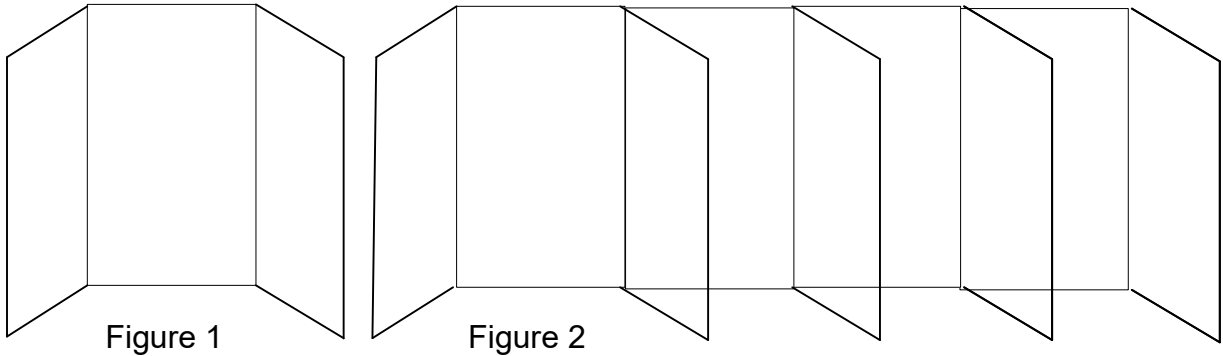


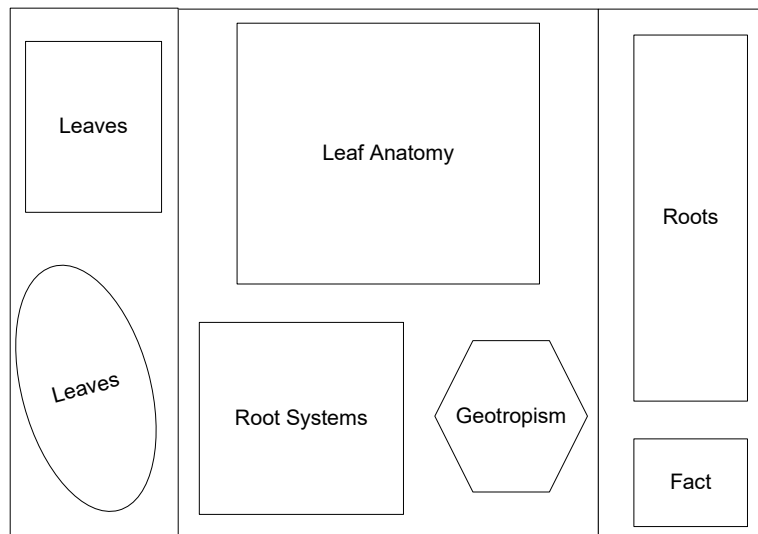
*Exploring Creation With
Botany: Lessons 6-13*
Base Assembly & Layout Guide

You will need 4 folders of any color. Take each one and fold both sides toward the original middle fold and make firm creases on these folds (Figure 1). Then glue (and staple if needed) the backs of the small flaps together (Figure 2).



This is the "Layout" for your lapbook. The shapes are not exact on the layout, but you will get the idea of where each booklet should go inside your lapbook.

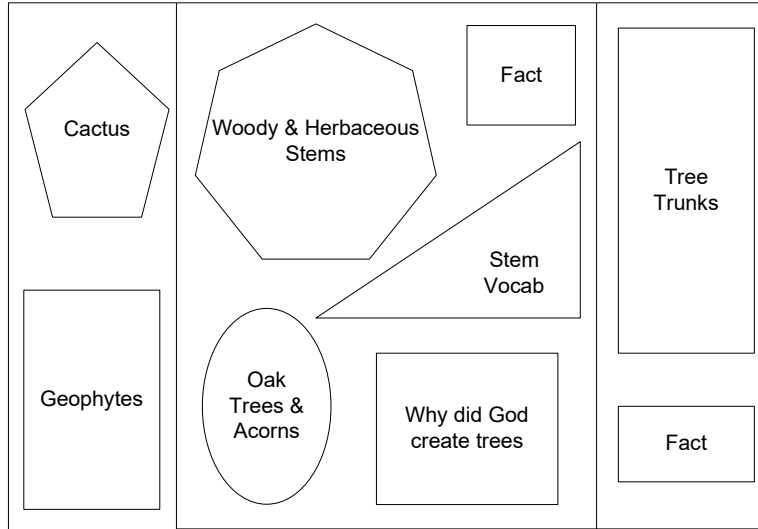
Inside of 1st Folder:



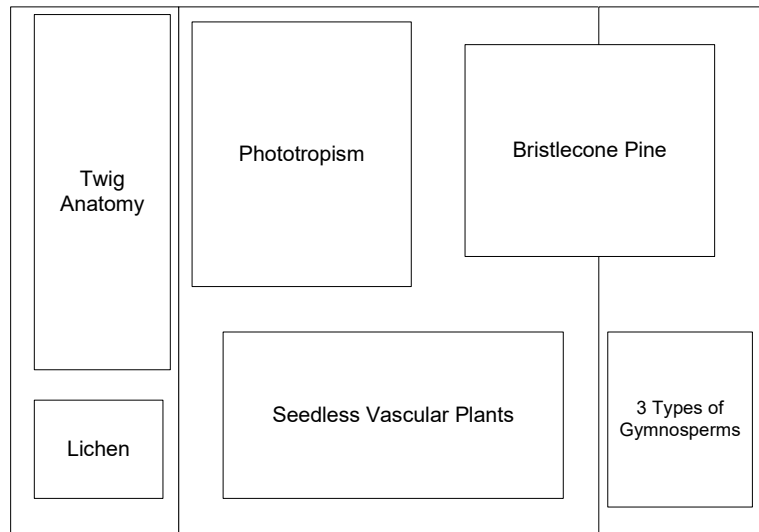
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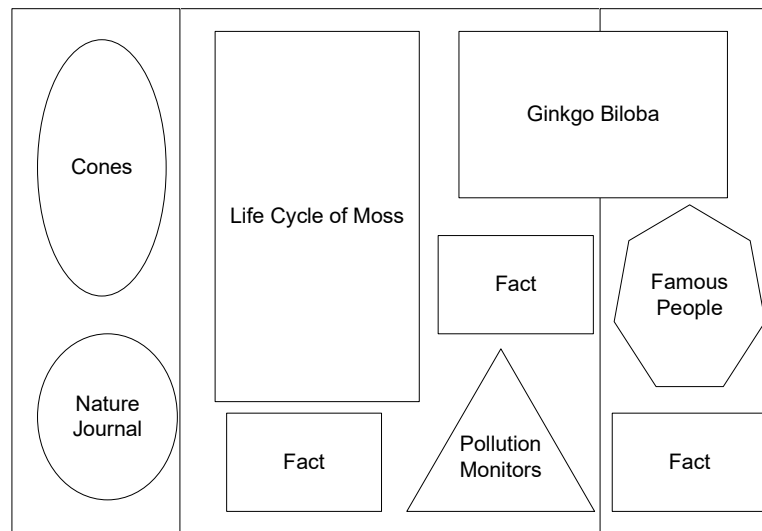
Inside of 2nd Folder:



Inside of 3rd Folder:



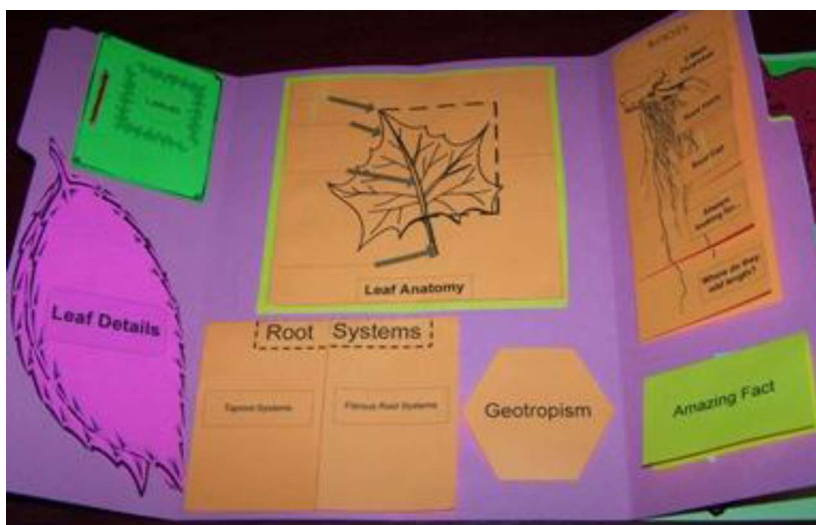
Inside of 4th Folder:



Below and on the next page, you'll find pictures of a completed lapbook. This should help in figuring out how to assemble the booklets and then how to put it all together!



Completed Lapbook



1st Folder

Continue ON.....



2nd Folder



3rd Folder

4th Folder



Exploring Creation With Botany

Lessons 6 – 13 Lapbook

Student Instruction Guide

Decorate the outside/ cover of your lapbook. The cover of your lapbook has purposely been left blank so that you may decorate it in any way that you choose. You may draw, paint, glue pictures, etc. You may print coloring sheets and glue them to the front. The ideas for the front cover are endless. Choose a topic or art project from this unit and HAVE FUN making it your own personalized lapbook!

Lesson 6:

- Leaves Booklet: Have you ever looked closely at a leaf? They are really fascinating. Did you know that they have mouths on them??? Answer these questions about leaves. You may even want to draw pictures.
- Leaf Anatomy Booklet: Can you name the parts of a leaf? Find a leaf outside and see if you can name the parts. Also, label them on this diagram.
- Leaf Details Booklet: How much have you learned about leaves? Tell about the different shapes, arrangements, and more! You can even color or decorate this leaf booklet on the outside if you like.

Lesson 7:

- Roots Booklet: Have you ever noticed the roots of a tree? Have you ever noticed that they have hair? Roots are amazing. See if you can answer these questions about them.
- Geotropism Booklet: Does it matter which side of a seed you have “pointing up” when you plant it in the ground? Why or why not? Explain geotropism. Isn’t God amazing!?
- Root Systems Booklet: What are the different types of root systems? They are taproot and fibrous root. Can you tell what the difference is? Maybe you will want to draw or glue a picture too.
- Geophytes Venn Diagram Booklet: Have you ever used a Venn Diagram? They are used to tell how things are both alike and different. In this one, you are comparing 3 different things: corms, tubules, and rhizomes.

Lesson 8:

- Stem Vocabulary Booklet: Have you ever broken open a stem? Did you know that there is sugar in there?? Try your best to define these words.
- Woody & Herbaceous Stems Booklet: Do you know what “woody” and “herbaceous” mean? They are funny words, aren’t they? See if you can answer the questions about these types of stems.
- Cactus Booklet: Have you ever seen a cactus? What is something that most trees have...but a cactus doesn’t? That’s right...Leaves! Why do you think that God did not give leaves to cacti (that is the word for more than one cactus)?
- Phototropism Booklet: This is a fun booklet. It will show you how phototropism works. Have you ever noticed how flowers seem to grow toward the sun? Explain how this works!

Lesson 9:

- Why Did God Create Trees Booklet: How many trees do you have in your yard? How about on your street? Trees are incredible, and God created them for very special reasons. Do you know what they are?
- Oak Trees & Acorns Booklet: Do you have any oak trees in your yard? If you do, then you probably also have acorns! And if that is the case, then you more than likely have squirrels! See if you can answer these questions about these amazing creations.
- Twig Anatomy Booklet: Twigs have a lot of little parts that have special functions. See if you can label them all.
- Tree Trunk Layers & Their Jobs Booklet: Did you know that the center of a tree trunk is dead? Tree trunks have 5 layers, and each layer has a different job. Do you know what they are?

Continue ON.....



Lesson 10:

- Bristlecone Pines Booklet: Did you know that a lot of people think that the earth is millions or billions of years old? God gave us many, many evidences that this is not true at all. In this booklet, tell about how the bristlecone pine trees confirm this. You may also want to color Noah's Ark.
- Gymnosperm Leaves Booklet: What is a gymnosperm? What kinds of leaves do they have? Can you name them and draw them? You may choose to glue a picture of them instead.
- Cones Booklet: Do you remember that conifers make their seeds in cones? What kinds of cones have you seen and held? See if you can answer these questions about them. You may choose to color the cone on the front....and maybe draw or glue pictures inside.
- Ginkgo Biloba Booklet: How are the ginkgo biloba leaves different from other gymnosperms? Tell about them here, and you may even want to draw a picture or glue one in.

Lesson 11:

- Seedless Vascular Plants Booklets: Do you remember learning about vascular and nonvascular plants in Lesson 1? This booklet is about a special kind of vascular plant: ferns.

Lesson 12:

- Life Cycle of Moss Booklet: Have you ever seen a moss-covered tree or rock? See if you can tell the stages of the life cycle of moss. It's a lot different than other plants.
- Lichen Booklet: Do you remember studying about lichens in Lesson 1? They aren't really plants, but there was a time when scientists thought that they were nonvascular plants. Tell about what they are here.
- Lichens as Pollution Monitors Booklet: Do you know what pollution is? How can lichens help with measuring the quality of our air?

Lesson 13:

- Famous People Who Kept Journals Booklet: Have you ever kept a journal? Do you know what one is? There were many people in the past who kept journals.....can you name a few?
- Nature Journal Booklet: What is a nature journal? If you haven't ever had one, this would be a GREAT time to start one!

There are also 5 Amazing Facts Booklets. In these, you may write about anything you have learned. Are there some interesting facts you have learned? Take your pick, and write about them here. You may also want to draw or glue pictures inside these booklets.

Lessons 1 – 5 are covered in a separate lapbook.

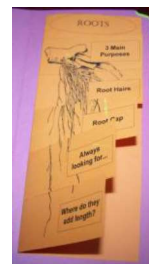
Exploring Creation With Botany

Lessons 6 - 13

Lapbook Assembly Guide

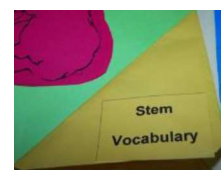
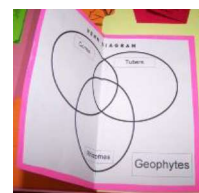
Inside of 1st Folder:

1. Leaves Booklet: Cut out each page of the booklet, and stack them together, with the title on top. Punch 2 holes on the left side of the stack, and secure with a ribbon or yarn, tied in a bow on the back of the booklet. We like to use green ribbon or yarn, so that it is the color of most leaves.
2. Leaf Details Booklet: Cut out all of the leaf shapes, and stack them together, with the title on top. Now, put a staple through the “stems” so that they are all secured together.
3. Leaf Anatomy Booklet: Cut out along the outer black line edges. Then, glue to a slightly larger piece of paper of a different color, so that there is a small border around the edges.
4. Root Systems Booklet: Cut out along the outer black line edges. Then, fold along the center line so that the title is on the front. Now, cut along the vertical line that is on the front cover, cutting through the title “Root Systems.” Now, you will have 2 “flaps” on front.
5. Geotropism Booklet: Cut out along the black line edges of the booklet. Fold along the center line so that the title is on the front.
6. Roots Booklet: Cut out along the outer black line edges of the booklet. Then, fold along the center vertical line, so that the words and graphic are on the outside. Now, cut along the dotted lines, creating “flaps.” See the picture.
7. Amazing Fact Booklet: Cut out along the outer black line edges of the booklet. Then fold along the center line so that the title is on the front.



Inside of 2nd Folder:

1. Cactus Booklet: Cut out along the outer black line edges of each page. Then fold along the center line so that the title is on the front.
2. Geophytes Booklet: Cut out along the outer black line edges of the Venn Diagram. Then glue to a slightly larger piece of paper of a different color, so that there is a small border around the edges. Now, fold down the center, vertically. Only one side of the booklet will be glued to the folder. See picture.
3. Woody & Herbaceous Stems Booklet: Cut out along the outer black line edges of each page. Then, stack them together, with the title on top. Punch a hole through the top of the trees, and secure with a metal fastener brad. The tree in the front will be smaller than the parts in the back. This helps to create the effect of being a real tree.
4. Stem Vocabulary Booklet: Cut out along the outer black line edges. Now, put the square on the table in front of you, with the words facing down. Fold each corner toward the center, so that the words are now showing on top. Once you have folded all 4 corners into the center, fold one corner over to meet the corner on the opposite side, creating a triangle. Cut out the label, and glue it to the outside. See picture on the right.



Continue ON.....



5. Oak Trees & Acorns Booklet: Cut out along the outer black line edges of each page. Then, stack them together, with the title on top. Place one staple through the stems to secure. See picture.

6. Why Did God Create Trees Booklet: Cut out along the outer black line edges of the booklet. Fold each curved side in toward the middle, so that the curved sides almost touch and the words are on the front. Now punch a hole in both circles on the curved edges. Secure with a loosely tied bow.



7. Amazing Facts Booklets (2): Cut out along the outer black line edges, and fold along the center line so that the title is on the front.

8. Layers of a Tree Trunk Booklet: Cut out along the outer black line edges of each page. Now, stack them together with the title on top and each page getting progressively longer. Secure with a staple in the center of the top of the stack. See picture on the right.



Inside of 3rd Folder:

1. Twig Booklet: Cut out along the outer black line edges of the booklet. Then glue to a slightly larger piece of paper of a different color, creating a small border around the edges.

2. Lichen Booklet: Cut out along the outer black line edges. Then fold along the horizontal lines, accordion-style, so that the title is on top, and a blank page is on the bottom.

3. Phototropism Booklet: This book is tricky. It is a pop-up book. You'll need to look at the picture below also. Ok...here goes. Cut out the large base booklet (with the title), and fold it along the center line, so that the title is on the front. Now, cut out the page with the writing lines on it, the flower with its base, the sun, and the fence. On the fence, notice that there is a dotted line...cut on that line ONLY. Glue the edge of the sun (about 4 rays and a small portion of the bottom of the center part (see picture)) to the page with the lines...notice that there is a curved line that indicated where this should be glued. Now, fold this page with the lines and the sun, so that the tips of the top rays touch the bottom of the page with the lines. Create a crease. Glue this page (below the crease – where the lines are ONLY) to the left side of the base booklet. When you unfold the page with the lines and sun on it, you will have a sun that is above the level of the top of the base booklet. Now, put some glue...VERY LITTLE GLUE (or staples) around the LEFT, RIGHT, and BOTTOM edges ONLY of the fence. Put this on the right side of the base booklet. Take your flower with its base attached, and put it into the little slice that you made in the fence. Your base is wider than the slice in the fence (so that it will stay in), so you will have to tilt it a little to get it into the slice. Now, you will have a flower that will move in and out (up and down).



4. Seedless Vascular Plants Booklet: Cut out along the outer black line edges of each page, noting that the tabs on top of each page are a different length. Stack the pages together, with the title page on top, and with the tabs getting progressively longer toward the back. Secure with 2 staples along the left side of the booklet. See picture.



5. Bristlecone Pine Booklet: Cut out along the outer black line edges of the booklet. Fold in the center, vertically, so that the picture of the ark meets in the middle.

6. 3 Types of Gymnosperm Leaves Booklet: Cut out along the outer black line edges of each page of the booklets. Stack them together, so that the title is on the front. Punch 2 holes in the top, and secure with a ribbon or yarn.

Continue ON.....



Inside of 4th Folder:

1. Cones Booklet: Cut out along the outer black line edges of each page. Stack them all together, so that the title and graphic are on top. Punch a hole through the top, and secure with a metal brad fastener.
2. Nature Journal Booklet: Cut out along the outer black line edges. Fold along the center line, so that the title is on the front.
3. Life Cycle of Moss Booklet: Cut out along the outer black line edges of the page. Glue to a slightly larger page of a different color, and leave a small border around the edges.
4. Amazing Fact Booklets (3): Cut out along the outer black line edges of each booklet. Fold along the center lines so that the titles are on the front.
5. Ginkgo Biloba Booklet: Cut out along the outer black line edges, and then fold along the center horizontal line so that the title and graphic are on the front. Now, fold along the center “imaginary” vertical line, so that the booklet will fit nicely in the fold of the base folder.
6. Famous People Booklet: Cut out along the outer black line edges. Fold along the center line so that the title is on the front.
7. Lichens as Pollution Monitors: Cut out along the outer black line edges. Fold along the center line so that the title is on the front.

Exploring Creation With Botany

Lessons 6 – 13 Lapbook

Teacher's Guide

Here, you'll find information to supplement your study. Jeannie Fulbright's book is so wonderfully filled with knowledge and wisdom. All of the information needed to complete all of the booklets can be found on the pages of her book. Below, I will tell you which pages hold specific "answers." Also, you'll find many other sites listed, where you may want to go for extra information, coloring pages, games, crafts, and ideas to extend your study.

I have been questioned as to *why I merely give you the page numbers for the answers instead of the answers themselves*. If I were to give you ONLY the answers, then there would be no need for you to have Jeannie's awesome book...right? Also, this will require the parent to actually read the book as well, which was Jeannie's intention from the beginning. So, I hope that you understand my decision to not "just give the answers." It really is a calculated plan on mine and Jeannie's part.

Lesson 6:

- Leaves Booklet: Answers found on pages 87-89
- Leaf Anatomy Booklet: Answers can be found on page 96
- Leaf Details Booklet: Answers can be found on pages 97-102

Additional Resources for Lesson 6:

- * Excellent graphics and explanations of leaf anatomy: <http://www.botany.uwc.ac.za/ecotree/leaves/InsideLeaf.htm>
- * Detailed explanation of photosynthesis: <http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookPS.html#What%20is%20Photosynthesis?>
- * Another site about photosynthesis: <http://photoscience.la.asu.edu/photosyn/education/learn.html>
- * Identifying Leaves / Nature Collage Idea: <http://www.activityvillage.co.uk/autumn%20crafts%20nature%20collage.htm>
- * Leaf Shapes: <http://www.theseedsite.co.uk/leafshapes.html>
- * Leaf Colors: <http://www.sciencemadesimple.com/leaves.html>

Lesson 7:

- Roots Booklet: Answers can be found on pages 107-110
- Geotropism Booklet: Answers can be found on page 111
- Root Systems Booklet: Answers can be found on pages 111-112
- Geophytes Venn Diagram Booklet: Answers can be found on pages 112-113

Additional Resources for Lesson 7:

- * This site has a good bit of information about root systems: <http://www.theteachersguide.com/plantsflowers.htm>
- * This site has a video about how plants grow in space: http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/How_Plants_Grow_in_Space.html

Lesson 8:

- Stem Vocabulary Booklet: Answers can be found on pages 117-118
- Woody & Herbaceous Stems Booklet: Answers can be found on pages 118-120
- Cactus Booklet: Answers can be found on page 121
- Phototropism Booklet: Answers can be found on pages 121-123

Additional Resources for Lesson 8:

- * Phototropism video: http://www.epress.com/w3jbio/vol17/fern/video_1.htm

Lesson 9:

- Why Did God Create Trees Booklet: Answers can be found on pages 125-126
- Oak Trees & Acorns Booklet: Answers can be found on page 127
- Twig Anatomy Booklet: Answers can be found on page 129
- Tree Trunk Layers & Their Jobs Booklet: Answers can be found on pages 131-132

Additional Resources for Lesson 9:

- * Tree Study (click on the name of the tree, and you will get information and pictures) - <http://www.marin.cc.ca.us/cnps/TreeStudyKit.html>
- * Tree Craft: <http://www.kinderart.com/littles/treetrunk.shtml>
- * How a Tree Grows Lesson: <http://www.woodmagic.vt.edu/html/Activities/htg3.htm>

Lesson 10:

- Bristlecone Pines Booklet: Answers can be found on pages 135-136
- Gymnosperm Leaves Booklet: Answers can be found on page 139
- Cones Booklet: Answers can be found on pages 139-142
- Ginkgo Biloba Booklet: Answers can be found on page 143

Additional Resources for Lesson 10:

- * Meet Methuselah, the world's oldest bristlecone pine: <http://sonic.net/bristlecone/>
- * More bristlecone pines: http://gorp.away.com/gorp/resource/us_national_park/nv/pin_gb.htm
- * Gymnosperm: <http://www.backyardnature.net/gymnos.htm>
- * Pinecone bird feeder craft: <http://www.kidsdomain.com/craft/birdfeeder2.html?trnstl=1>
- * Ginkgo Biloba Tree Information: <http://www.xs4all.nl/~kwanten/thetree.htm>

Lesson 11:

- Seedless Vascular Plants Booklets: Answers can be found throughout the entire lesson

Additional Resources for Lesson 11:

- * Click on the name of the fern, and you will see pictures: <http://www.marin.cc.ca.us/cnps/FernStudyKit.htm>
- * Nice site about ferns: <http://www.home.aone.net.au/~byzantium/ferns/about.html>

Lesson 12:

- Life Cycle of Moss Booklet: Answers can be found on pages 152-153
- Lichen Booklet: Answers can be found on pages 154-155
- Lichens as Pollution Monitors Booklet: Answers can be found on page 156

Additional Resources for Lesson 12:

- * Life Cycle of Moss with animation: <http://www.sumanasinc.com/webcontent/animations/content/moss.html>
- * Lots of great information about lichens: <http://www.lichen.com/>
- * More lichen information: <http://www.backyardnature.net/lichens.htm>

Lesson 13:

- Famous People Who Kept Journals Booklet: Answers found throughout lesson
- Nature Journal Booklet: Answers found throughout lesson

Additional Resources for Lesson 13:

- * Great site for starting your own nature journal (free pages): <http://www.nwf.org/Kids/Ranger-Rick/Parents-and-Educators/Ranger-Ricks-Nature-Notebook.aspx>

Additional Resources:

- * SO CUTE site with TONS of information and fun: <http://www.treetures.com/Meet2.htm>
 - * LOTS of lessons about trees: http://www.inhs.uiuc.edu/chf/pub/tree_kit/teacher/index.html
 - * Great idea: <http://sftrc.cas.psu.edu/LessonPlans/Forestry/WoodLike.html>
-

Cactus Paint:

Need: starch, water, green paint, salt, paper

Directions: Use green salt paint-- mix together 1/4 cup concentrated starch, 1/4 cup water, 2 tbsp. green tempera paint and 1 cup table salt. Paint a cactus using this paint! when the paint dries- it will have a neat texture

Snack

Crunchy Cacti

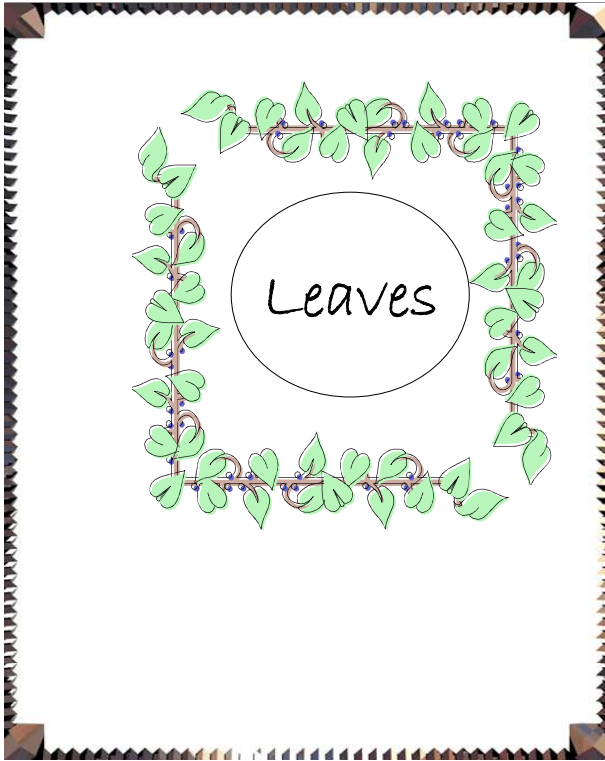
Ingredients: 1 12 oz. package butterscotch chips

2 tablespoons peanut butter

1 6 oz. can chow mein noodles

Green food coloring

Directions: Melt chips, stir in peanut butter and food coloring. Add noodles and coat well. Remove from heat. Working atop wax paper, have each child fashion a golf-ball sized portion of the mixture into a cactus shape. Allow to harden, peel the cactus from the paper and chow down. Makes approximately 15 to 20 crunchy cacti.



What are
"stomata," and
what is the
origin?

Why are leaves of
a plant so
important?

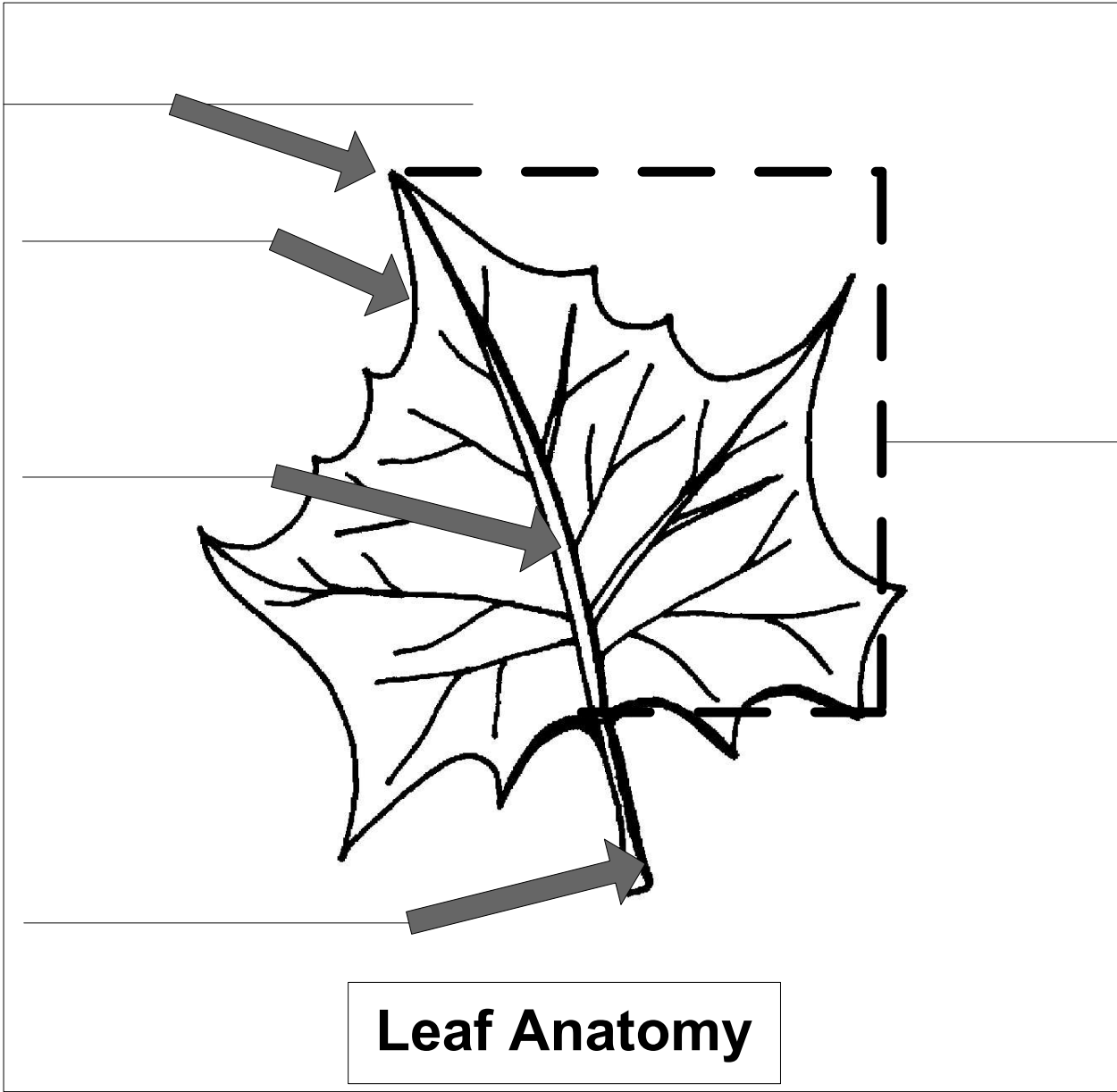
What would
happen if a plant
lost all of its
leaves?

How does the leaf
use Carbon
Dioxide?

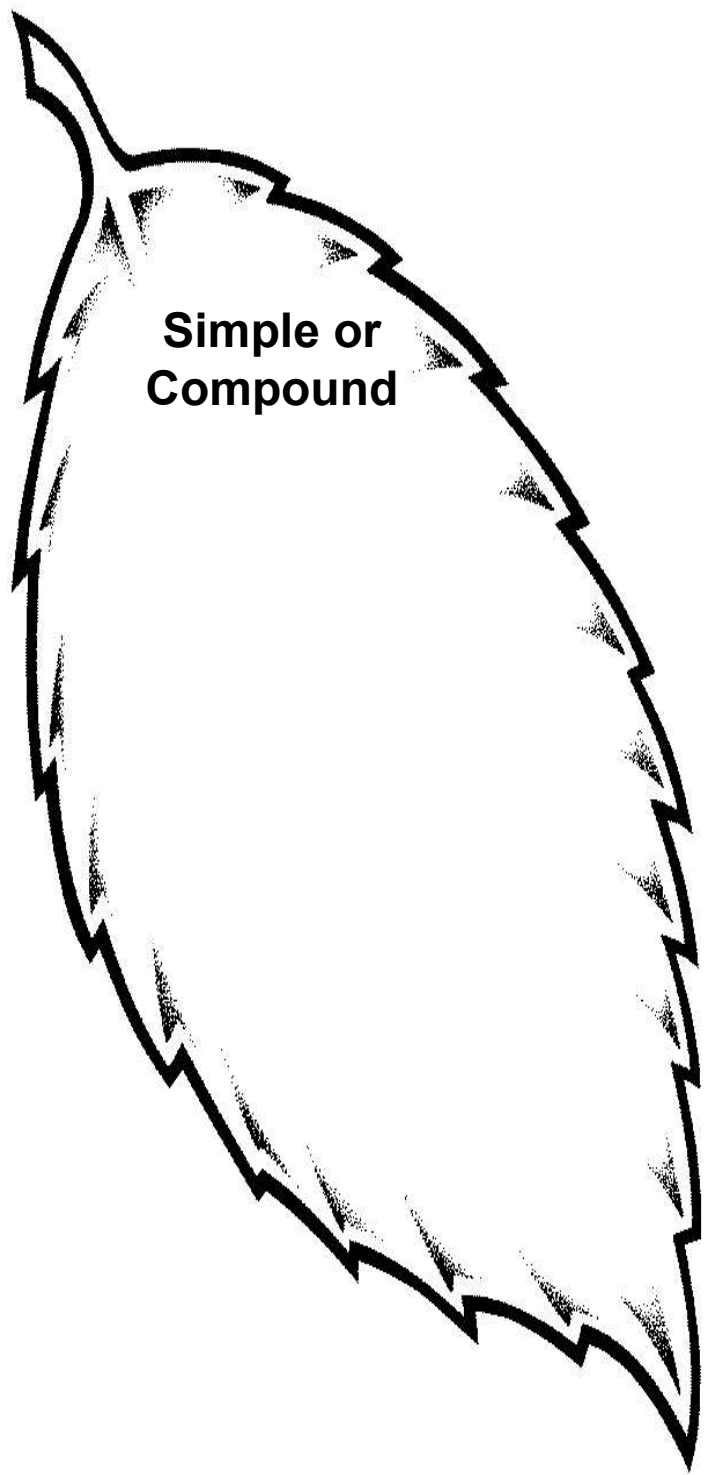
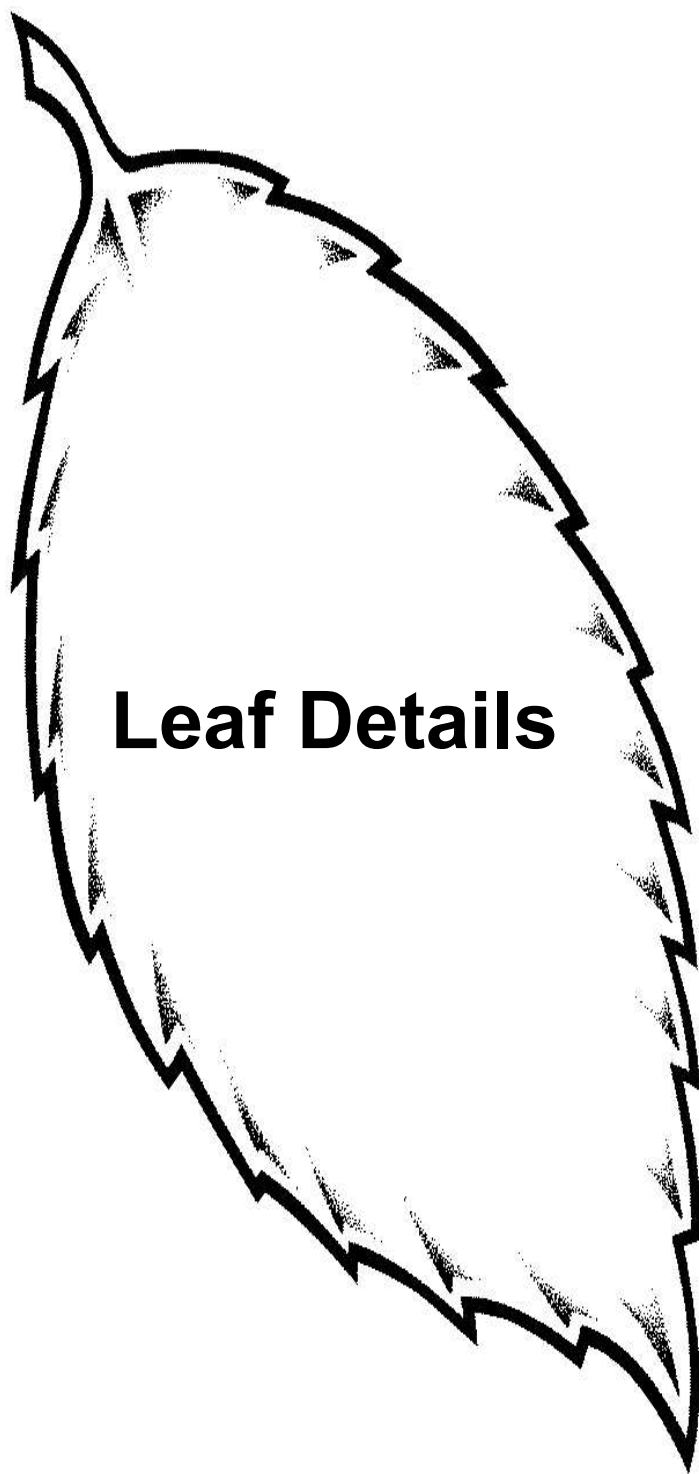
Photosynthesis

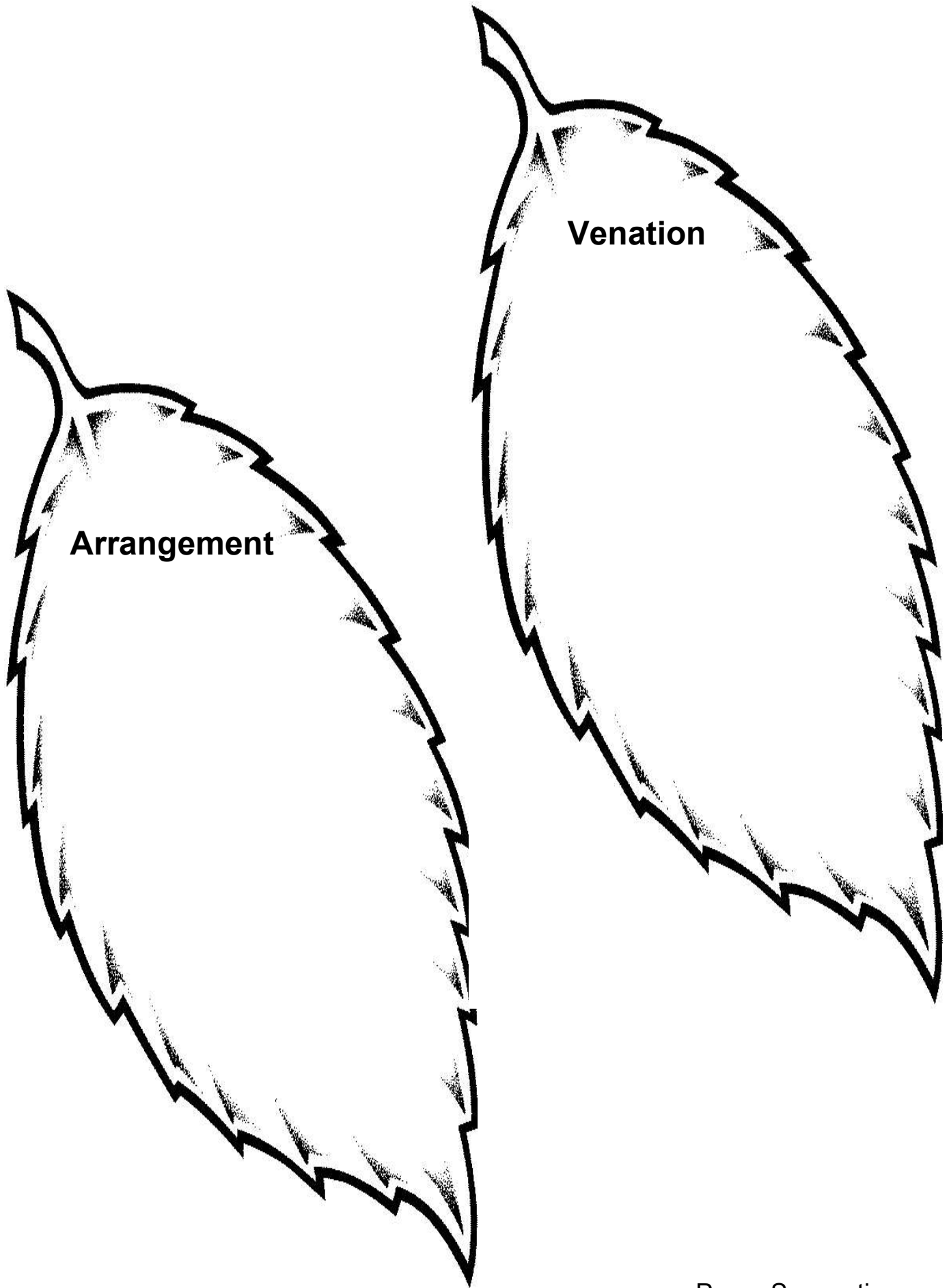
Chlorophyll

Transpiration



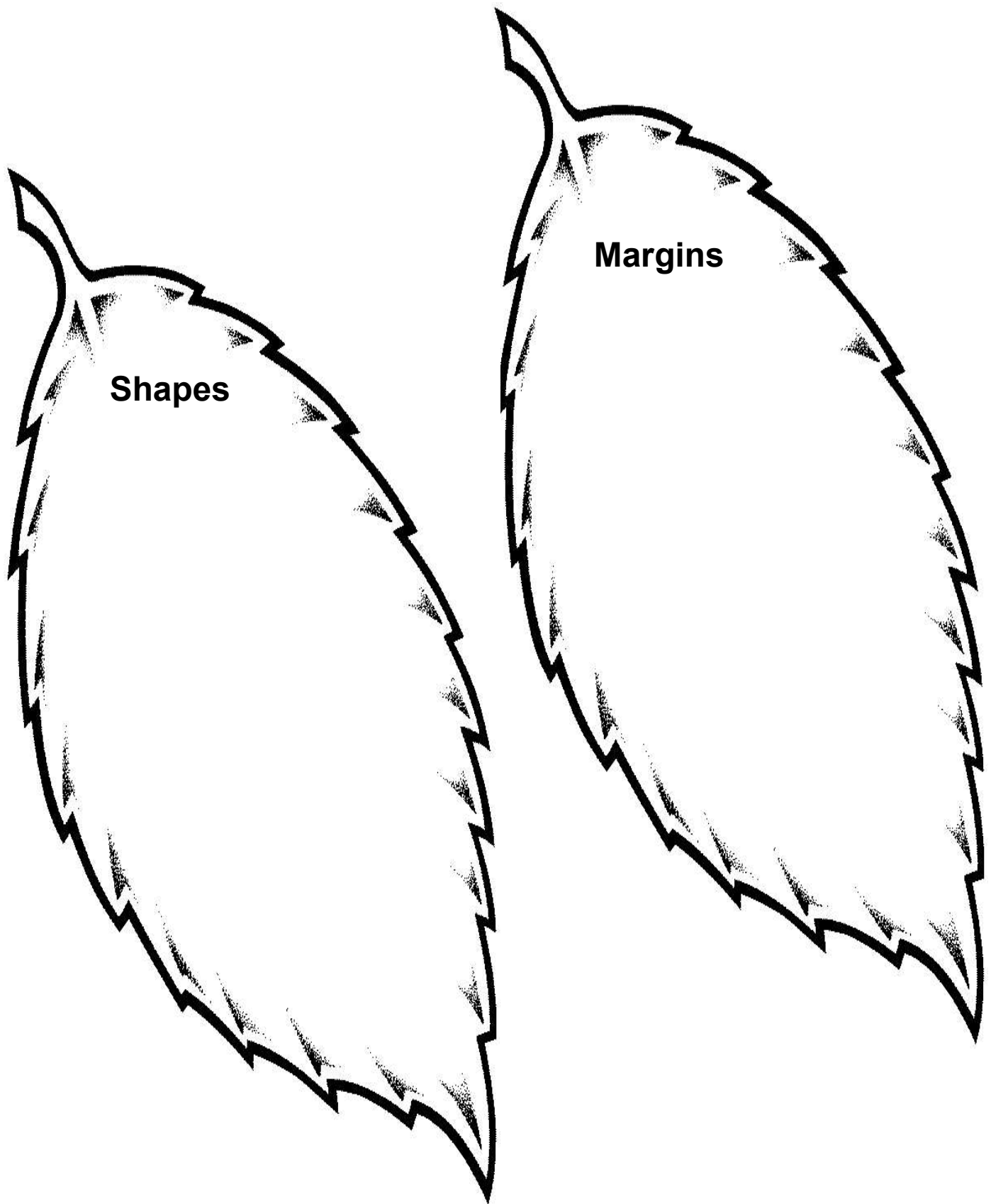
Lesson 6

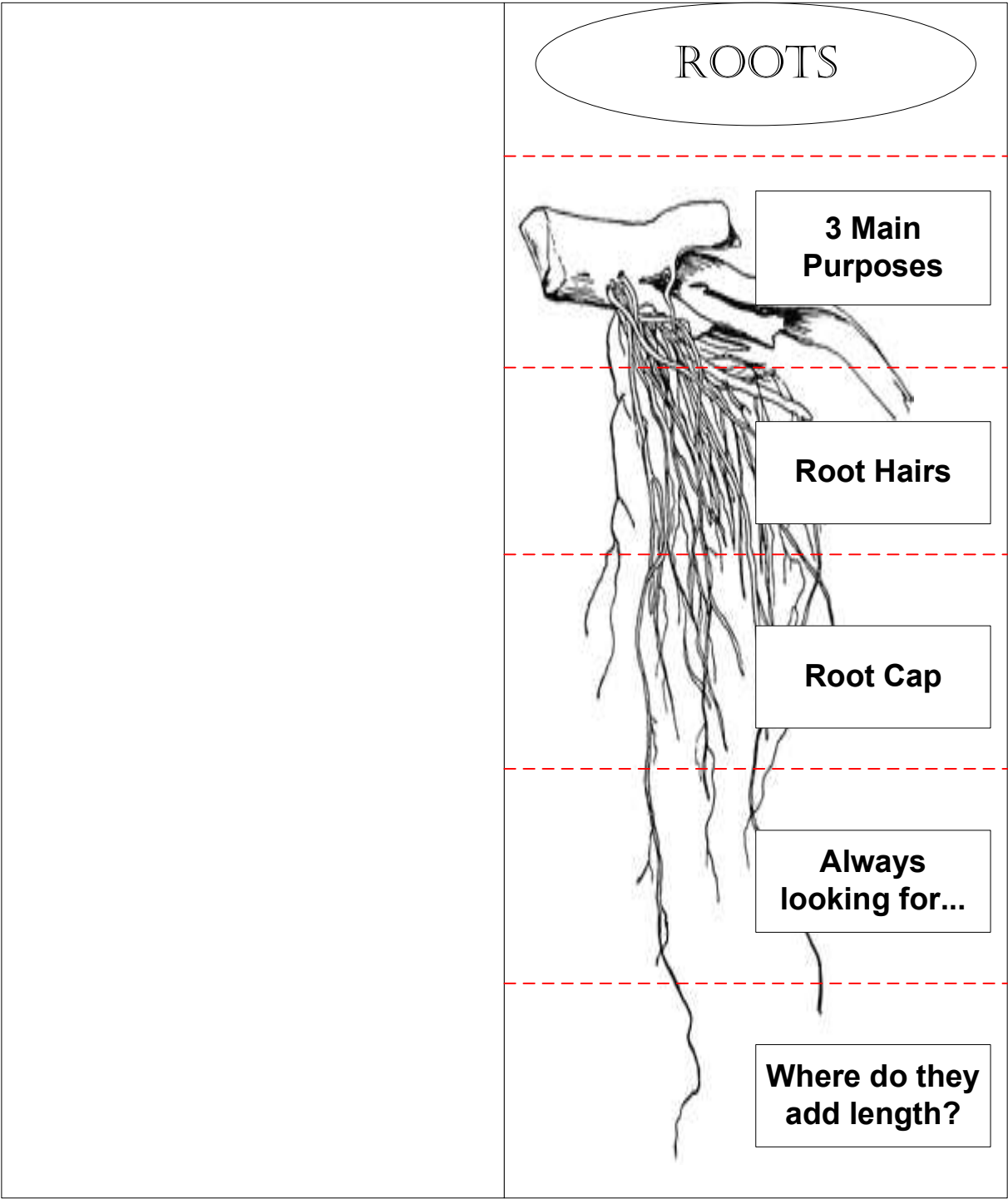




Arrangement

Venation







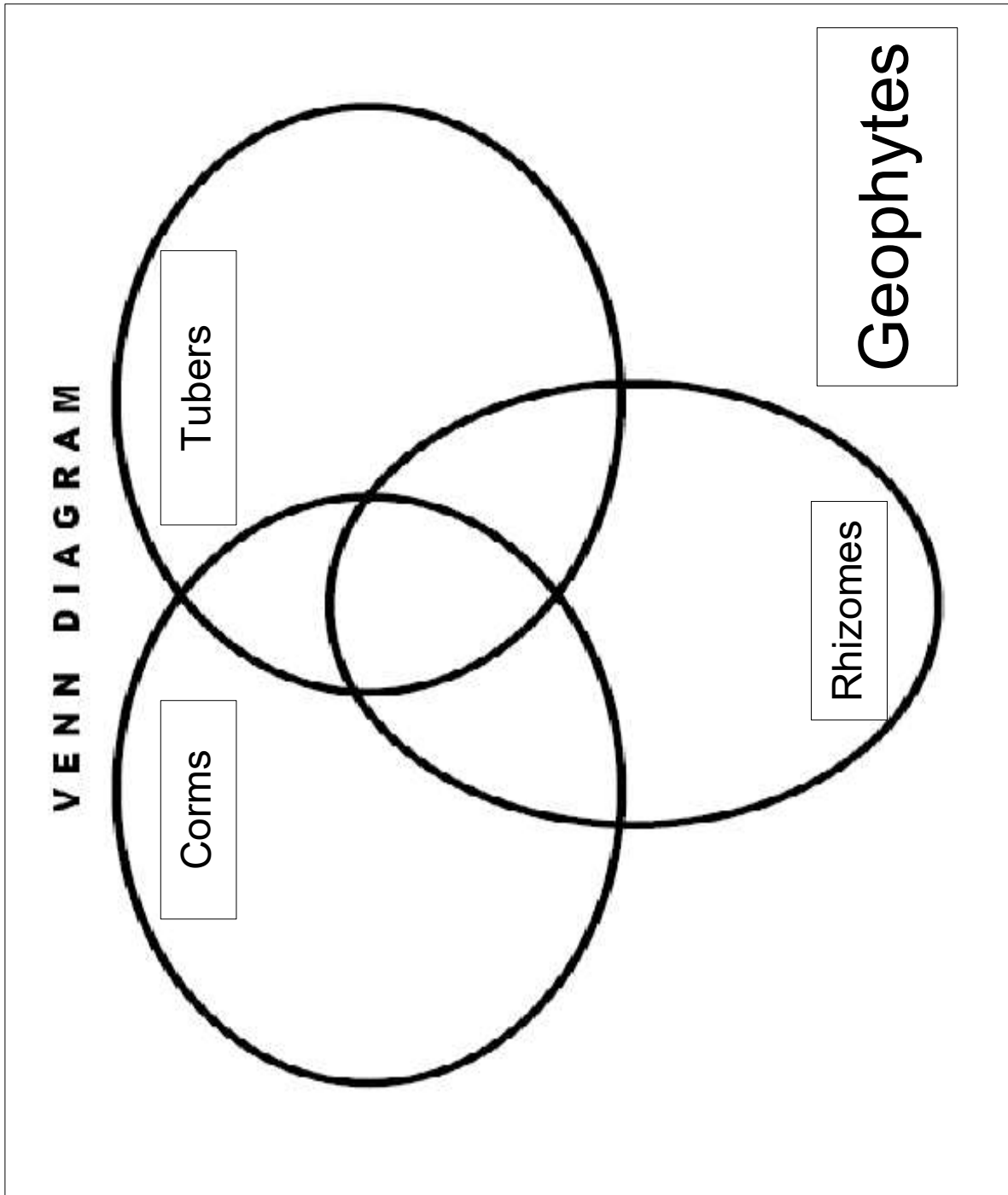
Geotropism

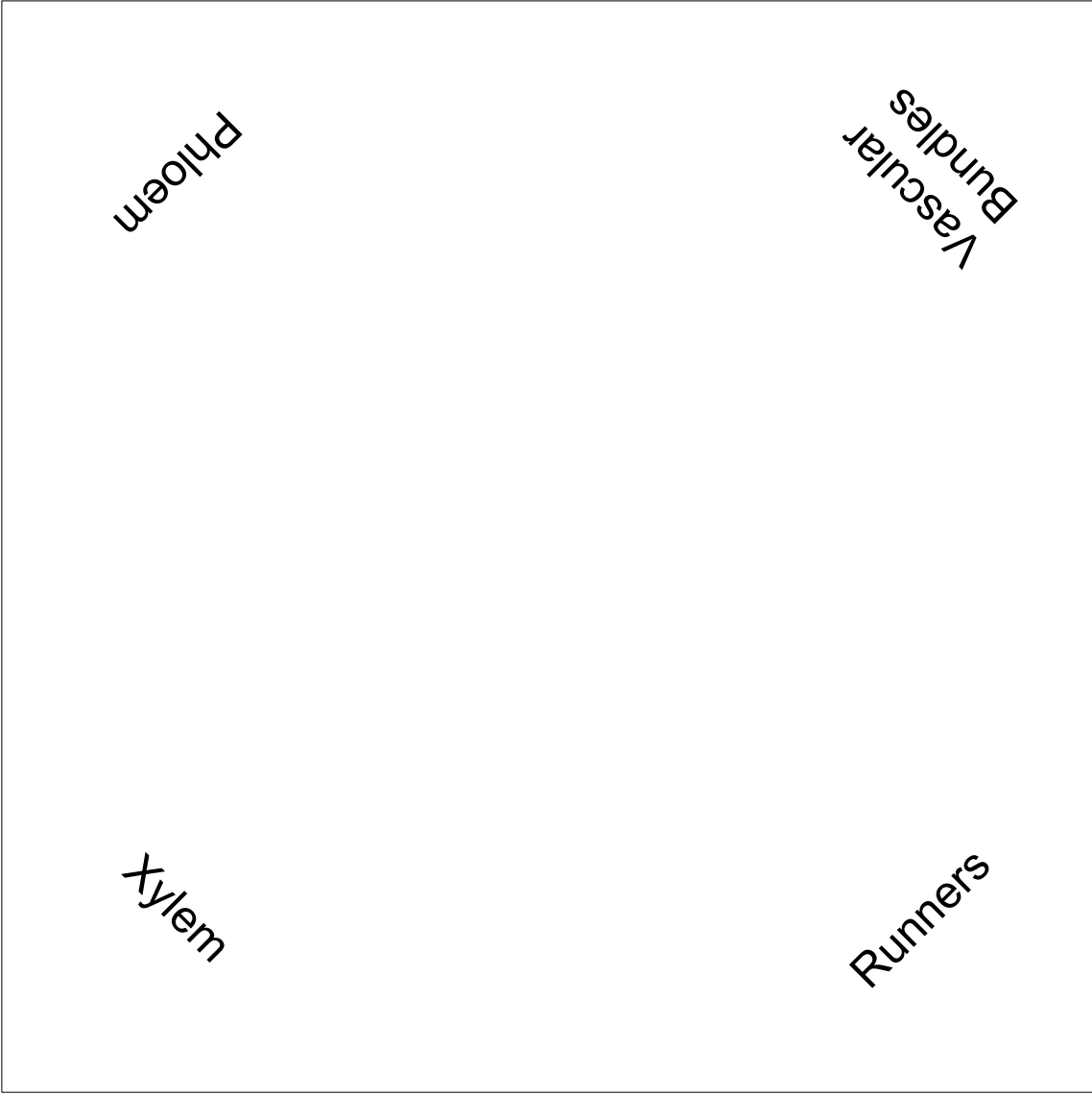
Root Systems

Taproot Systems

Fibrous Root Systems

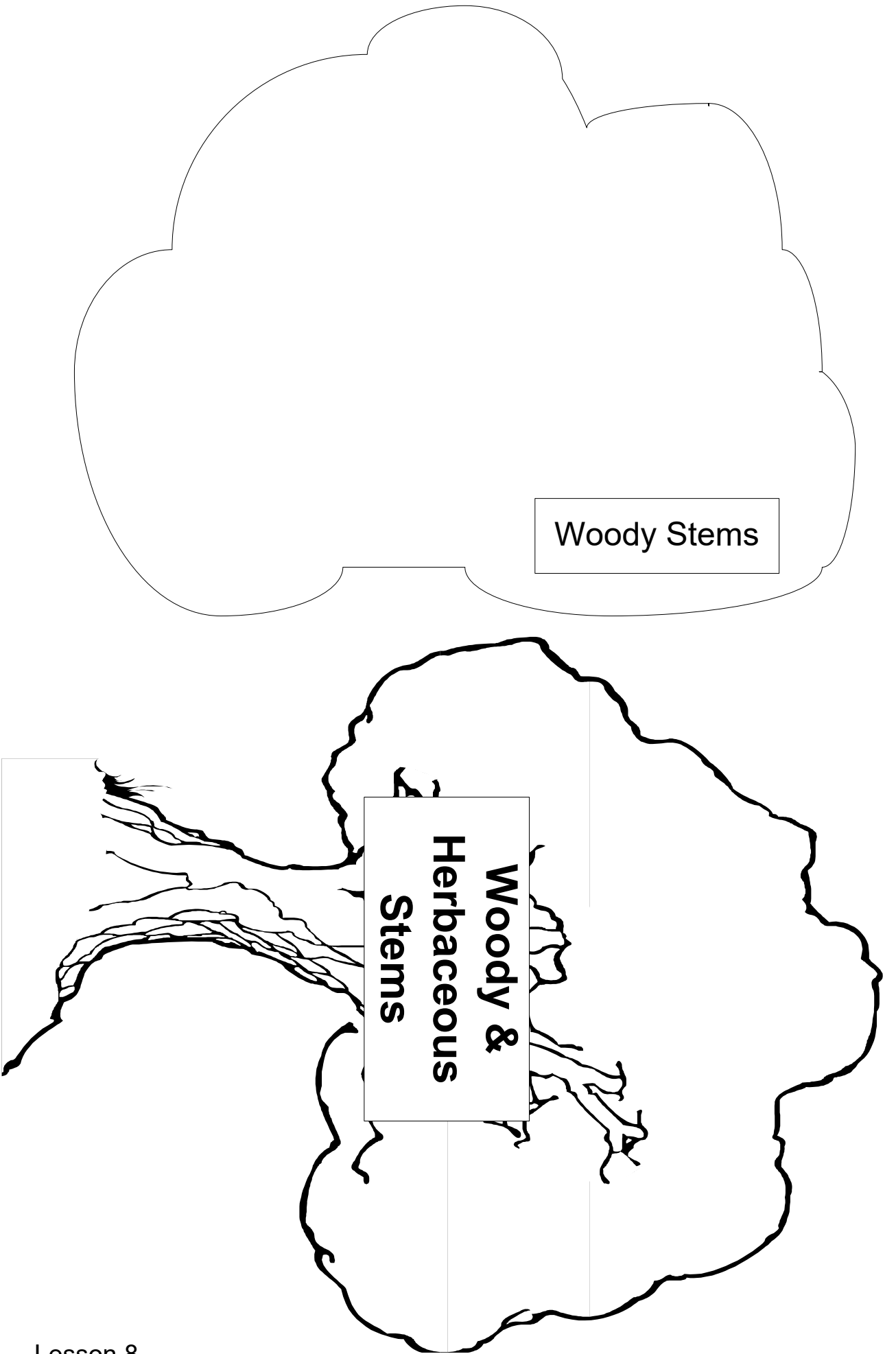
Geophytes

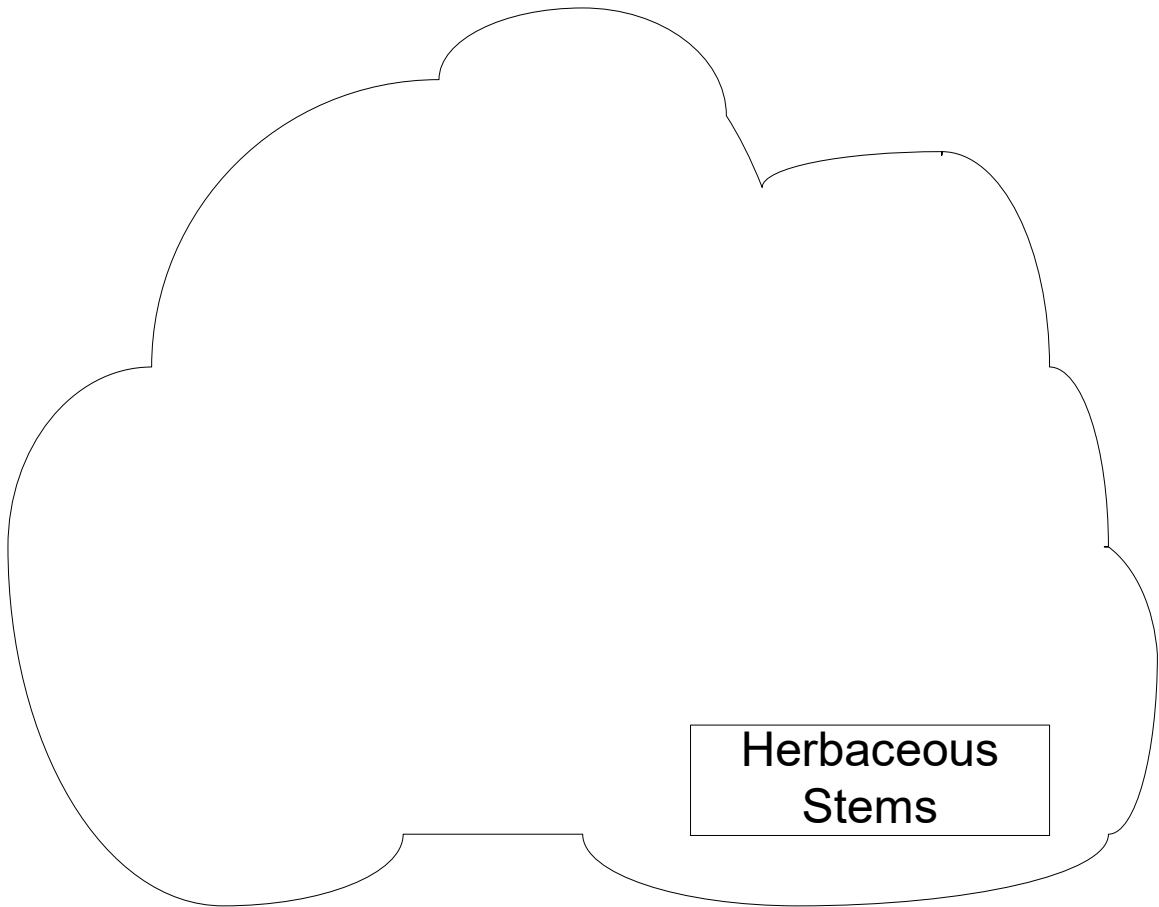
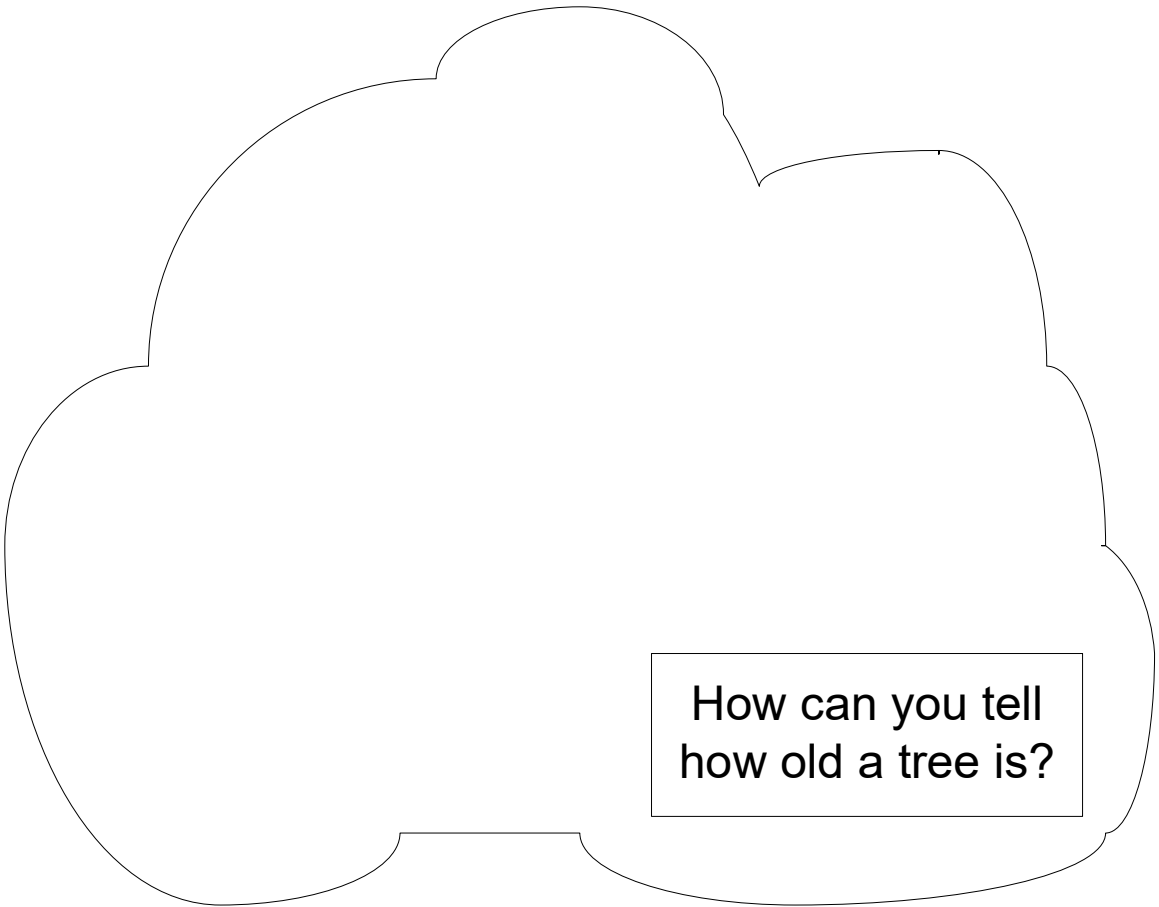


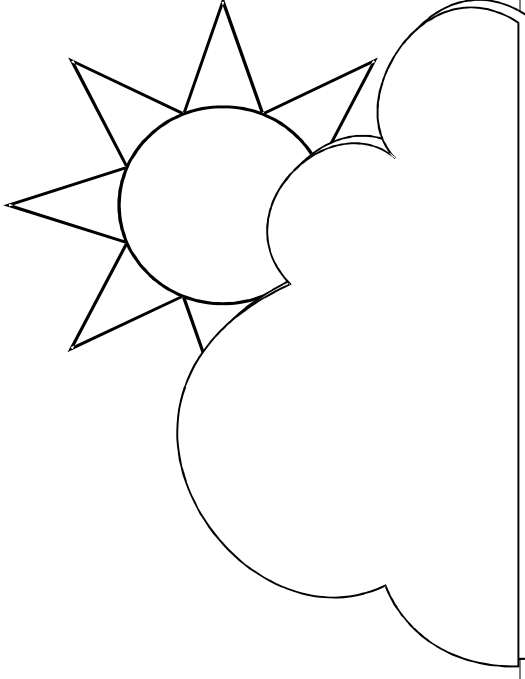


Lesson 8

**Stem
Vocabulary**



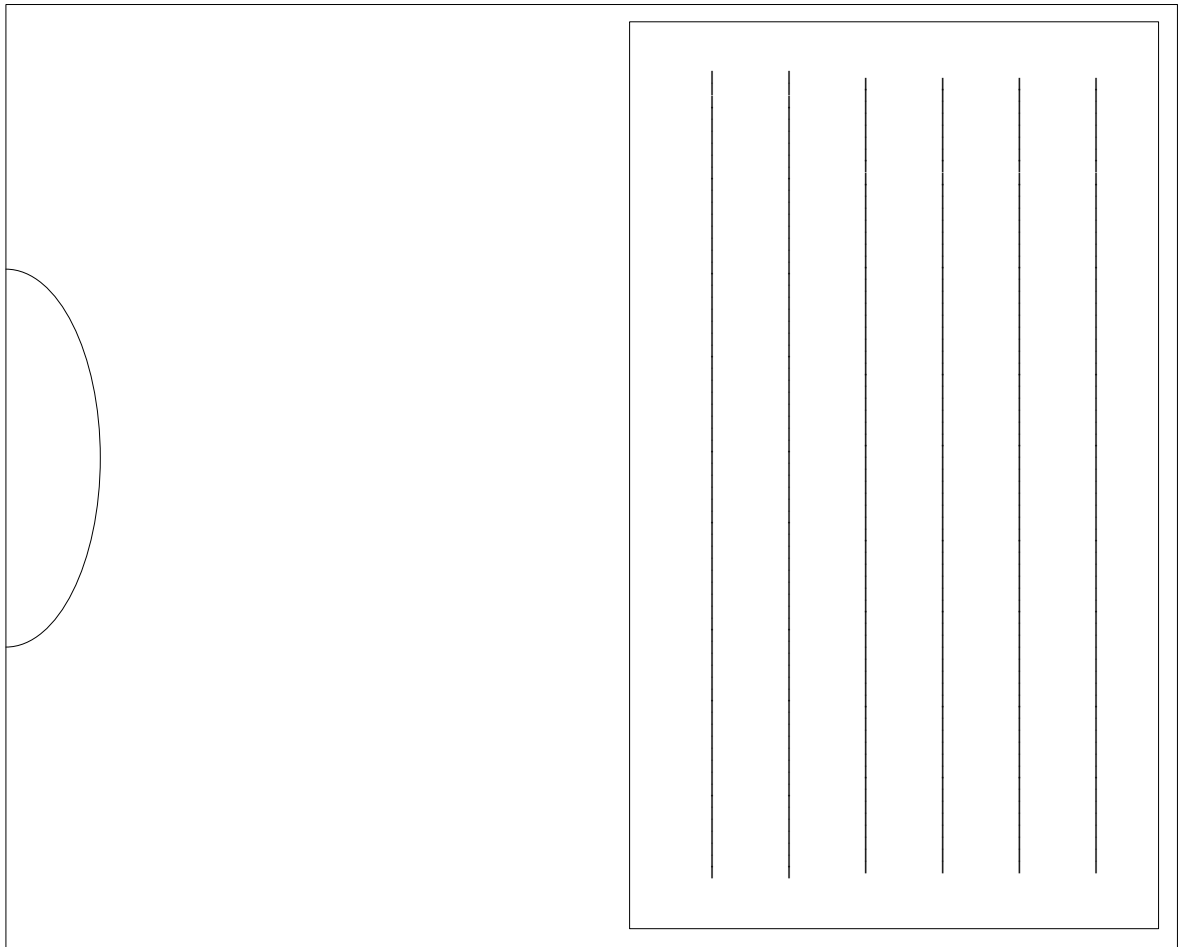
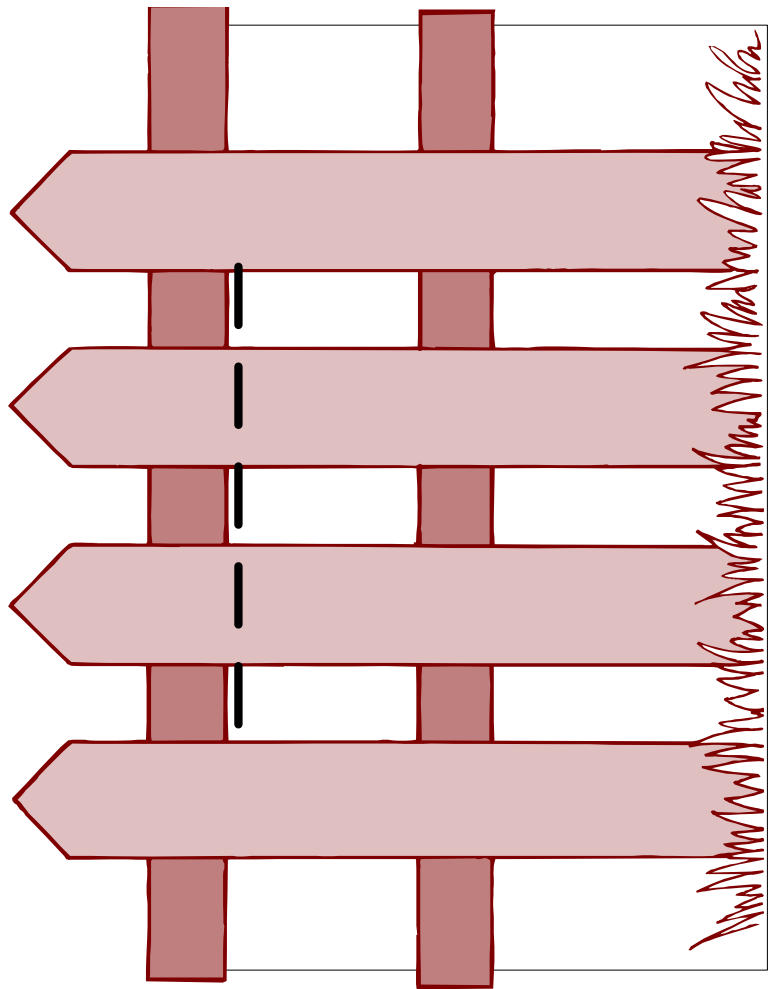




**What is
Phototropism?**

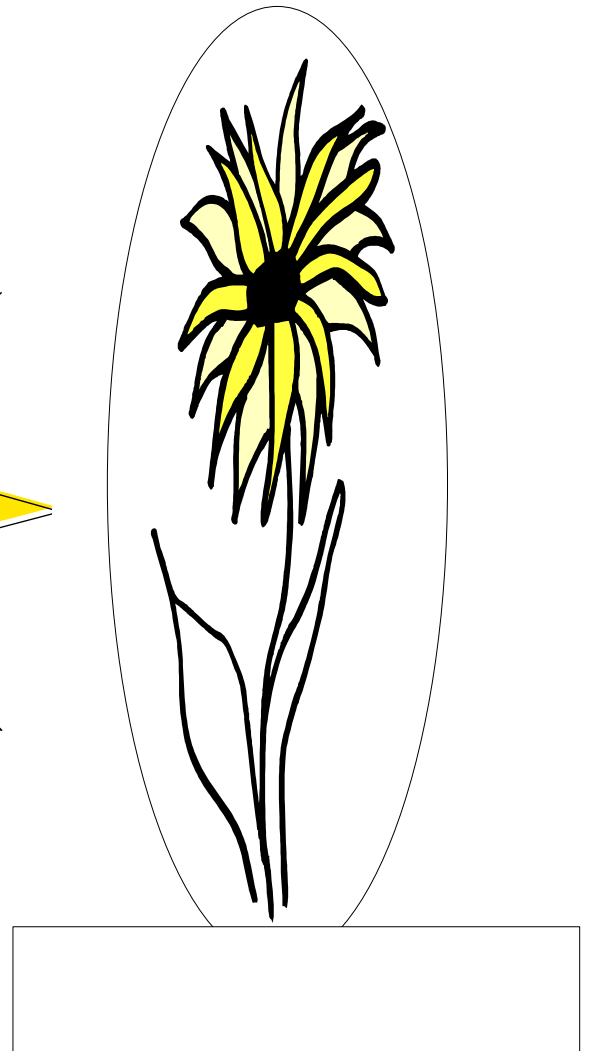
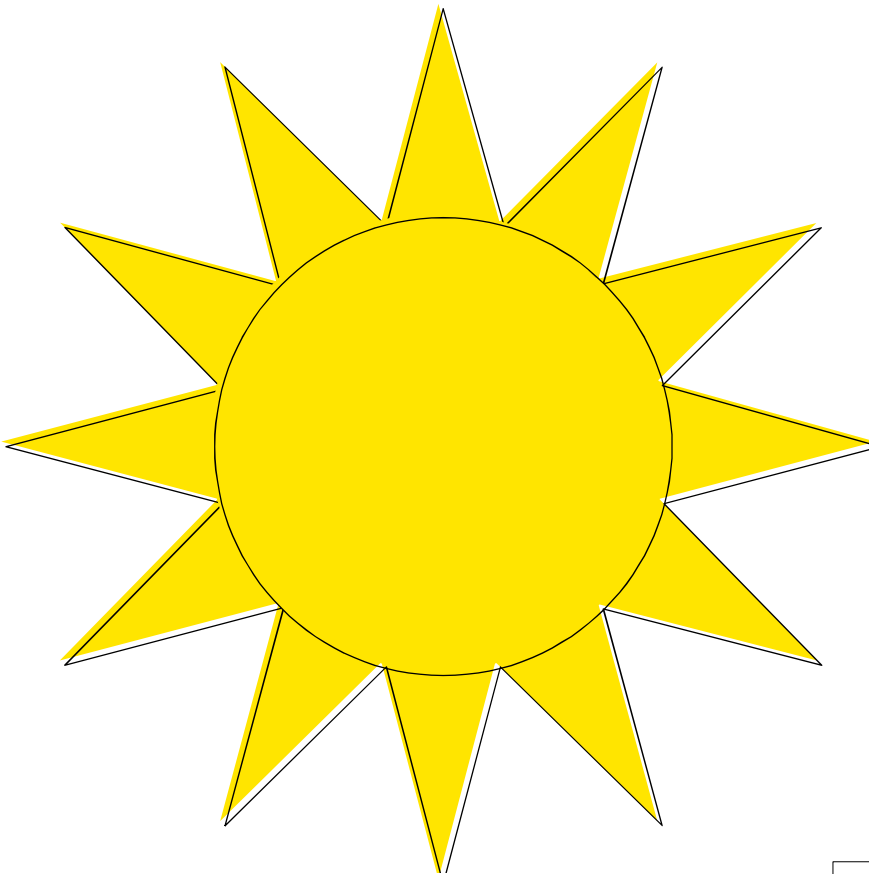
This is part of the inside of the Phototropism booklet. Print on white cardstock with colored ink.

Lesson 8

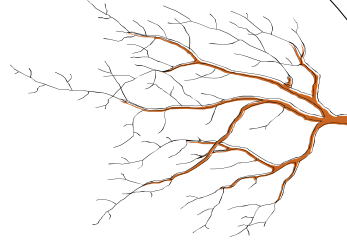


Lesson 8

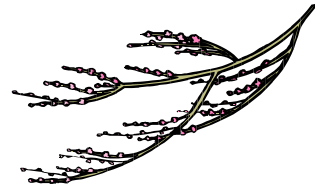
This is part of the inside of
the Phototropism booklet.
Print on white cardstock with
colored ink.

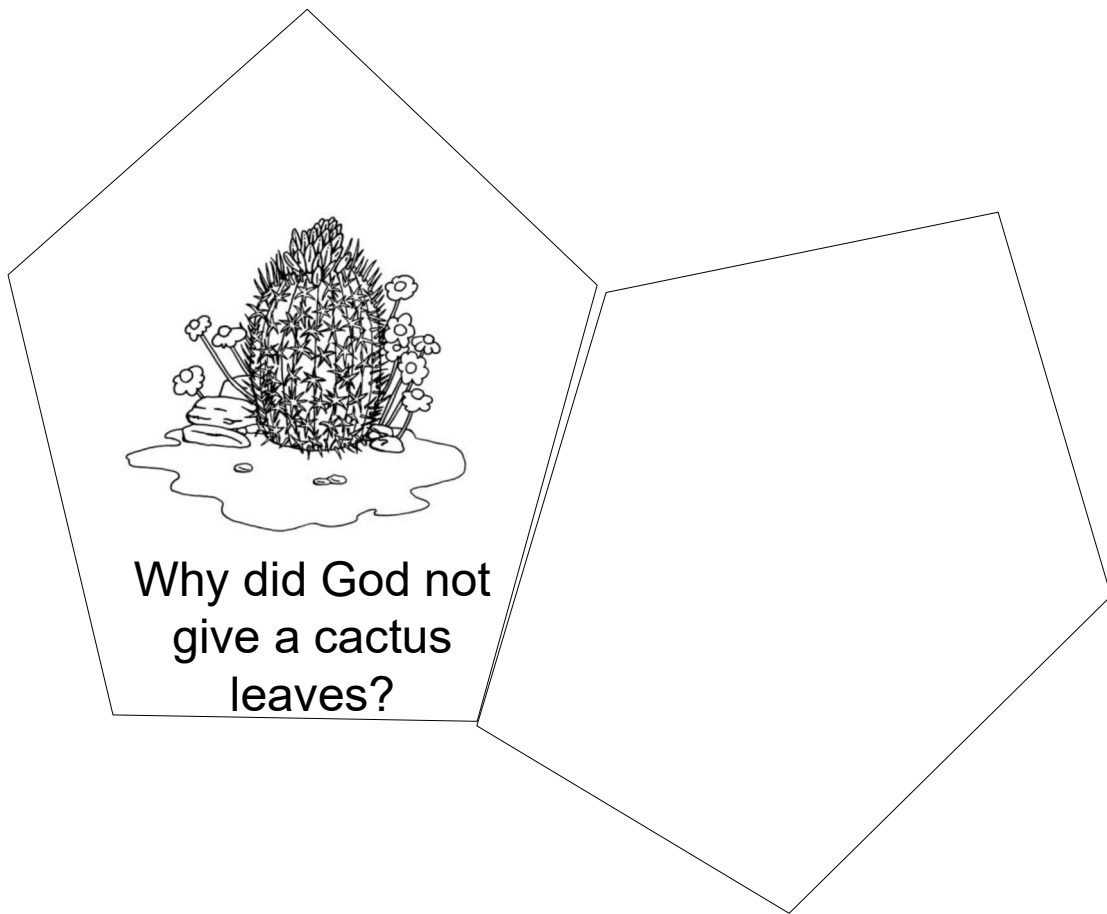


Why Did God

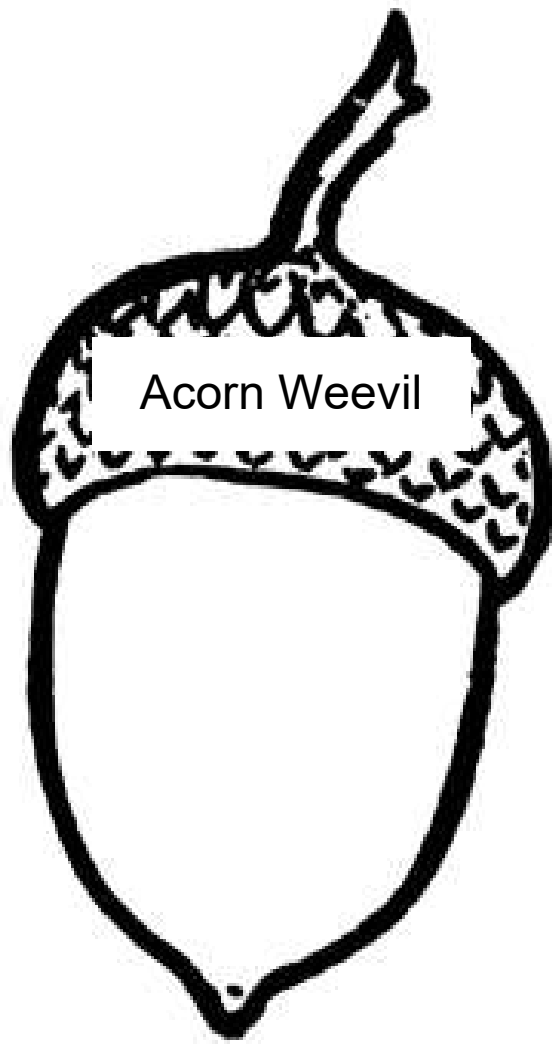


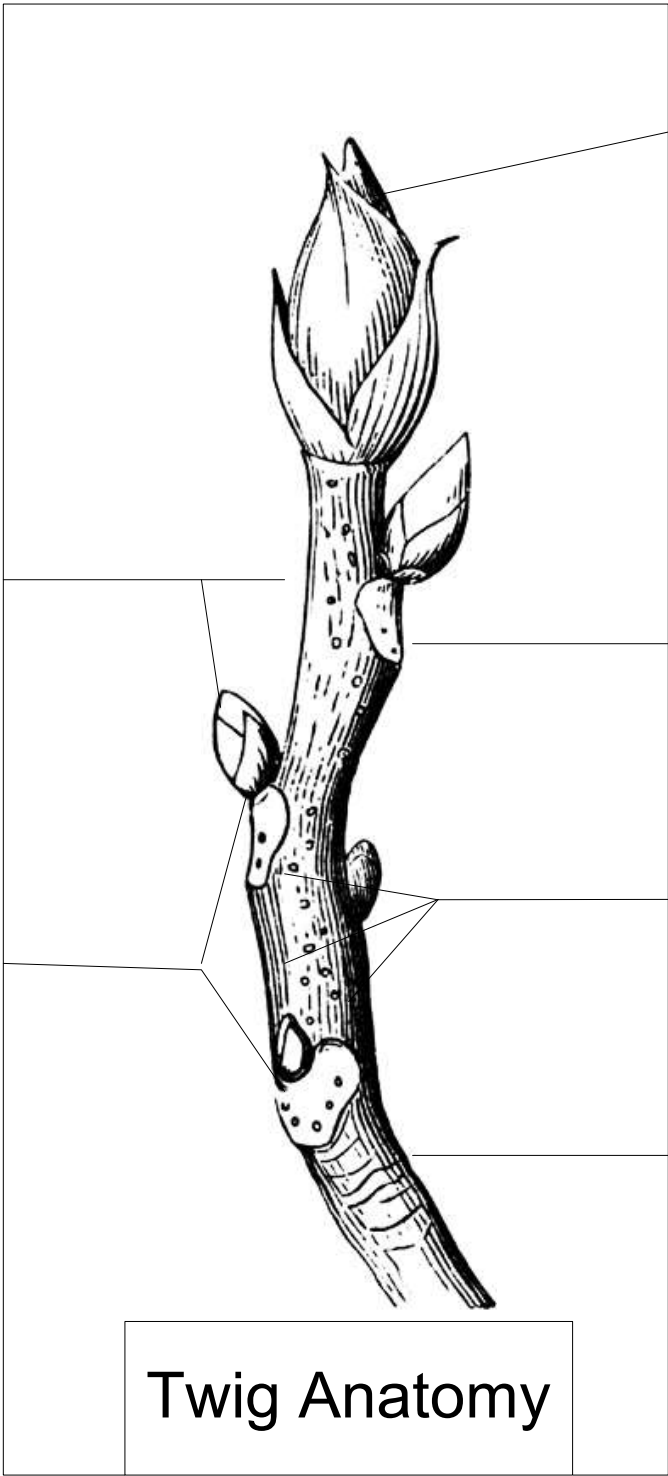
Create
Trees?



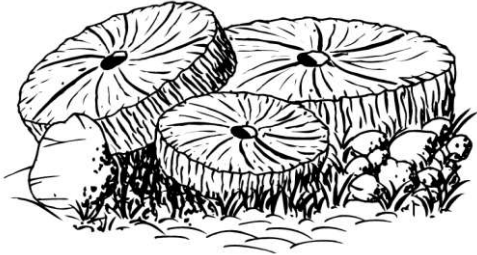








Layers of a Tree Trunk & Their Jobs



Heartwood

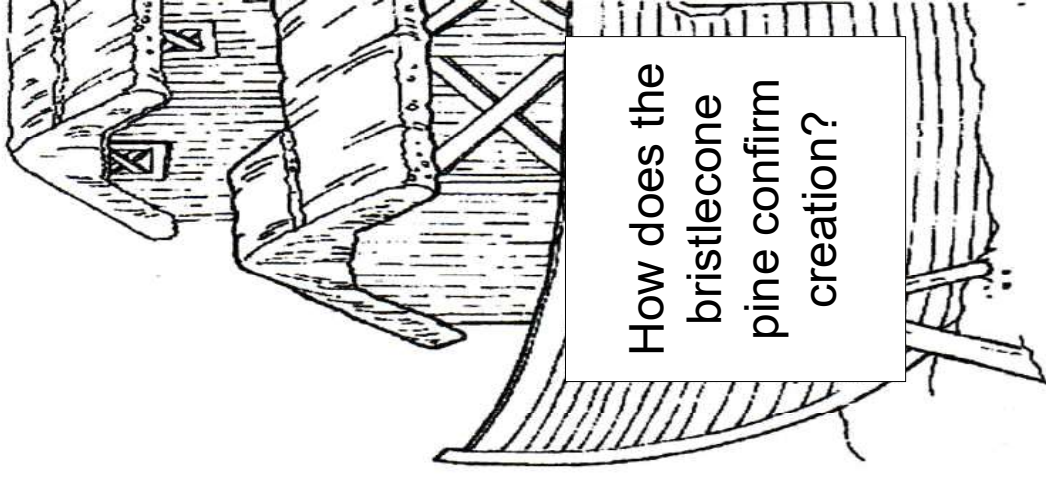
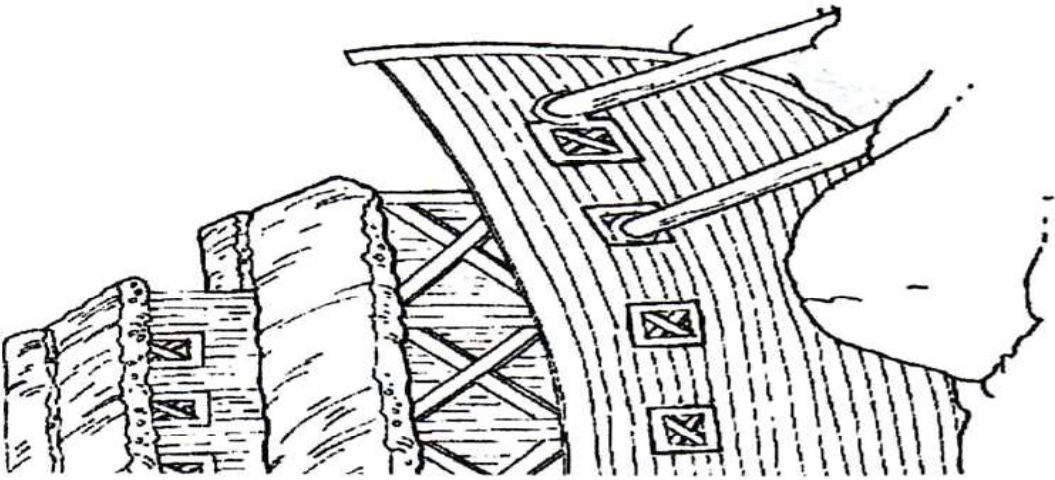
Sapwood

Vascular Cambium

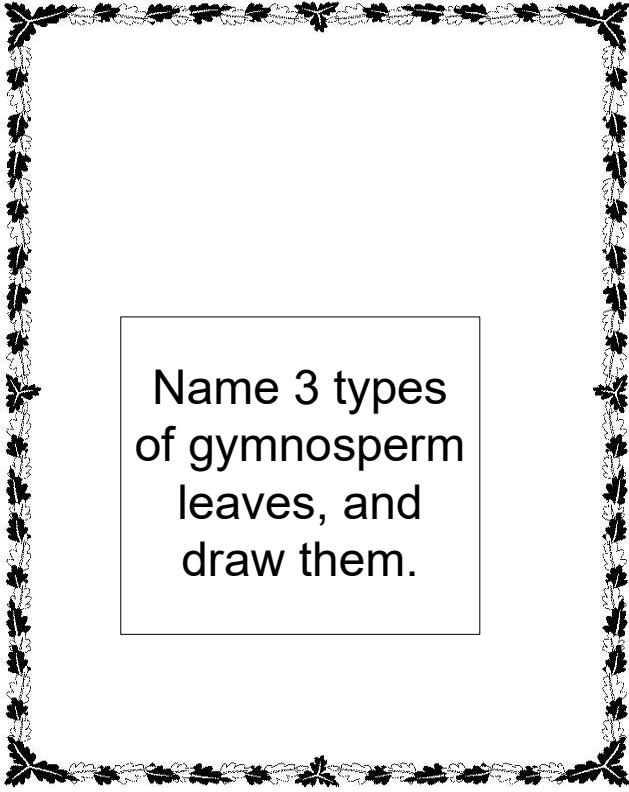
Lesson 9

Inner Bark

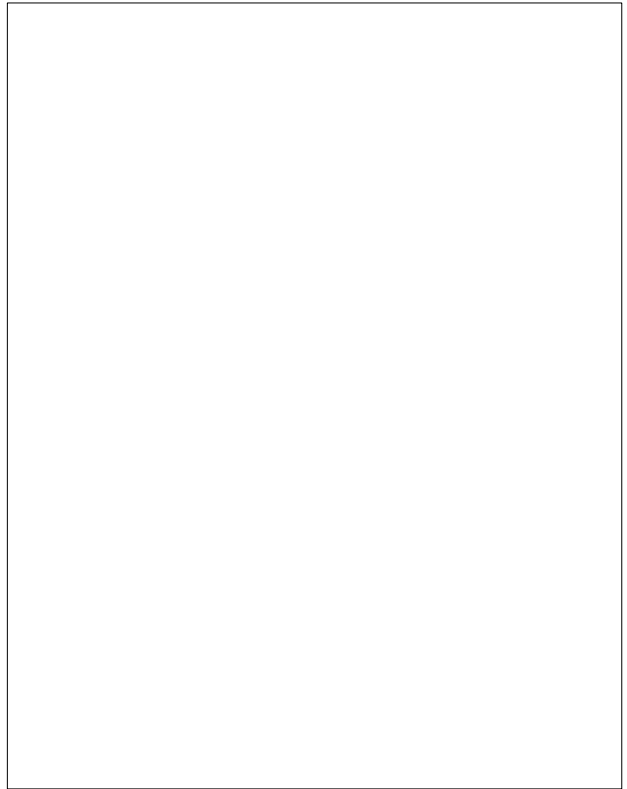
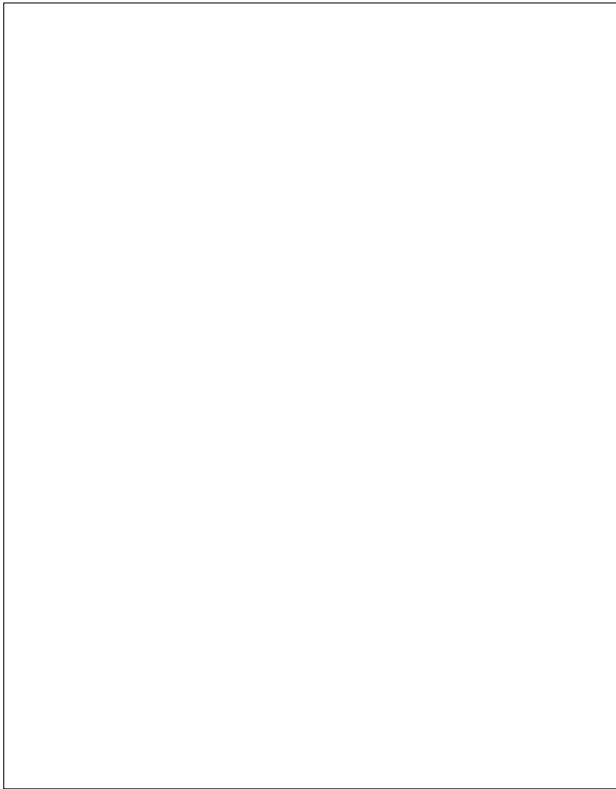
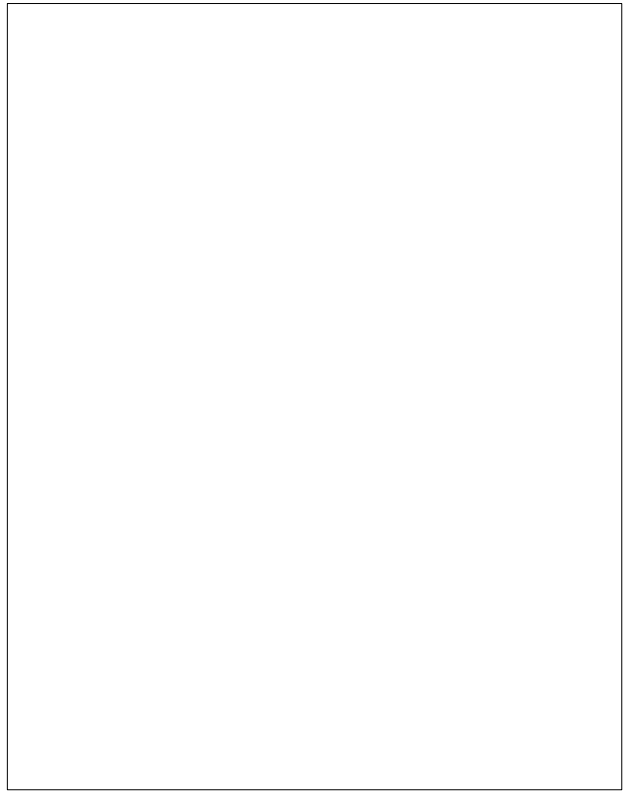
Bark



How does the
bristlecone
pine confirm
creation?



Name 3 types
of gymnosperm
leaves, and
draw them.

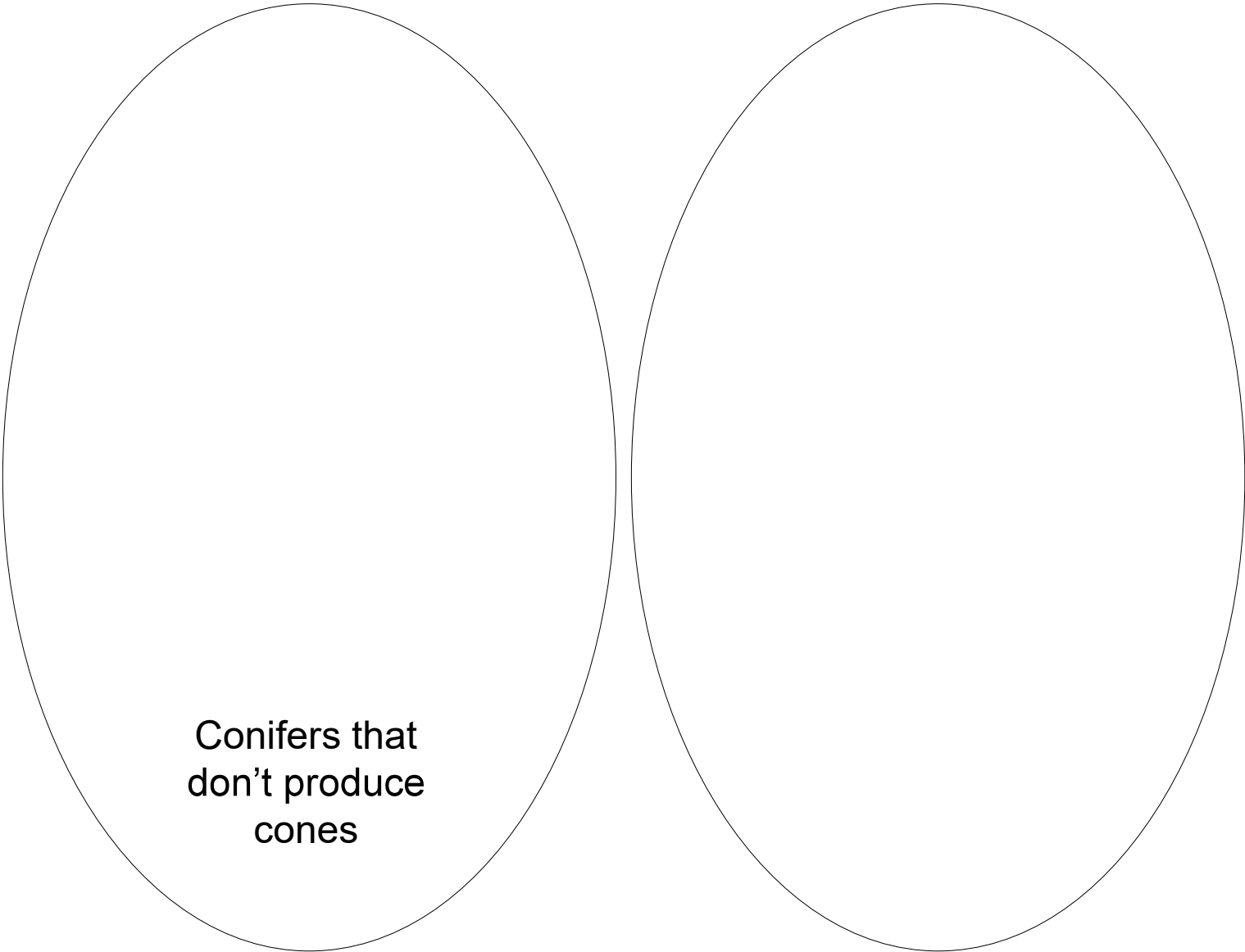




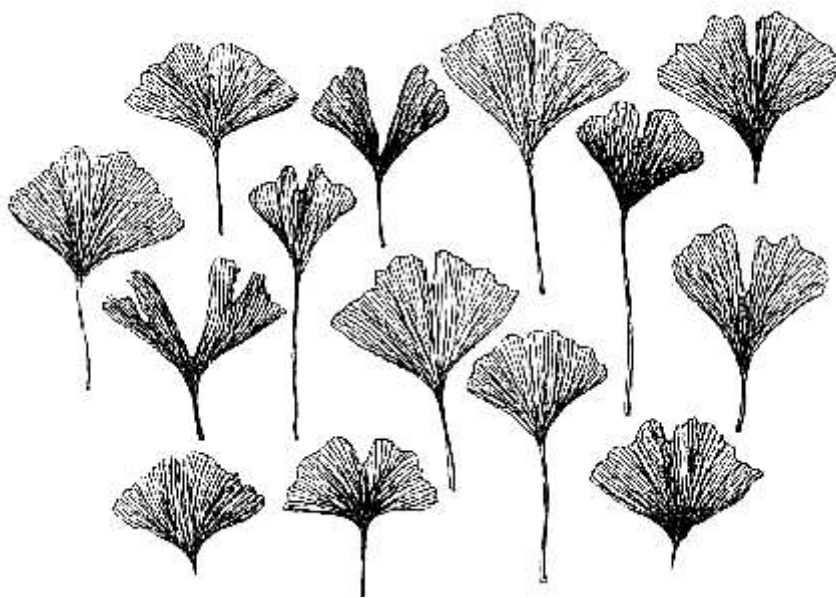
CONES

Pollen Cones

Seed Cones



Conifers that
don't produce
cones



Ginkgo Biloba



Seedless Vascular Plants

General

What are sporangia?

What is a seed?

What is a spore?

		Ferns
--	--	-------

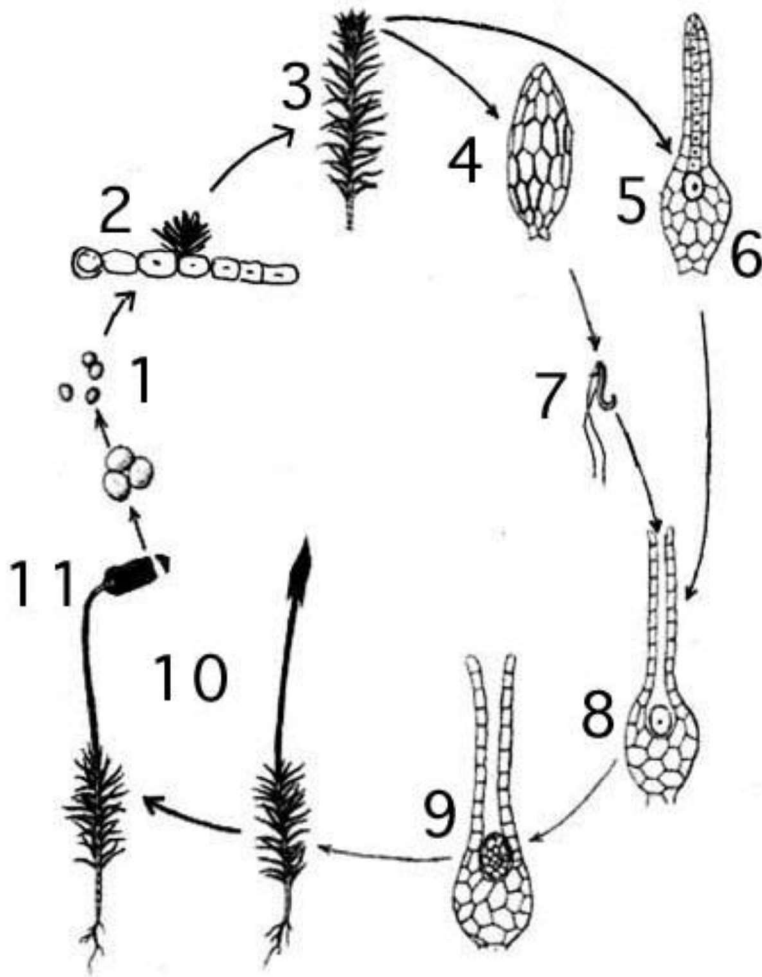
<table border="1"><tr><td>What makes ferns different from other plants?</td></tr></table>	What makes ferns different from other plants?
What makes ferns different from other plants?	

		Fronds
--	--	--------

		Reproduction

		Tree Ferns

Life Cycle of Moss



1	_____
2	_____
3	_____
4	_____
5	_____
6	_____

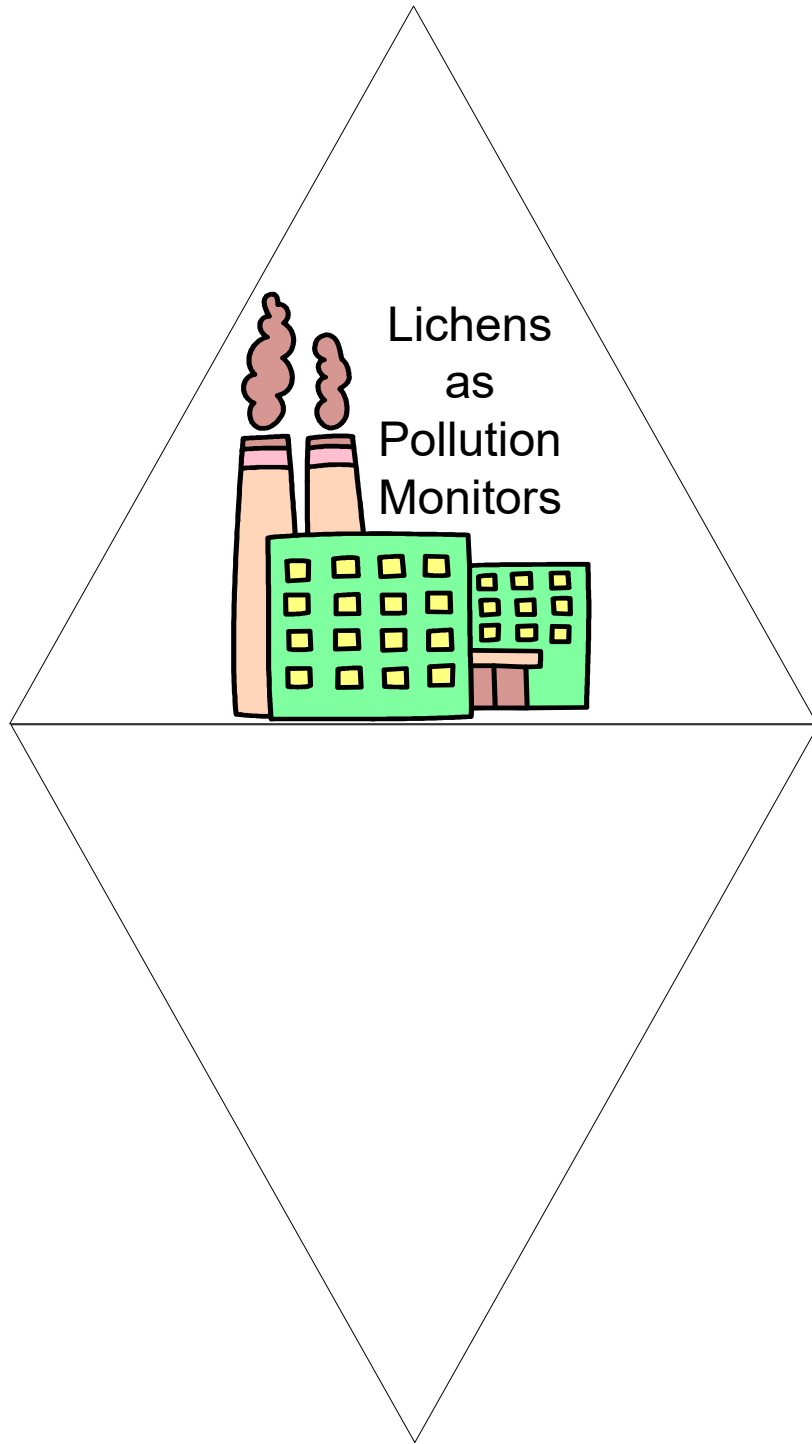
7	_____
8	_____
9	_____
10	_____
11	_____

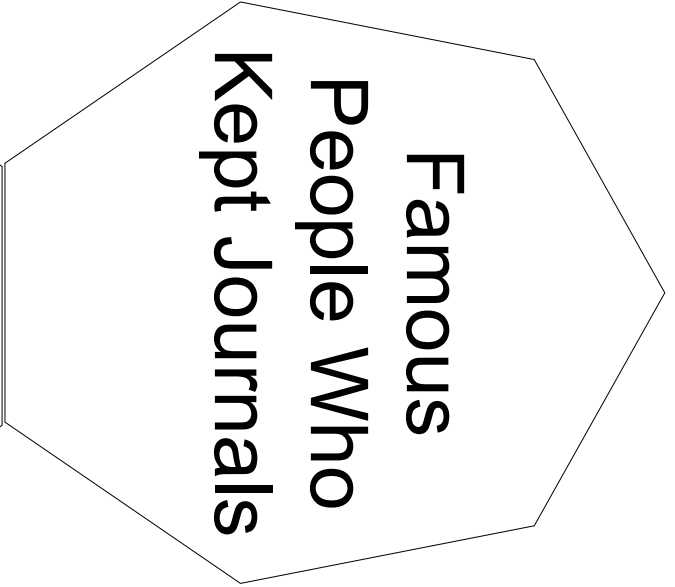
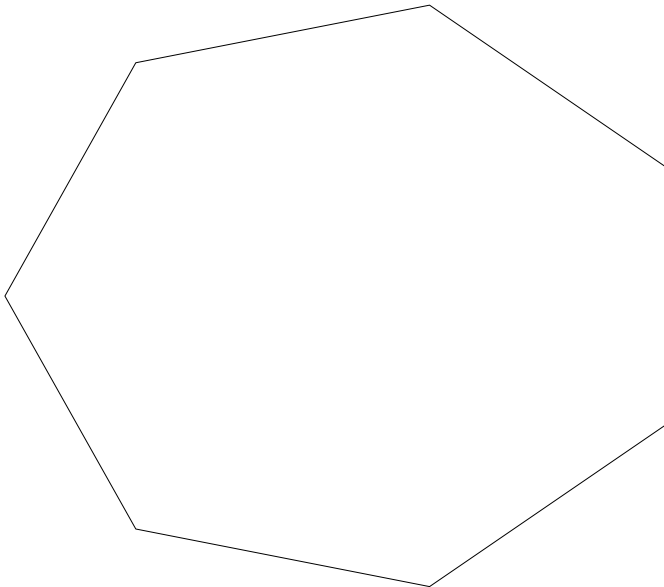
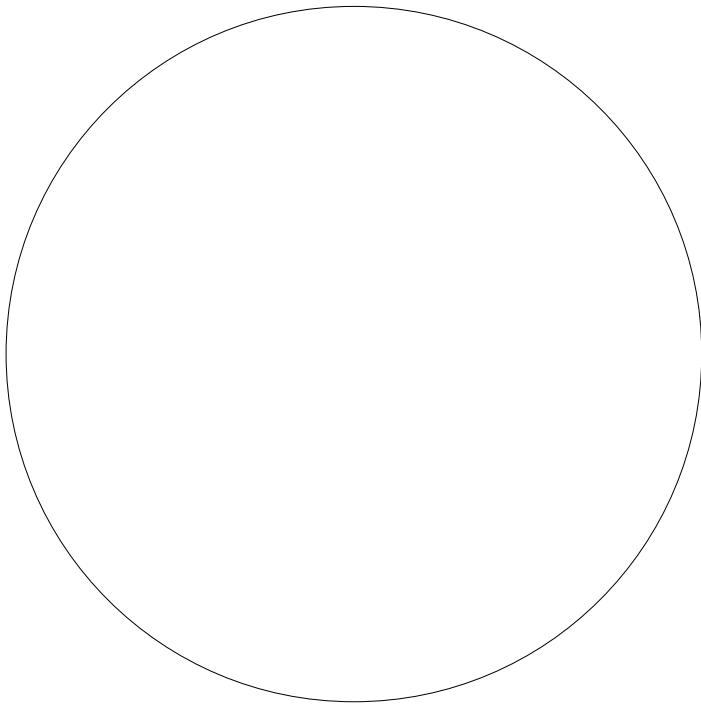
Lichen

What is fungus?

What is algae?

Symbiosis





	Amazing Fact
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	Amazing Fact
--	--------------

Amazing Fact

Amazing Fact

Amazing Fact

Amazing Fact