

Living Coast Discovery Center Field Trip Resource Packet

Budding Botanist

In this packet you will find lessons and resources related to your Living Coast field trip. The first two activities are intended to bookend your trip, followed by additional resources.

Career Focus: Botanist

I study plants and their physiological process, such as photosynthesis, the evolutionary history and relationships of plants and their current relationships with their environments. I also focus on the usage, development, classification, and monitoring of plant life. I conduct research to enhance crops, develop medicines, clean up contaminated sites, and even power cars.

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Needs of a Plant

Lesson Objectives:

- Students will be able to illustrate the needs of a plant
- Students will be able to compare how a plant meets its needs to how an animal would meet its needs

Standards:

- **1-LS1-1.** Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs

Materials:

- Handout

Outline:

Work with students to draw a plant on the board with all its parts labeled.

Drawing should include: leaves, stem, flower, roots. Ask students how plants begin their lives – as seeds! Let's cover the similarities between plants and animals. What are some things that both plants and animals need in order to survive?" Go through needs including food, water, space, air, etc. List the student's ideas on the board.

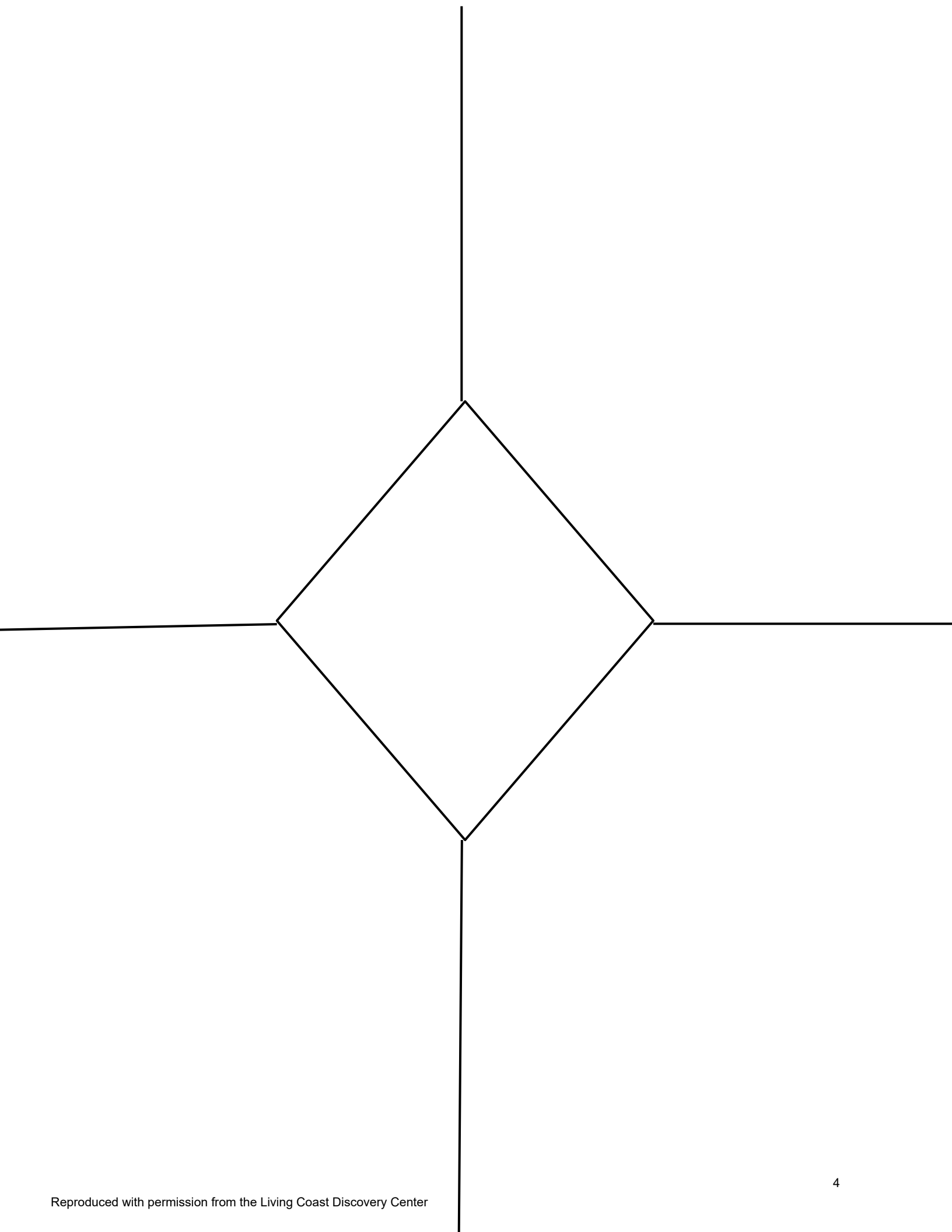
Do a skit with the students to compare how plants and animals grow. First, have a student pretend to be a baby plant – a seed! *Pretend to cover her with dirt.* Now that our baby plant is in the ground, what does she need? Water? *Pretend to pour some water on the plant.* Can I walk away and leave the plant alone to survive? Usually they say no. Why not? What else does a baby plant need to grow? The sun? Well it gets that from the sky! Water? It rains! Air/Carbon Dioxide? Guess what, that is in the air all around the plant! So does the plant need our help to grow? No! *Act out each of these needs and have the volunteer grow into a plant. Then have the volunteer sit down, and ask for a new volunteer.*

Now let's talk about animals. You are going to be a baby. Show us your best baby impersonation. Does anyone have a little brother or sister? What do they need? Milk! Can he/she find the milk on his/her own? No! *Have the baby cry and then give it some milk. Have students list other needs like burping, diapers, toys, cuddles, etc. Each time have the baby cry, and give it its need.* Can I walk away from the baby? No! If I stay and take care of the baby, then it will grow up into a big, strong man or woman! *Have the plant volunteer come back up to the front.* Which one needed more help? The person/animal! Why? It's because they have to find their food and

water. What about a plant? It makes its own food! This is what makes a plant different than an animal. Great job to the volunteers, give them a hand!

Students can complete the worksheet by drawing a plant in the middle and one of the plant's needs in each corner.

Worksheets:



Cactus Experiment

Lesson Objectives:

- Students will be able to explain how a cactus' spines and waxy coating help it to survive in the desert

Standards:

- **1-LS1-1.** Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs

Materials:

- 2 sponge pieces
- Water
- Toothpicks
- Postage or kitchen scale
- Flashlight (or other directed light source)
- Wax paper

Outline:

Review the material taught on the field trip, making sure to talk about the leaf adaptations that you learned. Tell the students that you are going to learn about another plant that lives in the desert, but this one doesn't have leaves - it's a cactus!

Cut 2 sponges of equal size to resemble a cactus. Take one of the dry sponge cacti." Place toothpicks in it to represent spines. Stand it up with a piece of clay. Shine a flashlight (sun) on the spines. Do you see shadows? How might shadows help to cool the plant?

Turn the plant so that the flat, wide part of the pad faces away from the flashlight (sun). Estimate the surface area exposed (thin, narrow edge) to light (sun) versus the surface area not exposed to the sun. How might orientation to sunlight affect a cactus?

If you can't access a scale for this experiment, have the students describe the sponges before adding water, after adding water, and after drying. They can hold them and think about if one is heavier as well. Remove the toothpicks and clay from the "cactus" used in part B. Weigh each "cactus" and record the weight of each. Put ~2 ounces (60 milliliters) of water in each plastic cup and add a sponge "cactus" to

each cup. Set aside for ~10 minutes to let the water absorb. Carefully remove each sponge and weigh it. Record the weights. How much weight did each sponge gain? Compare the weights.


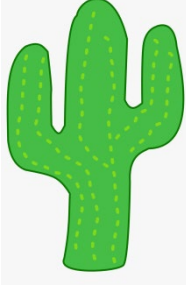
Set both sponges aside to dry. Cover the top of one with a piece of waxed paper. Leave them in a sunny space (preferably outside) for 24-48 hours. After the time has elapsed, weigh the two sponges again. Which sponge was heavier? What does that mean for the water in the sponges (the heavier sponge kept more water).

Worksheets:

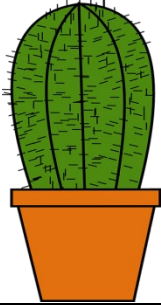
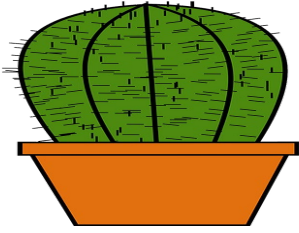
Cactus Experiments

Name: _____

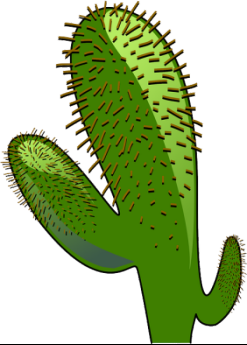
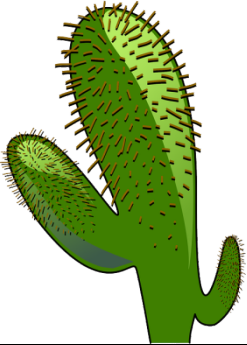
Which plant gets hotter?

	
Cactus with spines	Cactus with no spines

Which plant gets more sun?

	
Tall and skinny cactus	Wide cactus

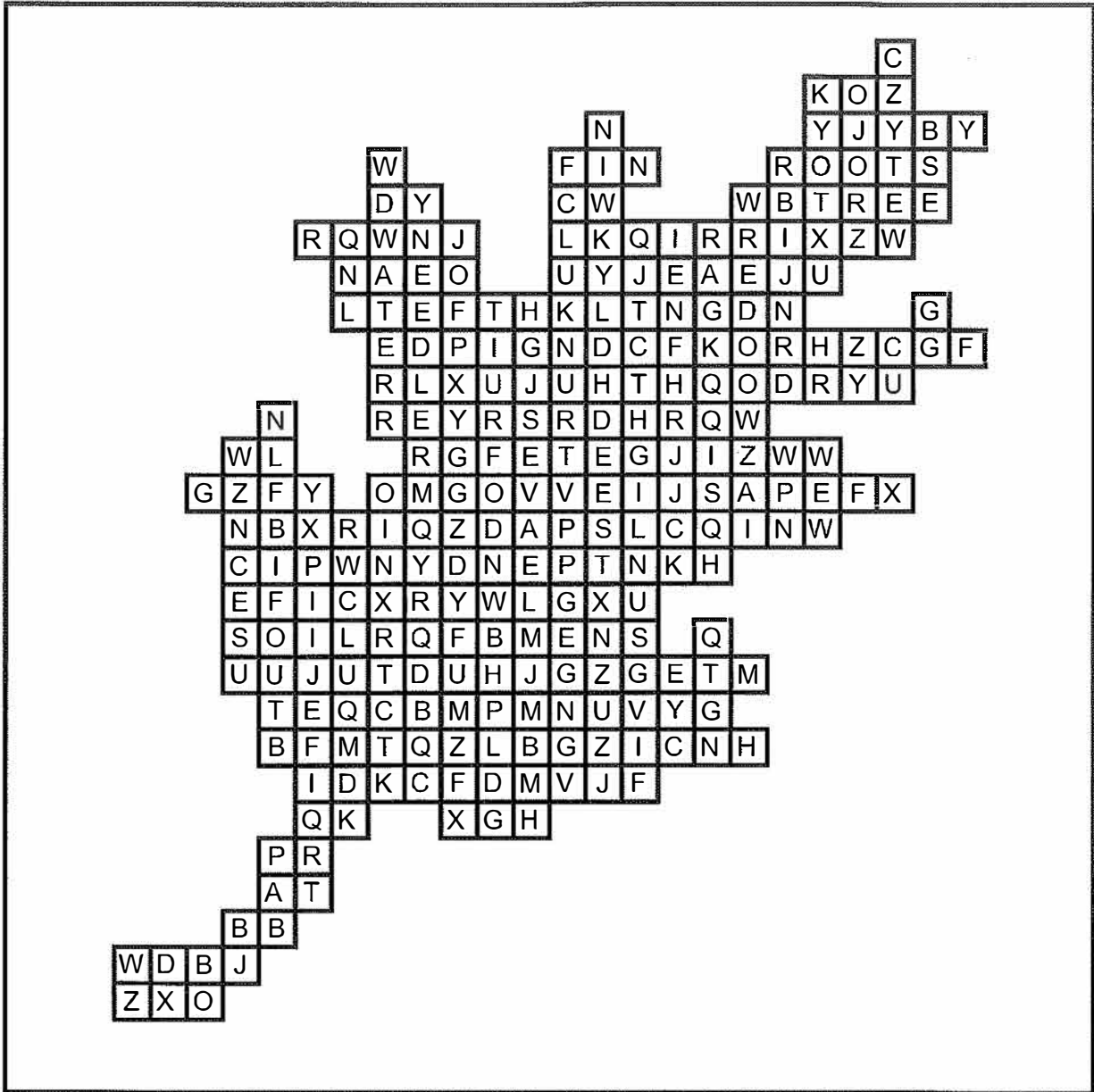
Which plant keeps more water inside?

	
Cactus with waxy coating	Cactus without waxy coating

Plant Games

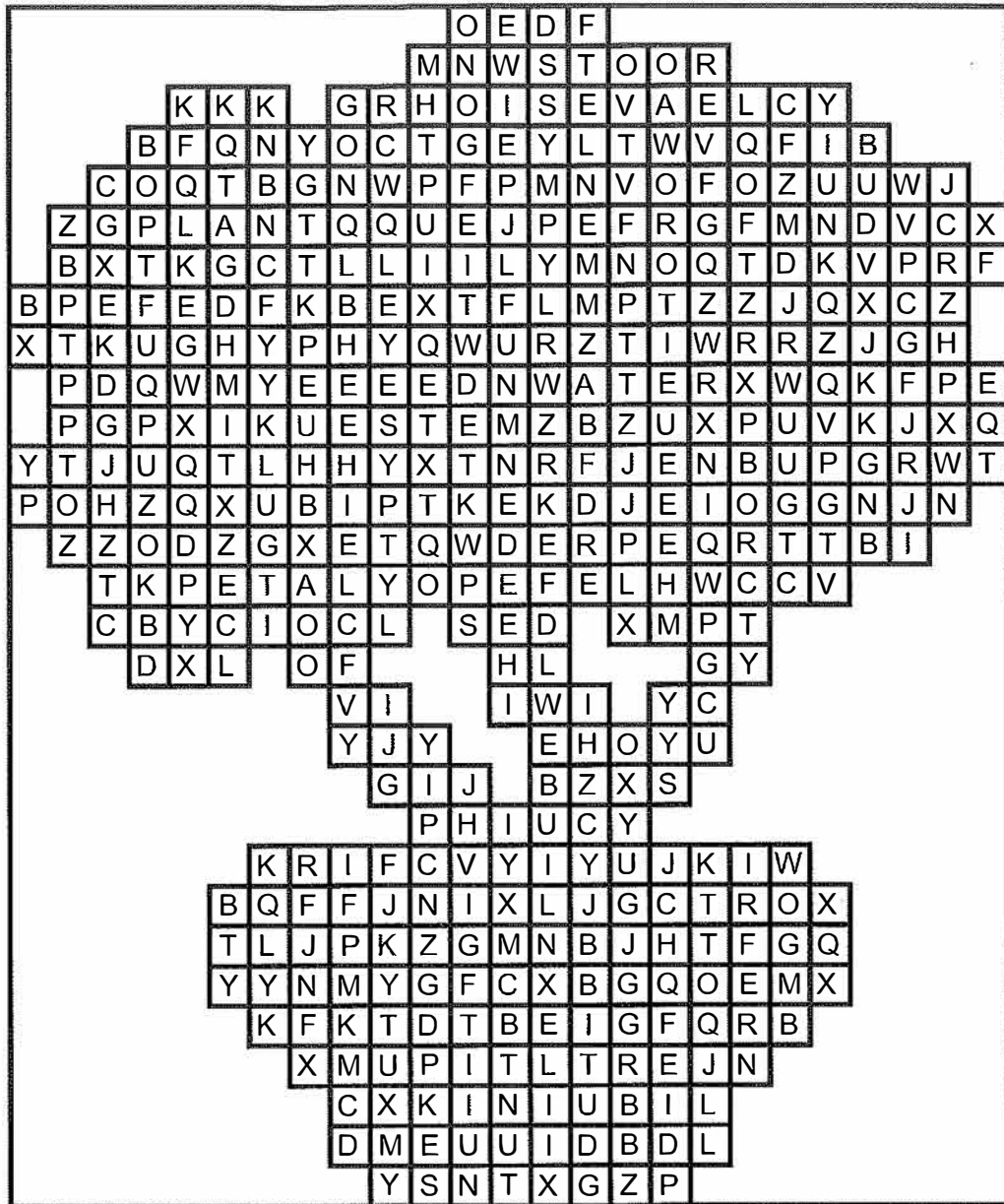
Word games, jokes and songs about plants!

Trees



LEAVES BARK ROOTS TREE SEED WOOD TRUNK BRANCH SAP
 NEEDLE FRUIT SUNLIGHT WATER SOIL

Plants



FERN
STEM

PLANT
FRUIT

FLOWER
SOIL

LEAVES

SUNLIGHT

WATER

SEED

PETAL

ROOTS

Plant Jokes

Bob: I just bought a new book on plant care.

Bill: Why?

Bob: 'Cause I want to be a good weeder!

Sonny: How do you like that new gardening show?

Cher: I can take it or leave it!

Dick: Do you know how to ship vegetables?

Fanny: By Parsley Post!

Wierdo: I really like that gardening show.

Fozzy: Yeah, it really grows on you!

Billy Bob: How do you tell a dogwood tree from a redwood tree?

Liza Jane: I don't know! How?

Billy Bob: Because of its bark!

Fruity: Why was the strawberry worried?

Tooty: Ummmm, I don't know WHY?

Fruity: His Mom and Dad were in a jam!

Daisy: What is the reddest side of an apple?

Dizzy: Don't know...

Daisy: The outside!

Buttercup: How did you break your arm?

Dandelion: I fell out of a tree!

Buttercup: How far did you fall?

Dandelion: All the way to the ground!

Jilly: What tree do you like when you're hungry?

Philly: I don't know.

Jilly: The 'pan-tree'!

Sources:

Bolton, Martha. TV Jokes and Riddles. Sterling publishing Company: New York. 1992

Bonham, Tal D. The Treasury of Clean Country Jokes. Rodman Press: Nashville, Tennessee. 1986

Chrystie, Frances. The First Book of Jokes and Funny Things. Franklin Watts: New York. 1951

Sarnoff, Jane and Reynolds Ruffins. What? A Riddle Book. Charles Scribner's Sons: New York. 1974

Plant Songs for Kids

Do You Know the Parts of Plants? Tune: Head, Shoulders, Knees, And Toes

Do you know the parts of plants,
Parts of plants?
Do you know the parts of plants,
Parts of plants?
All kinds of plants that grow and grow and grow.
Do you know the parts of plants,
Parts of plants?

The roots hold the plant in place,
Plant in place.
The roots hold the plant in place,
Plant in place.
The roots store food and water, too.
The roots hold the plant in place,
Plant in place.

The stem move water up the plant,
Up the plant.
The stem move water up the plant,
Up the plant.
The stem brings water to the leaves.
The stem move water up the plant,
Up the plant.

The leaves soak up the sun,
Soak up the sun.
The leaves soak up the sun,
Soak up the sun.
The sun helps the plant to grow and grow and grow.
The leaves soak up the sun,
Soak up the sun.

The flower grows into a fruit,
Into a fruit.
The flower grows into a fruit,
Into a fruit.
Inside the fruit are little tiny seeds.
The flower grows into a fruit,
Into a fruit.

The Gardener Plants the Seeds (Tune "Farmer in the Dell")

The gardener plants the seeds.
The gardener plants the seeds.
High ho the derry oh,
The gardener plants the seeds.

Second Verse: The rain falls on the ground.

Third Verse: The sun shines bright and warm.

Fourth Verse: The seeds begin to grow.

Fifth Verse: Flowers grow everywhere. OR The flowers smile at us.

The Farmer Plants the Seeds (Tune "Farmer in the Dell")

The farmer plants the seeds. (put seeds in the ground)
The farmer plants the seeds.
High ho the derry oh,
The farmer plants the seeds.

Second Verse: The sun comes out to shine. (make big circle with arms)

Third Verse: The rain begins to fall. (hands flutter to the ground)

Fourth Verse: The seeds begin to grow. (children begin to rise)

Fifth Verse: The farmer digs them up. (pretend to use a shovel)

Now we'll have some to eat. (pretend to eat)

Little Seed (Tune: I'm a Little Teapot)

Here's a little seed in the dark, dark ground.
Out comes the warm sun, yellow and round.
Down comes the rain, wet and slow.
Up comes the little seed, grow, grow, grow!

This is the Way We Plant the Seeds (Tune: Mulberry Bush)

This is the way we plant the seeds,
Plant the seeds, plant the seeds,
This is the way we plant the seeds,
Early in the springtime.

Other Verses: This is the way we dig the hole...

This is the way we put in the seeds...

This is the way we cover the seeds...

This is the way we water the seeds...

This is the way we check the seeds...

Parts of Plants Song (Tune: Muffin Man)

Oh, do you know the parts of plants,
The parts of plants, the parts of plants?
Do you know the parts of plants
That make them grow and grow?

The roots, they hold the plant in place,
The plant in place, the plant in place.
The roots they hold the plant in place
Soak up food and water, too.

The stem moves water up the plant,
Up the plant, up the plant.
The stem moves water up the plant
Brings water to the leaves.

The leaves soak up the rays of sun,
The rays of sun, the rays of sun.
And help the plant make food.

The flower grows into a fruit,
Into a fruit, into a fruit.
The flower grows into a fruit, Which holds the tiny seeds.

Now you know the parts of plants,
The parts of plants, the parts of plants,
Now you know the parts of plants,
That make them grow and grow.

Green Plants Need Song (Tune: "Three Blind Mice")

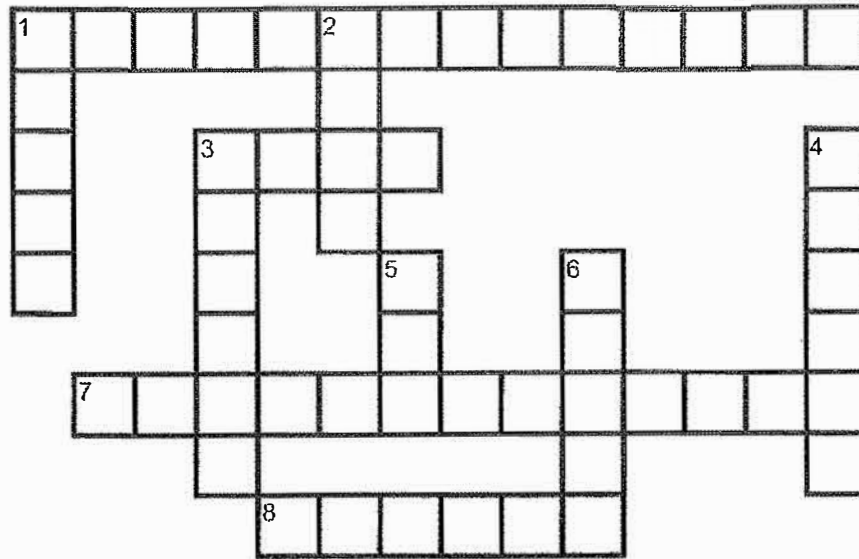
Three main things, three main things,
Green plants need, green plants need.
For plants to grow and plants to thrive,
In order to keep green plants alive,
What does it take for them to survive?
Just three main things.

Plants need sun, plants need sun,
That's number one, plants need sun.
For plants to grow and plants to thrive,
In order to keep green plants alive,
What does it take for them to survive?
Just three main things.

Plants need air, plants need air,
Be aware, plants need air.
For plants to grow and plants to thrive,
In order to keep green plants alive,
What does it take for them to survive?
Just three main things.

Plants need water, plants need water,
Especially when it's hotter, plants need water.
For plants to grow and plants to thrive,
In order to keep green plants alive,
What does it take for them to survive?
Just three main things.

Plants

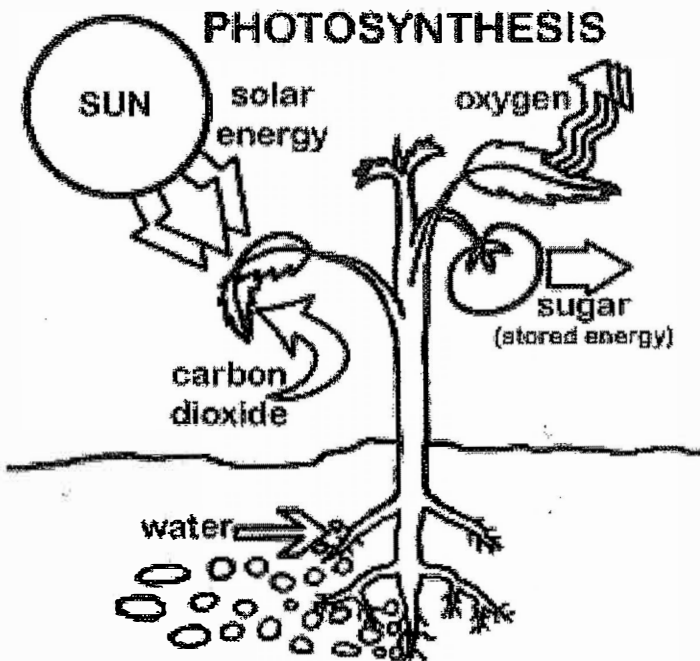


Across

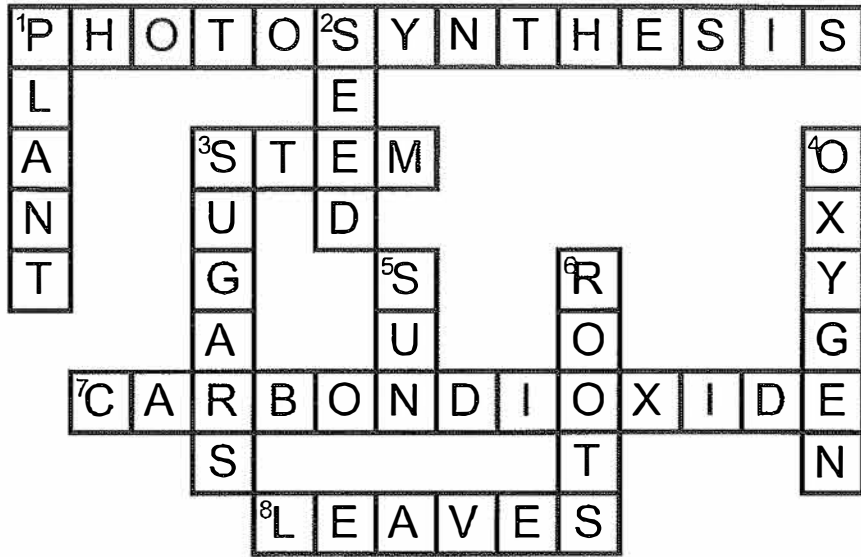
- Plants make their food with this process.
- A "transport system".
- Plants need this gas for photosynthesis.
- Where most plants make their food.

Down

- A kind of kingdom.
- Holds the beginning of a new plant.
- Product of photosynthesis (along with oxygen).
- Plants produce this.
- Source of energy.
- Used by many plants to take in water and minerals.



Answer Key



Useful Links

Outdoor Family Fun with Plum

App from PBS Kids providing families with challenges to complete outside by exploring nature in their yard or neighborhood.0

<https://pbskids.org/apps/outdoor-family-fun-with-plum.html>

Butterfly LiveCam

Visit the Safari Park's Butterfly house through their live butterfly cam:

<https://www.sdzsafari.org/butterfly-cam>

Climate Science Alliance:

San Diego-based climate science info, including 10 ways to help with Climate Change

<https://www.climatekids.org/resources>