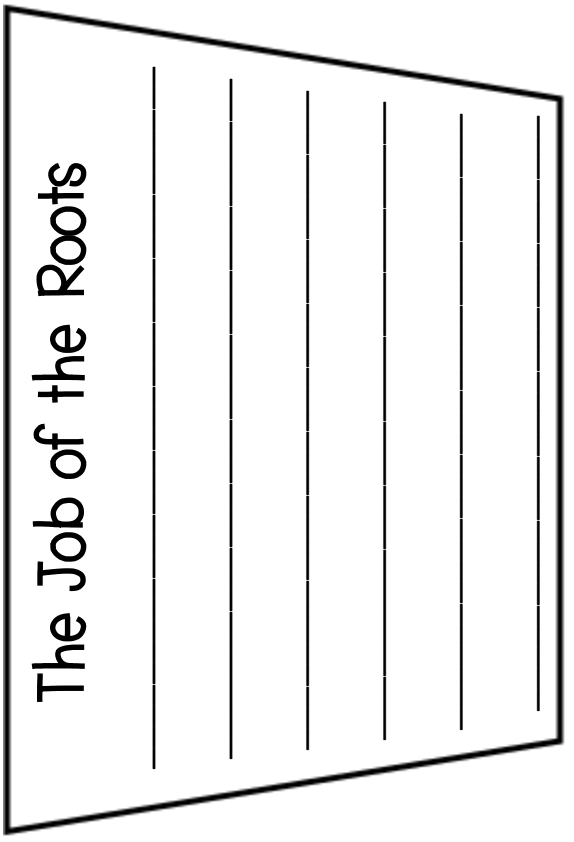
Flowerpot Inserts

Copy 1 per student on white paper

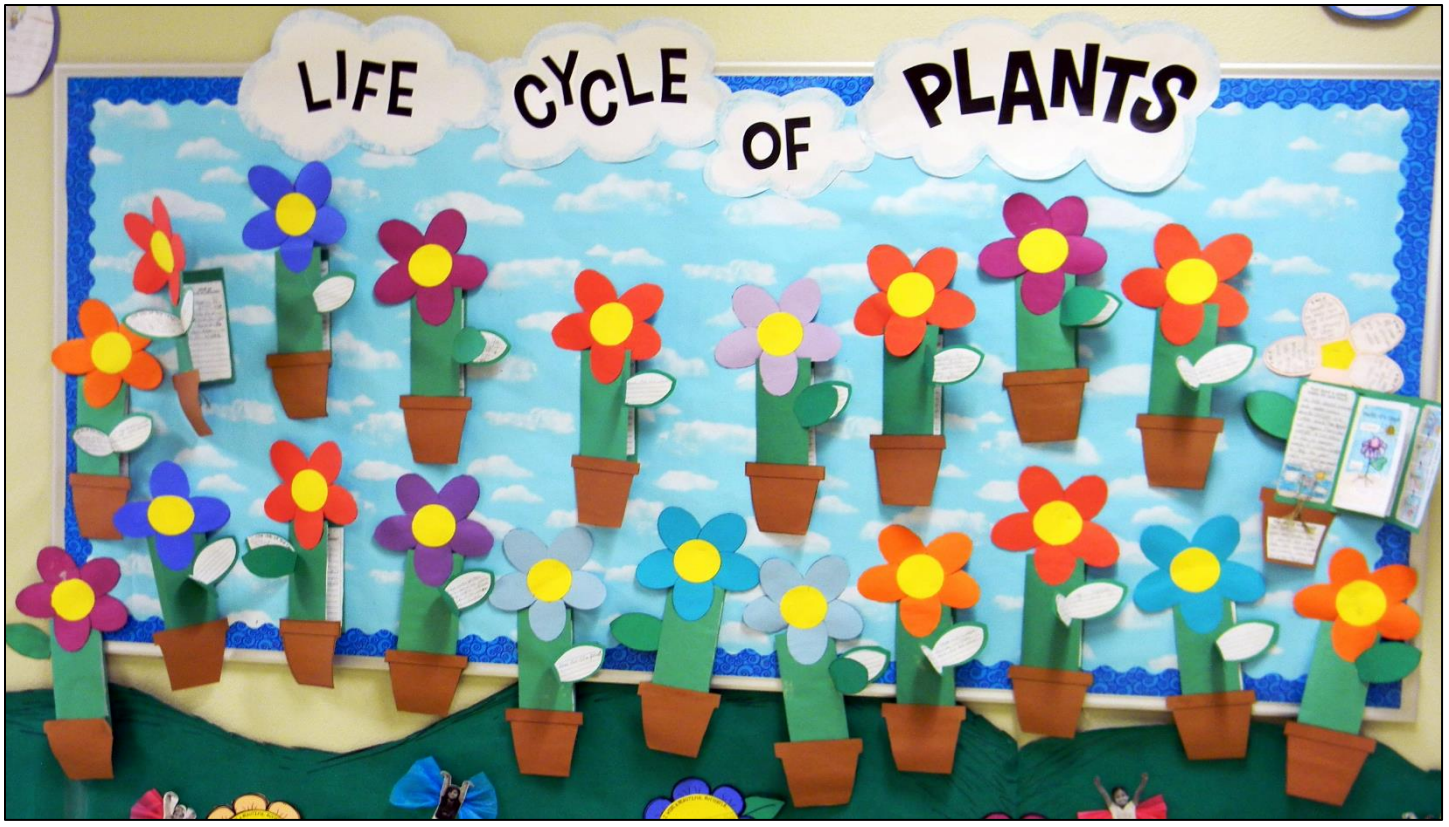








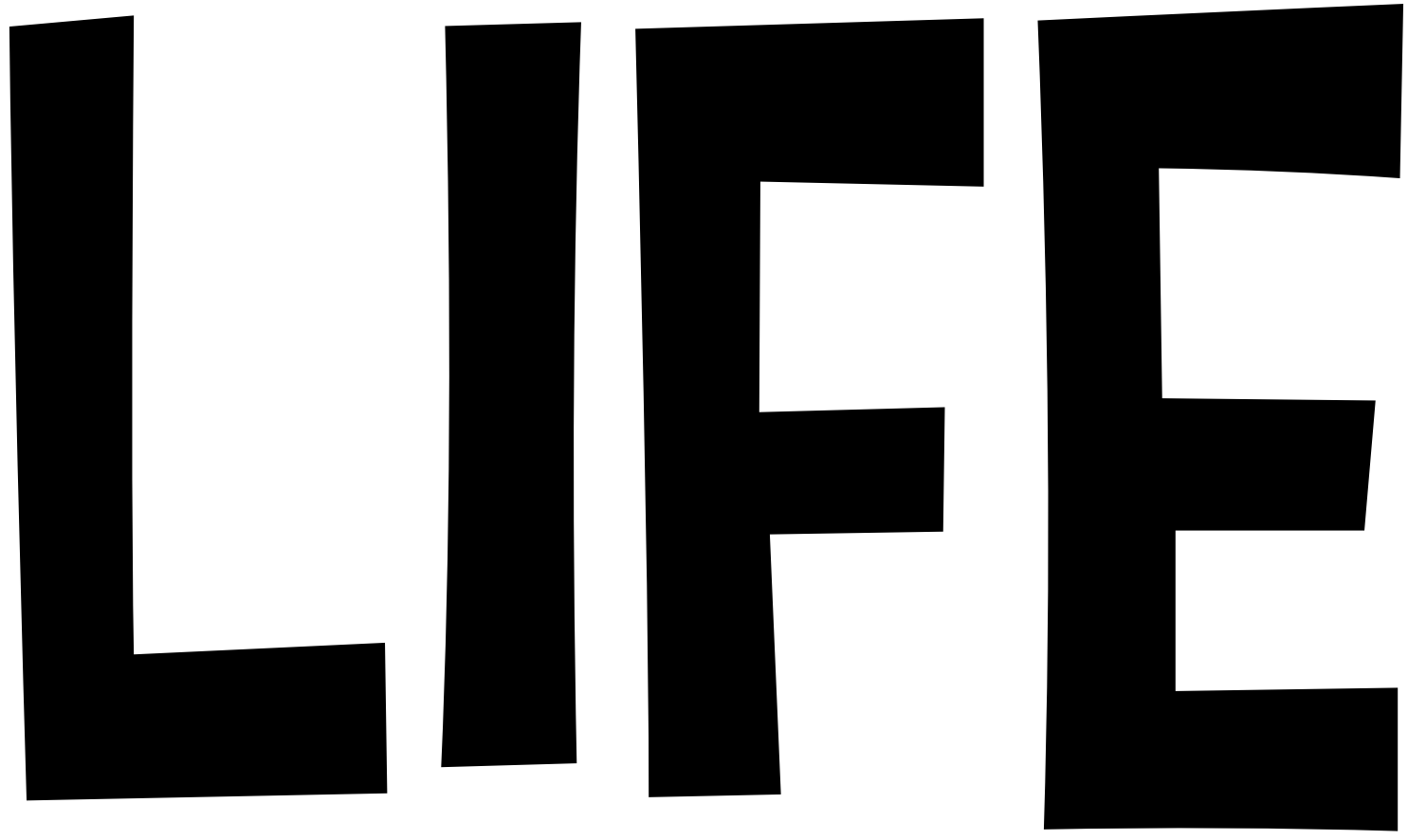
BULLETIN BOARD Display



TO PREP THE DISPLAY:

1. Copy the following title lettering on white copy paper. Loosely trim around the letters. Leaving a little bit of white on is OK.
2. Lay the letters out the way you want them on white butcher paper. Draw a cloud shape around the word using a black marker so it still shows after you shade the cloud.
3. Using a blue crayon, lightly shade inside the drawing line.
4. Cut out the cloud on the marker line.
5. Glue the letters inside the cloud. I made mine "bounce" by gluing them alternately slightly up and down.

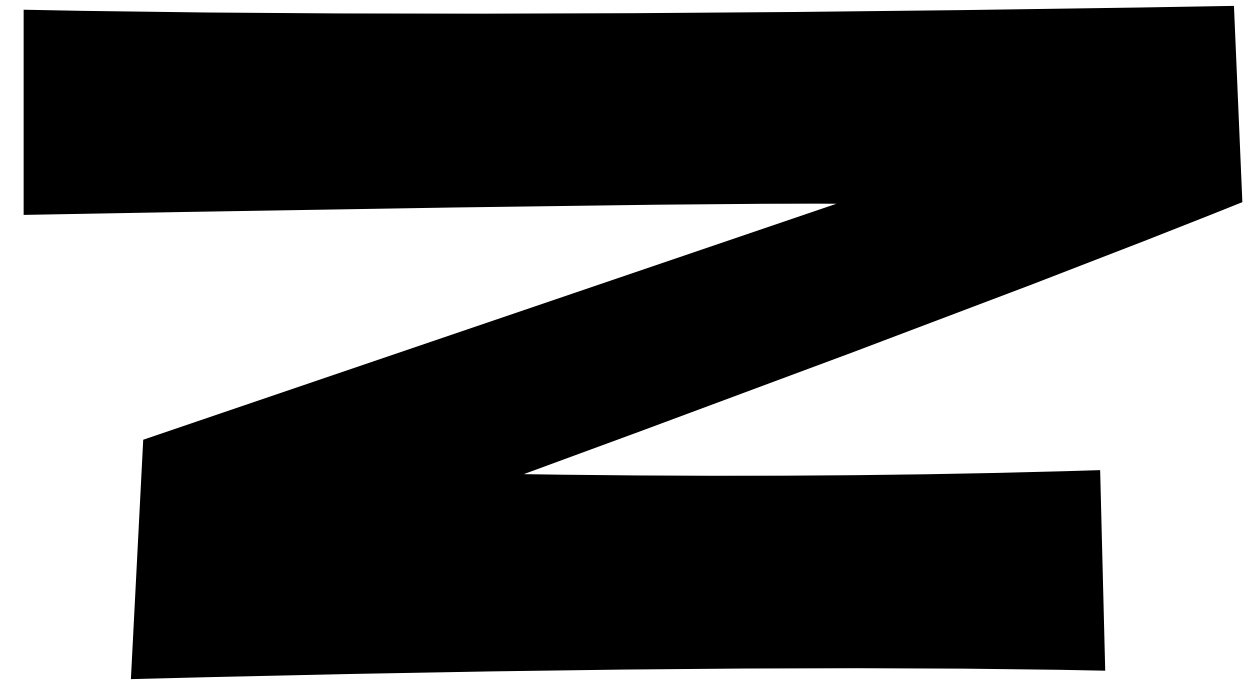
CLICK HERE to see our life cycle garden open house display!

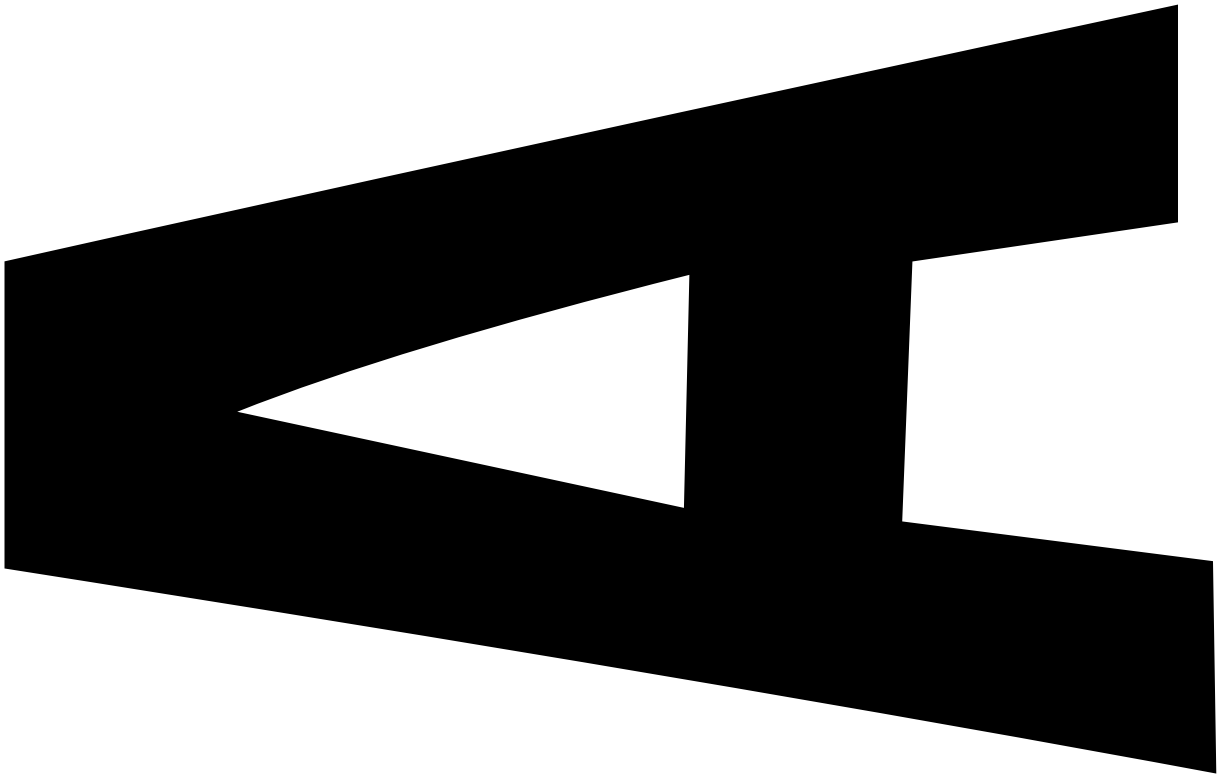

LIFE


CYC


LEOF

P L





$$\supset \vdash$$

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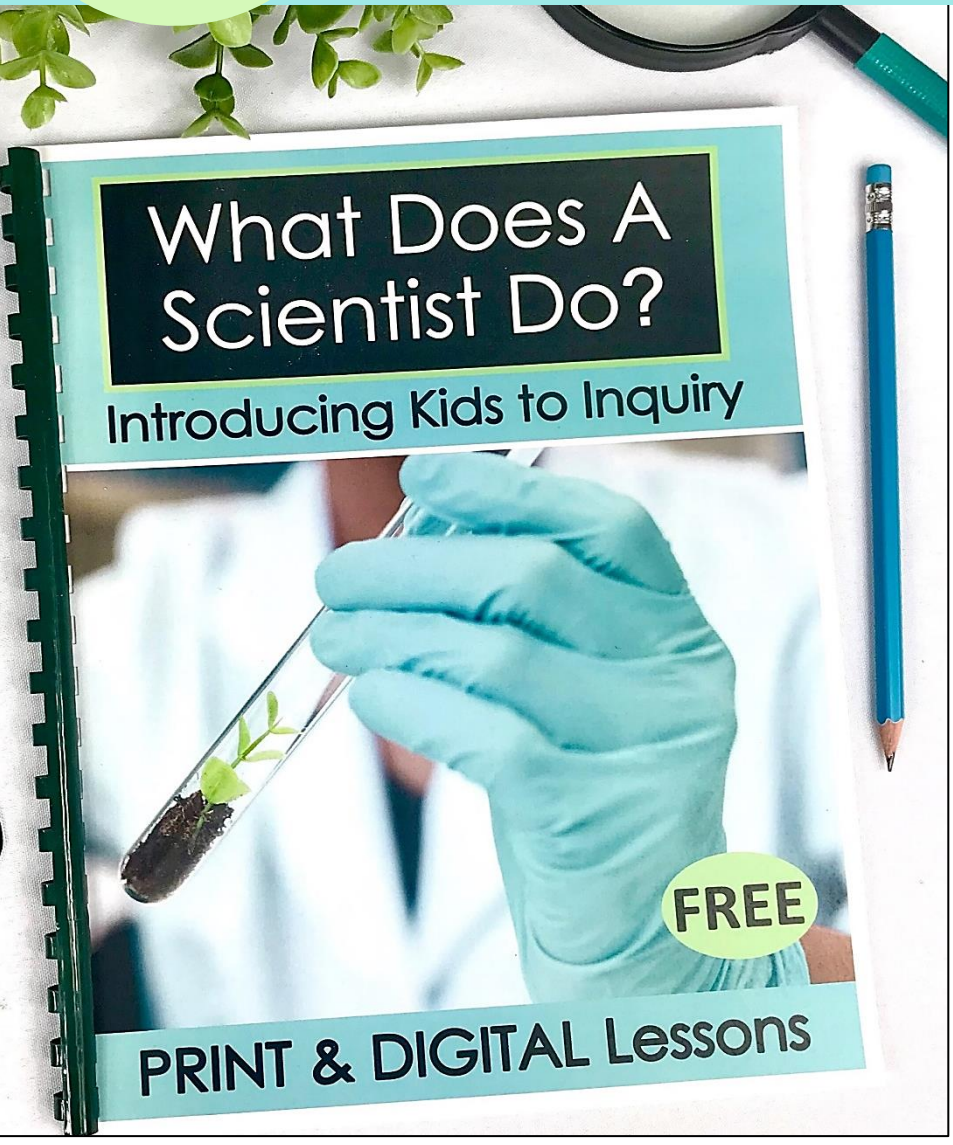
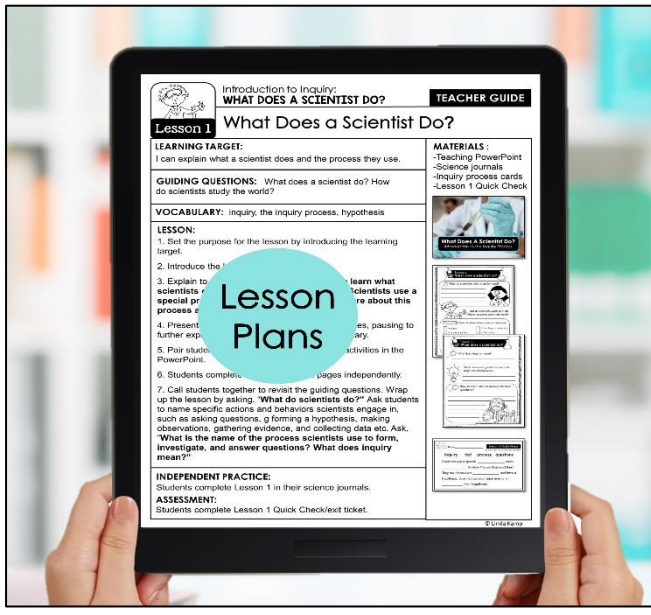
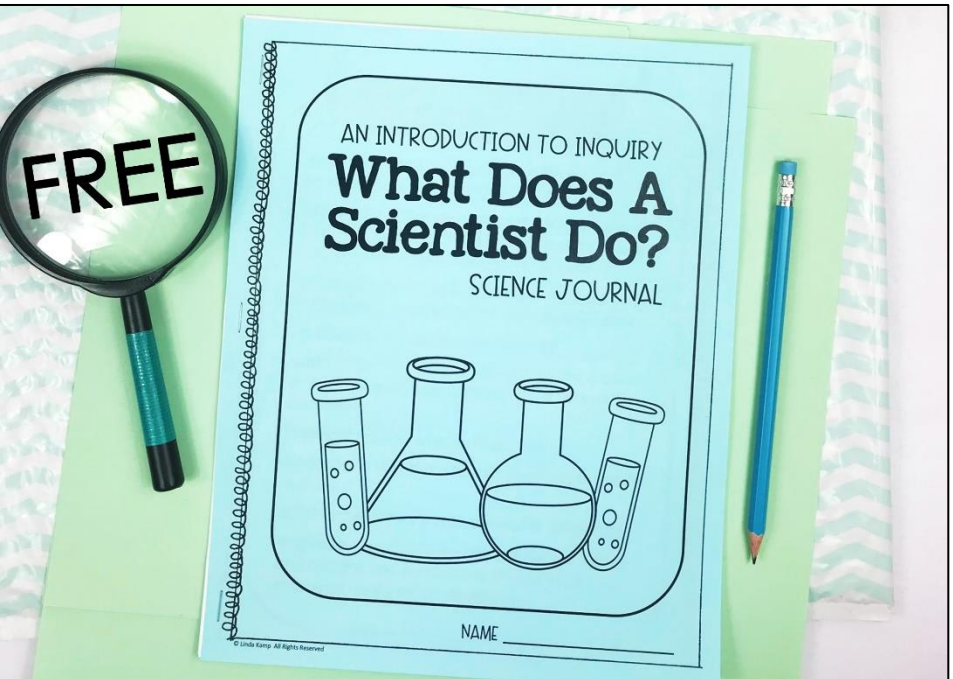
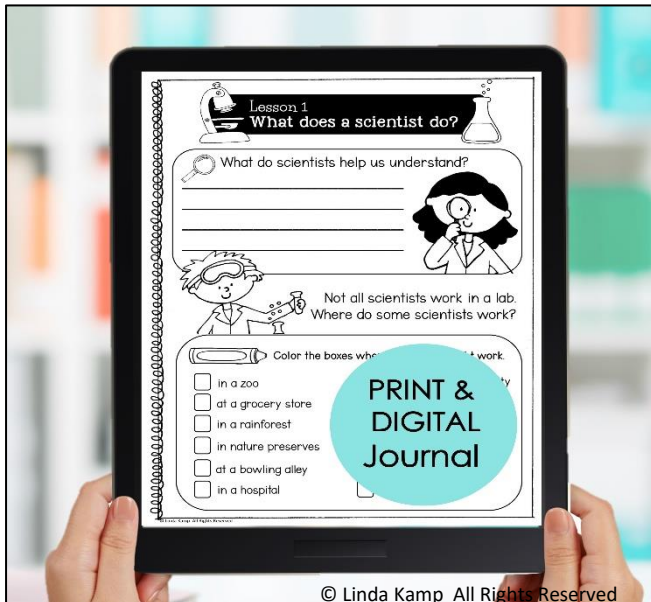








Video Links

The following are links to videos that support the lessons in the unit. You will need access to YouTube to view the videos.

LIFE OF PLANTS
by David Attenborough

PHOTOSYNTHESIS & CHLOROPHYLL
Photosynthesis Song
Why Do Leaves Change Color?

POLLINATION
The Beauty of Pollination
by Louie Schwartzberg
This is an absolutely beautiful time lapse video of pollination

SEED DISPERSAL
Seed Dispersal-The Great Escape
Watch Exploding Seed Pods
How Do Seeds Travel?

PLANT ADAPTATIONS
Plant Adaptations: Plants of the Rainforest
10 Amazing Plants With Real Superpowers

***Note**: Always preview videos before showing them to your class. At the time of publishing all the above links were active and appropriate, but it is always best to preview first.

Recommended Books

The following are some of my favorite books to use with this unit.

Nonfiction

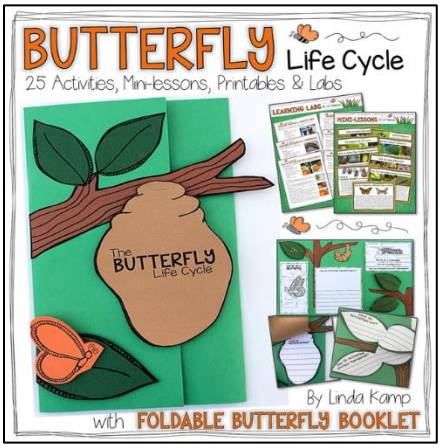
From Seed to Plant by Allan Fowler
Plant Life Cycles by Julie K. Lundgren
How a Plant Grows by Bobbie Kalman
How Does A Seed Sprout by Melissa Stewart
Seed to Plant by Kristen Baird Rattini
Life Cycles: Sunflowers by Robin Nelson
Plant Life Cycles (Nature's Patterns) by Anita Ganeri
The Life Cycle of a Pine Tree by Linda Tagliaferro

Picture Books

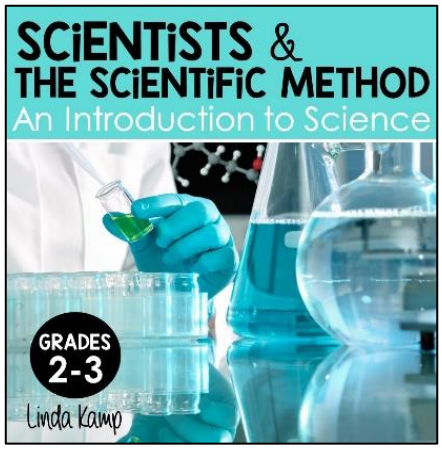
From Seed to Plant by Gail Gibbons
One Bean by Anne Rockwell
Oh, Say Can You Seed? by Bonnie Worth
How a Seed Grows by Helene J. Jordan
A Dandelion's Life by John Himmelman
Travelling Seeds by Rebecca Bielawski
Flip, Float, Fly by Joann Early
A Fruit is a Suitcase for Seeds by Jean Richards
Planting the Wild by Kathryn O. Galbraith

AROUND the KAMPFIRE

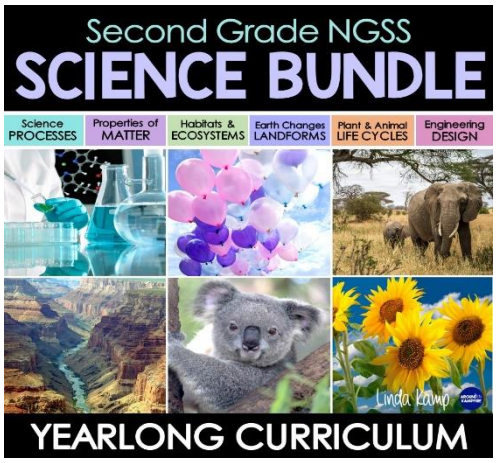
You might also enjoy these SCIENCE UNITS



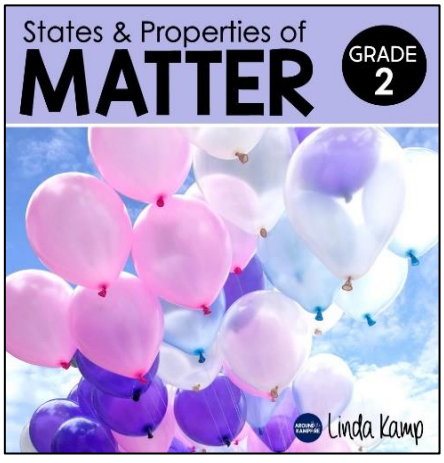
[Butterfly Life Cycle Unit]



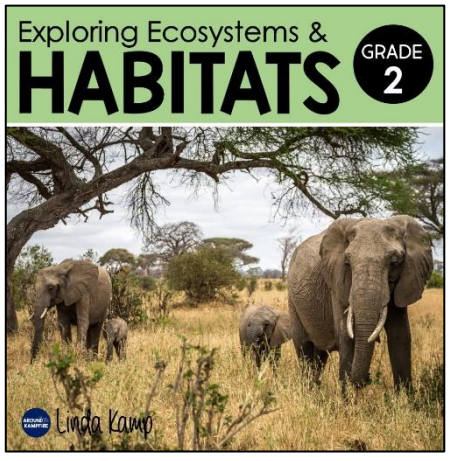
[Intro to Science: Scientists & the Scientific Method]



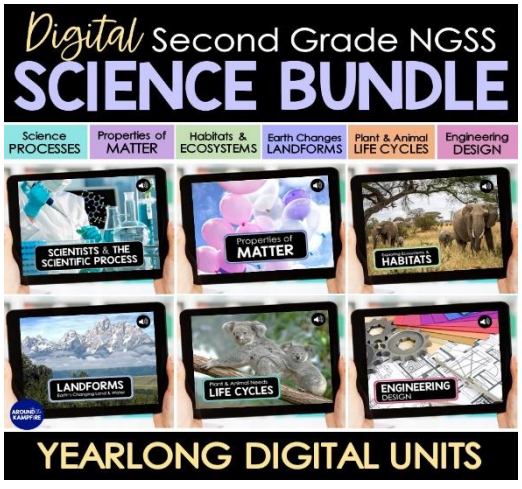
[Gr. 2 Science Bundle]



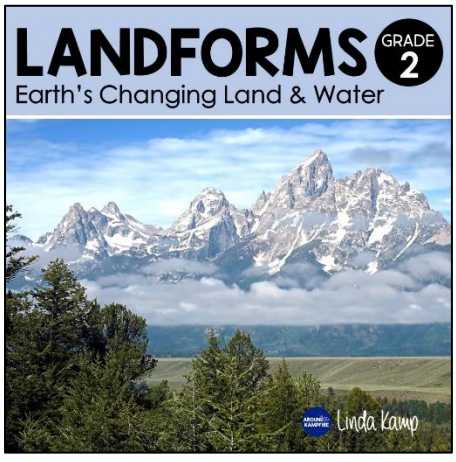
[Properties of Matter]



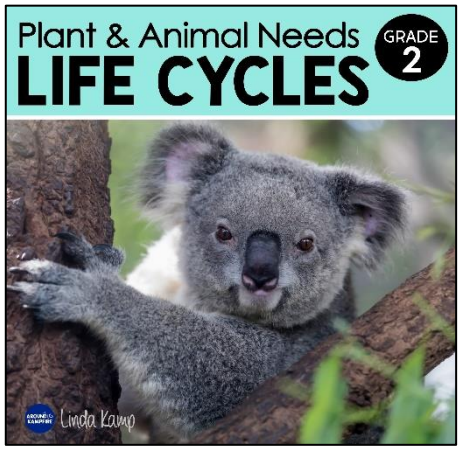
[Habitats & Ecosystems]



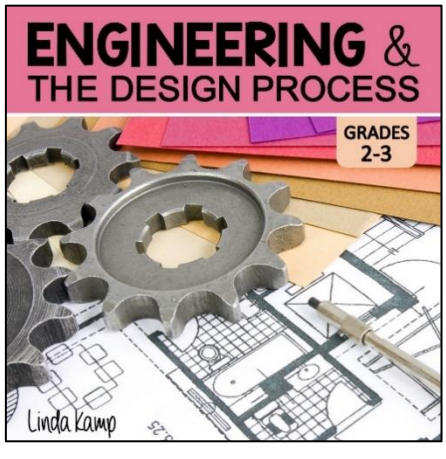
[Audio Lessons Bundle]



[Landforms & Earth Changes]



[Plant & Animal Needs & Life Cycles]



[Engineering Design]

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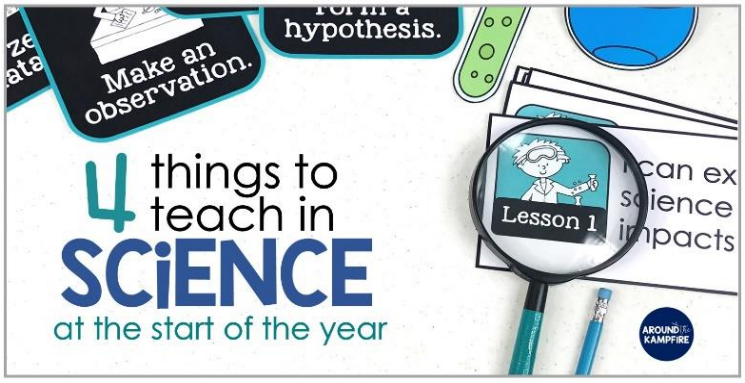
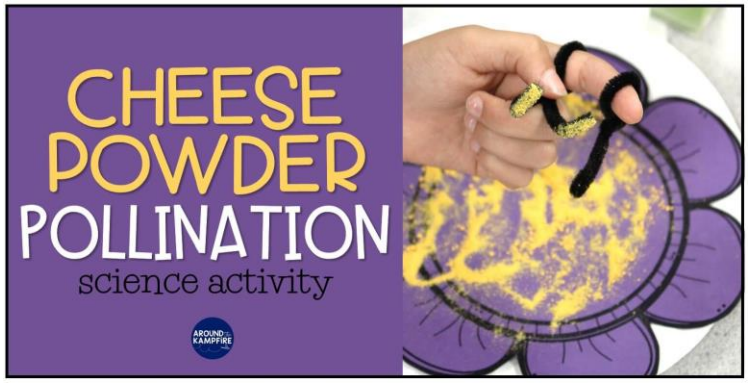
Click on the pictures to get started!





Hello there!

Click to find me here!

I hope you enjoy this resource and it makes your planning easier! Please feel free to email me at kamp.linda@gmail.com with any questions.

Happy teaching!

Linda

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