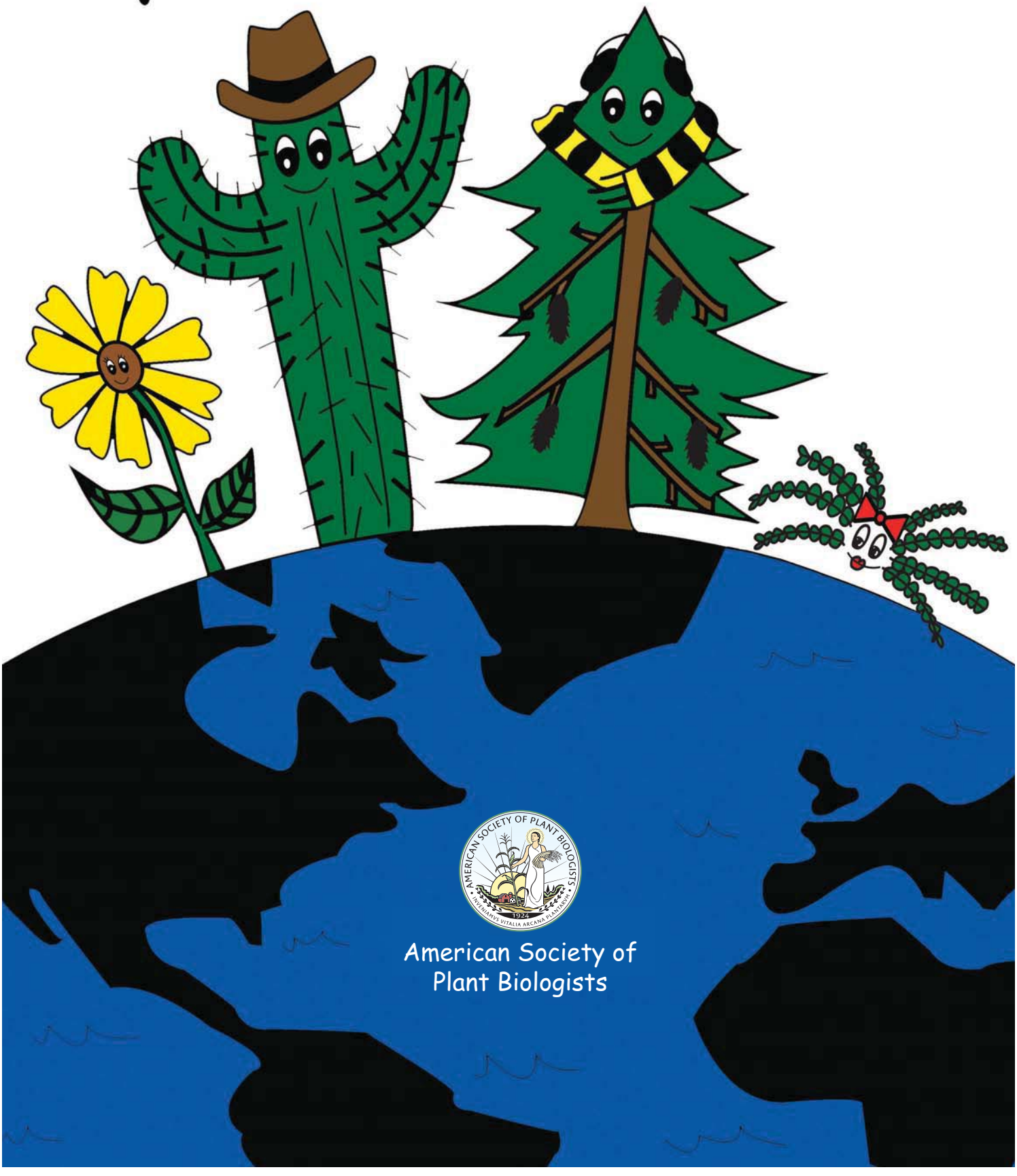
My Life As A Plant



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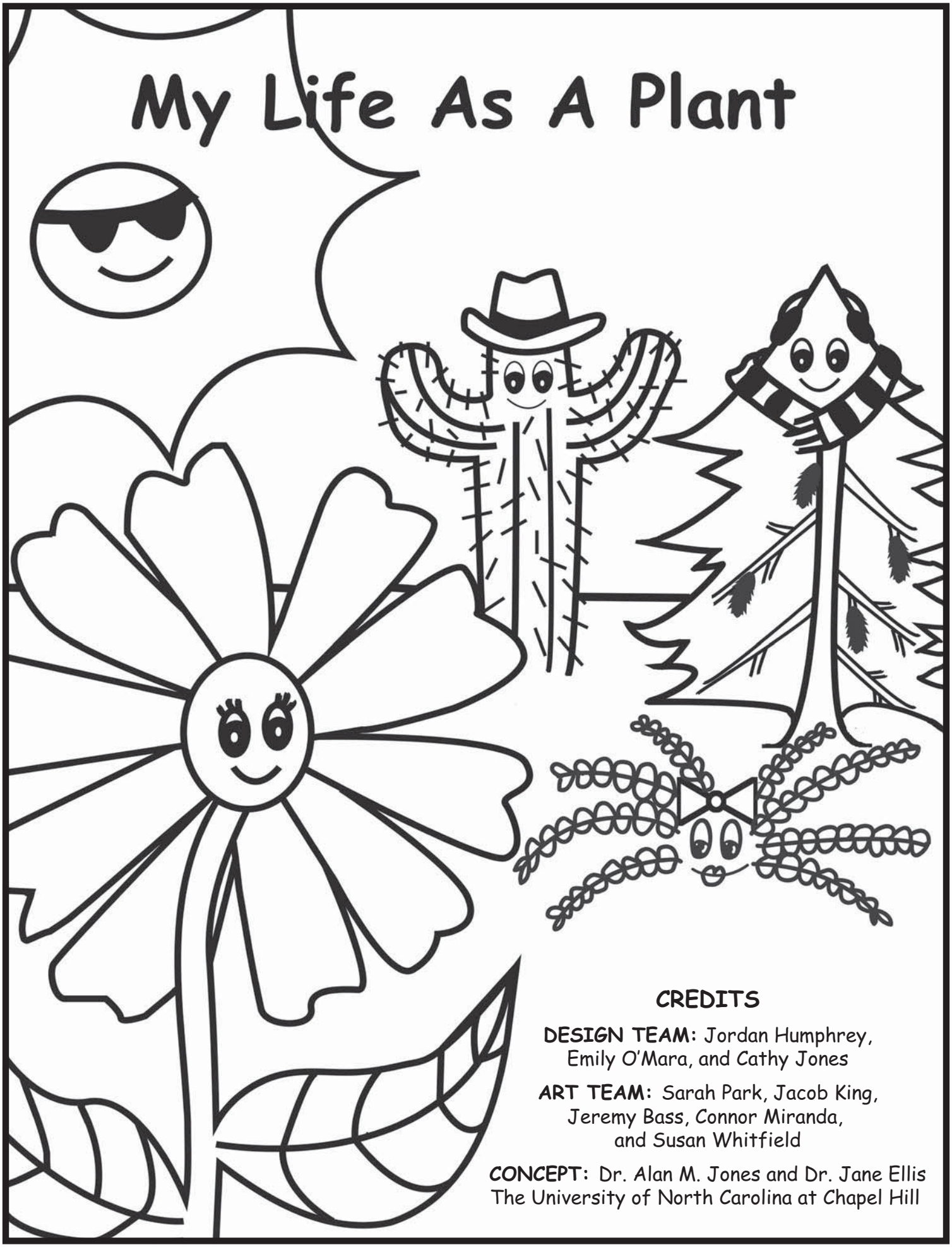

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"Hi! My name is Sally Sunflower!
My roots stay BELOW the ground and
my leaves and stem reach ABOVE
the ground toward the sun."

petal

leaf

stem

root

Plants grow from seeds up toward the sun.
Help the seedling find its way to the sun.

"I need food to grow just like YOU!"

"But I use energy from the sun to make food with air (CO_2) and water (H_2O)."

energy

air
(CO_2)

water
(H_2O)

"We both need food, but we prepare our food in different ways. Let's compare recipes."

Sally's Food

Photosynthesis

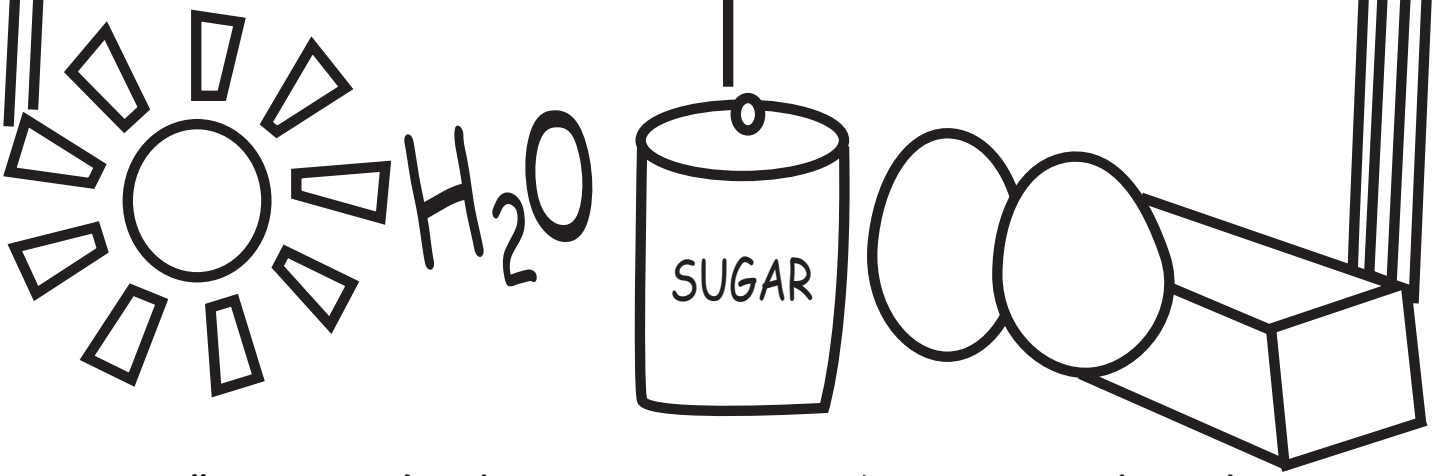
- sun
- carbon dioxide (CO_2)
- chlorophyll
- water (H_2O)
- minerals

Mix well to get sugar and oxygen.

People Food

No-Bake
Peanut Butter Cookies

- 8 graham cracker squares, crushed into crumbs
- 1/4 cup raisins
- 1/4 cup peanut butter
- 2 tablespoons honey
- 4 tablespoons unsweetened coconut



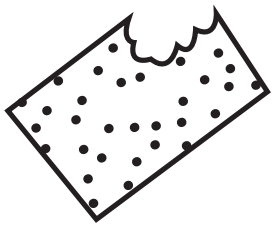
"Mmm...looks yummy. Let's get cooking! Always ask an adult for help."

No-Bake Peanut Butter Cookies

Ask an adult for help.

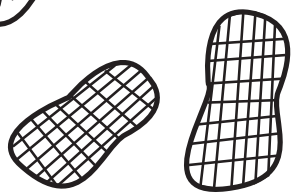
Combine:

graham cracker crumbs,

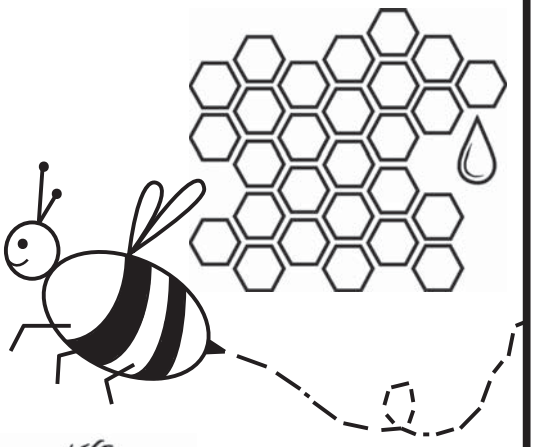


raisins,

peanut butter,

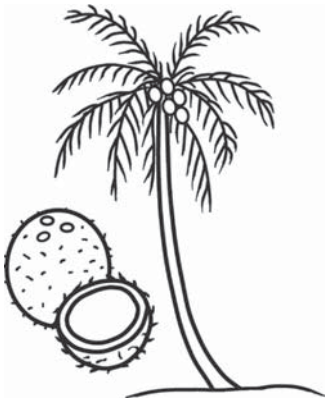


and honey in a small bowl.



Mix with a spoon.

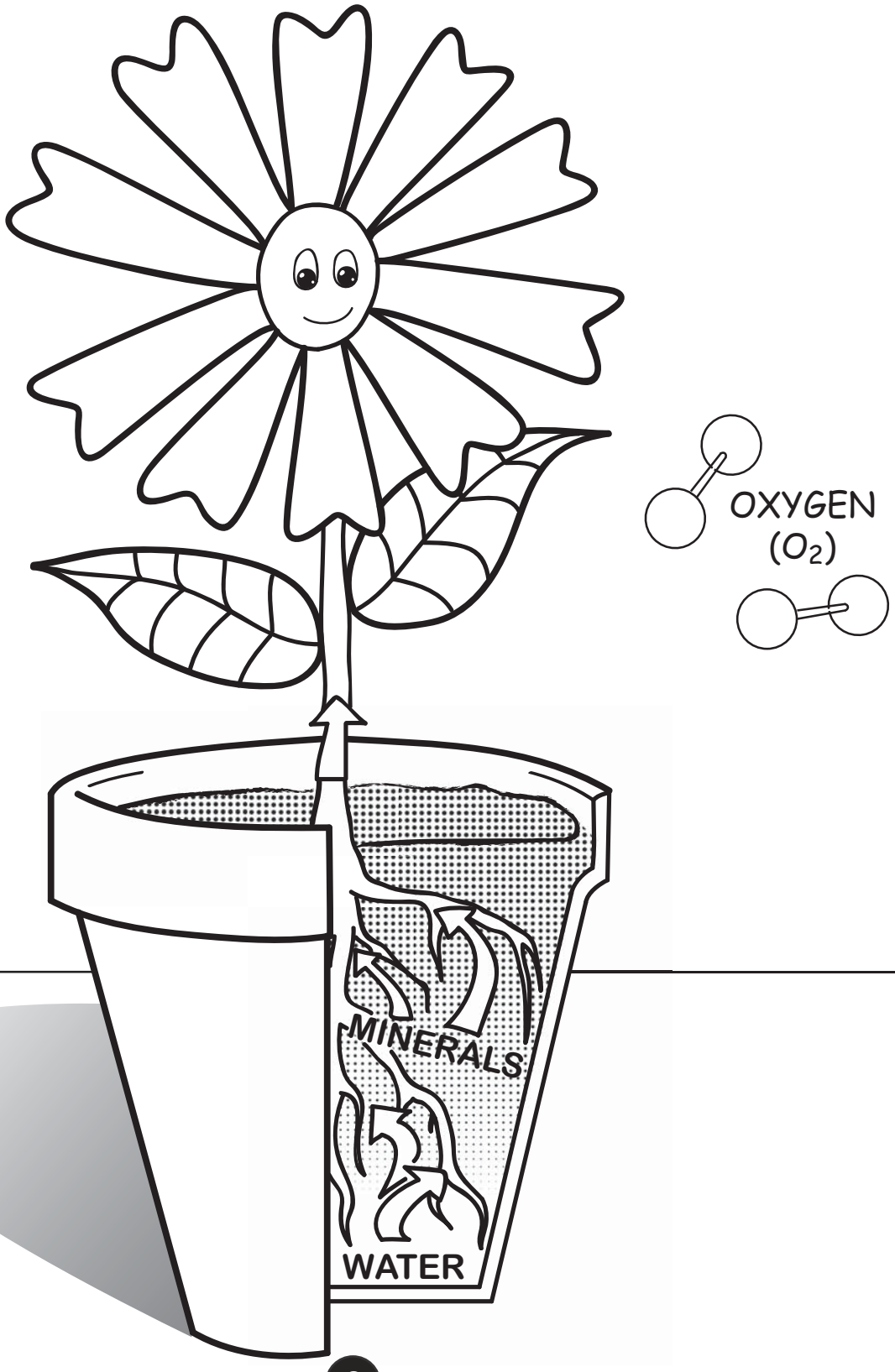
Pat into 8 cookies and
press lightly in coconut.



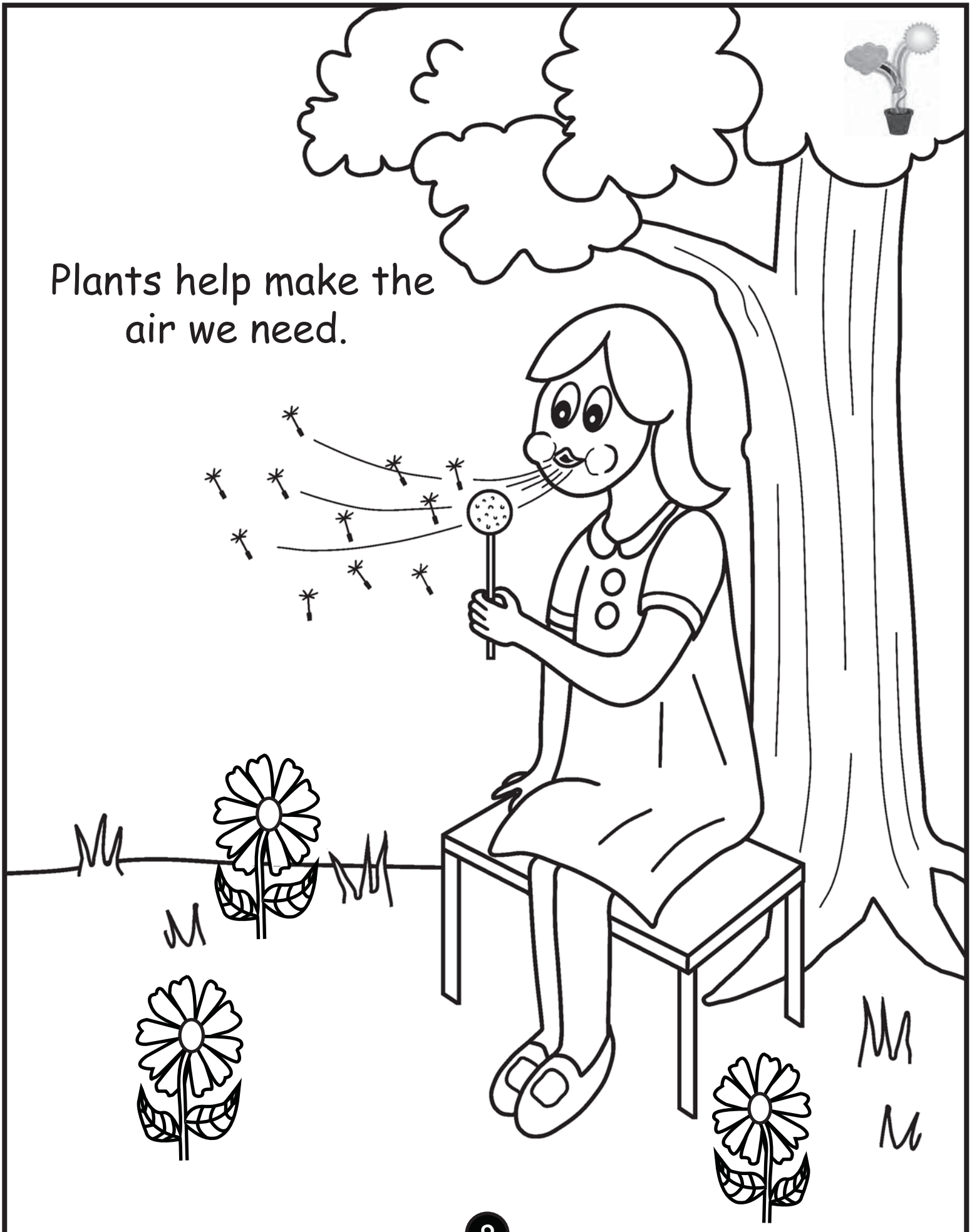
Chill until firm.

Did you know that everything in these cookies comes from plants?

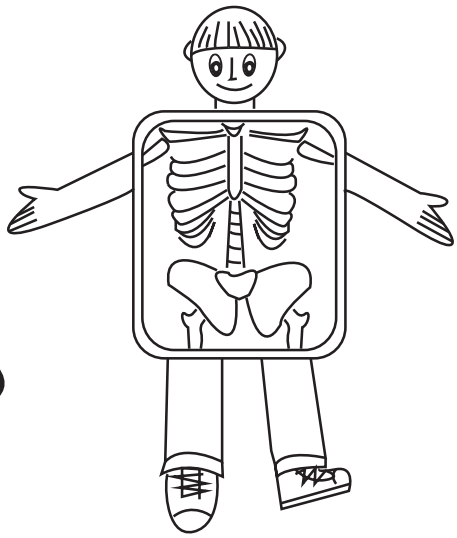
"The sun helps me make the food I need. I also need oxygen (O_2), water (H_2O), and minerals. These things help me turn my food into ENERGY!"



Plants help make the air we need.

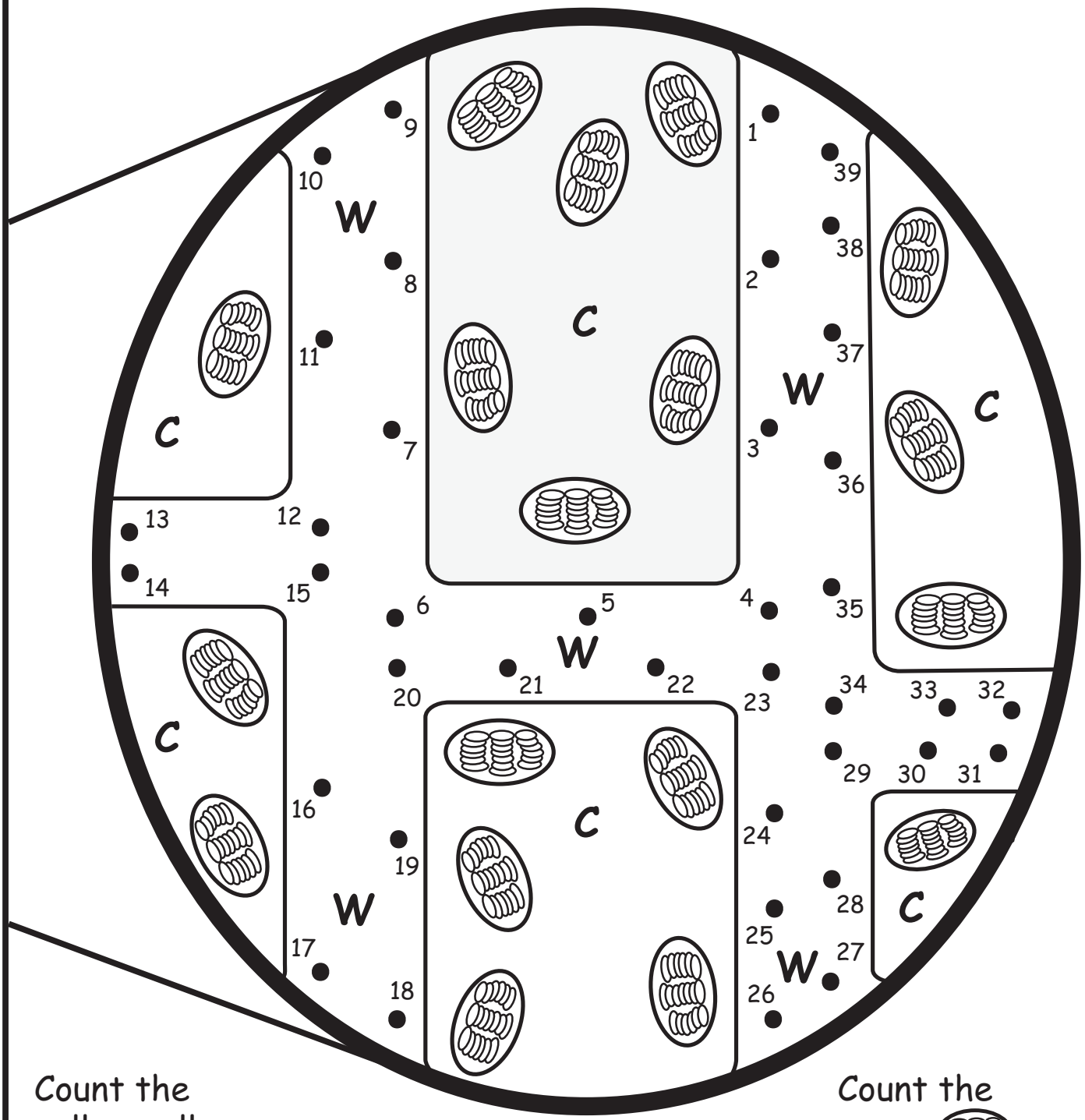


"You have bones. I have cell walls.
They keep us strong as we grow up."



Color all the cell walls (W) brown.
Color all the cells (C) yellow.
Connect the dots of Sally's cell walls.

Color all the  green. They are called "chloroplasts."
They give Sally her green color.



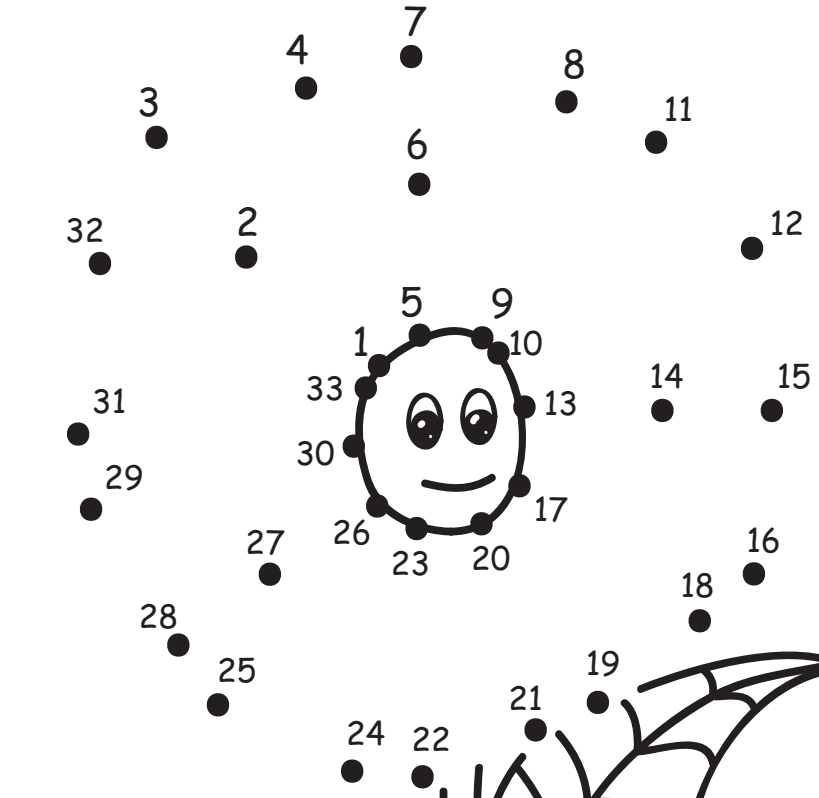
Count the yellow cells _____

Count the green  _____

"You bring your bug spray to the park.
I can repel bugs without spray!"

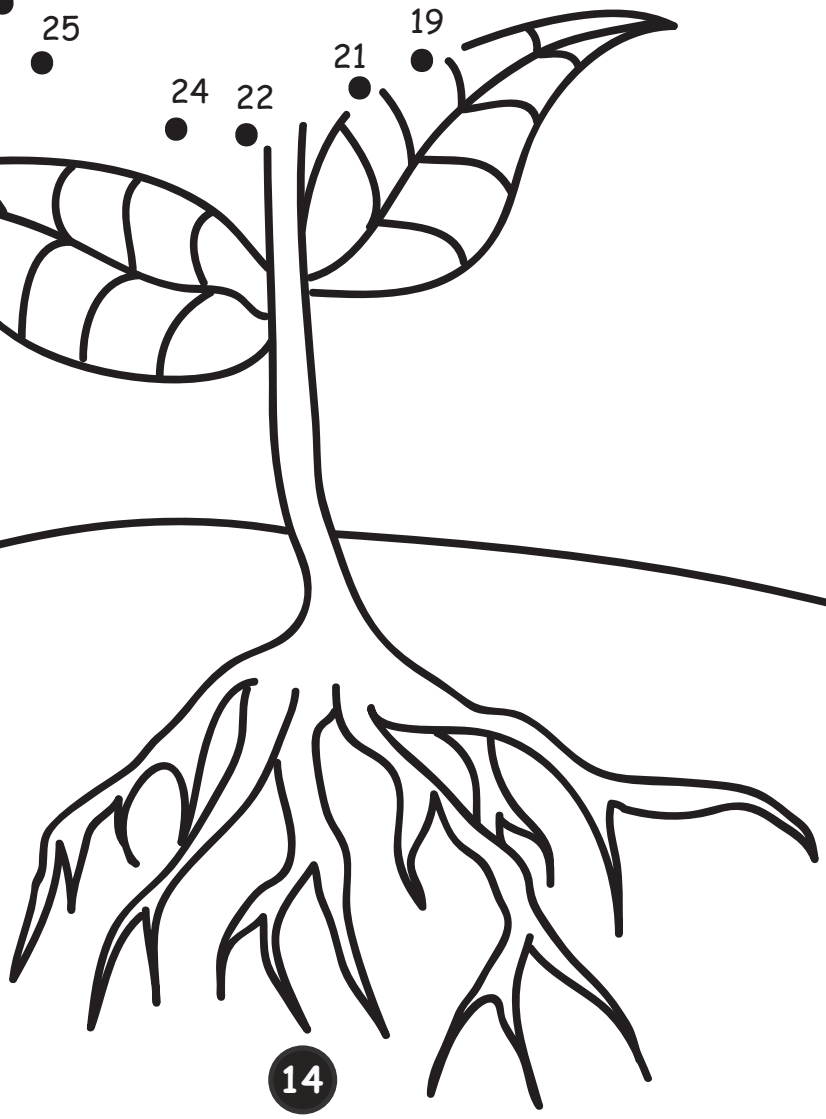
Plants can get hurt just like you.
Plants grow new parts. People do not.
Draw new roots on the flower below that was
cut by the shovel. The flowers are also looking pale.
Why not give them some color while you are at it?

"Connect the dots to show who I am!
Color me."



How many
root tips
do you see?

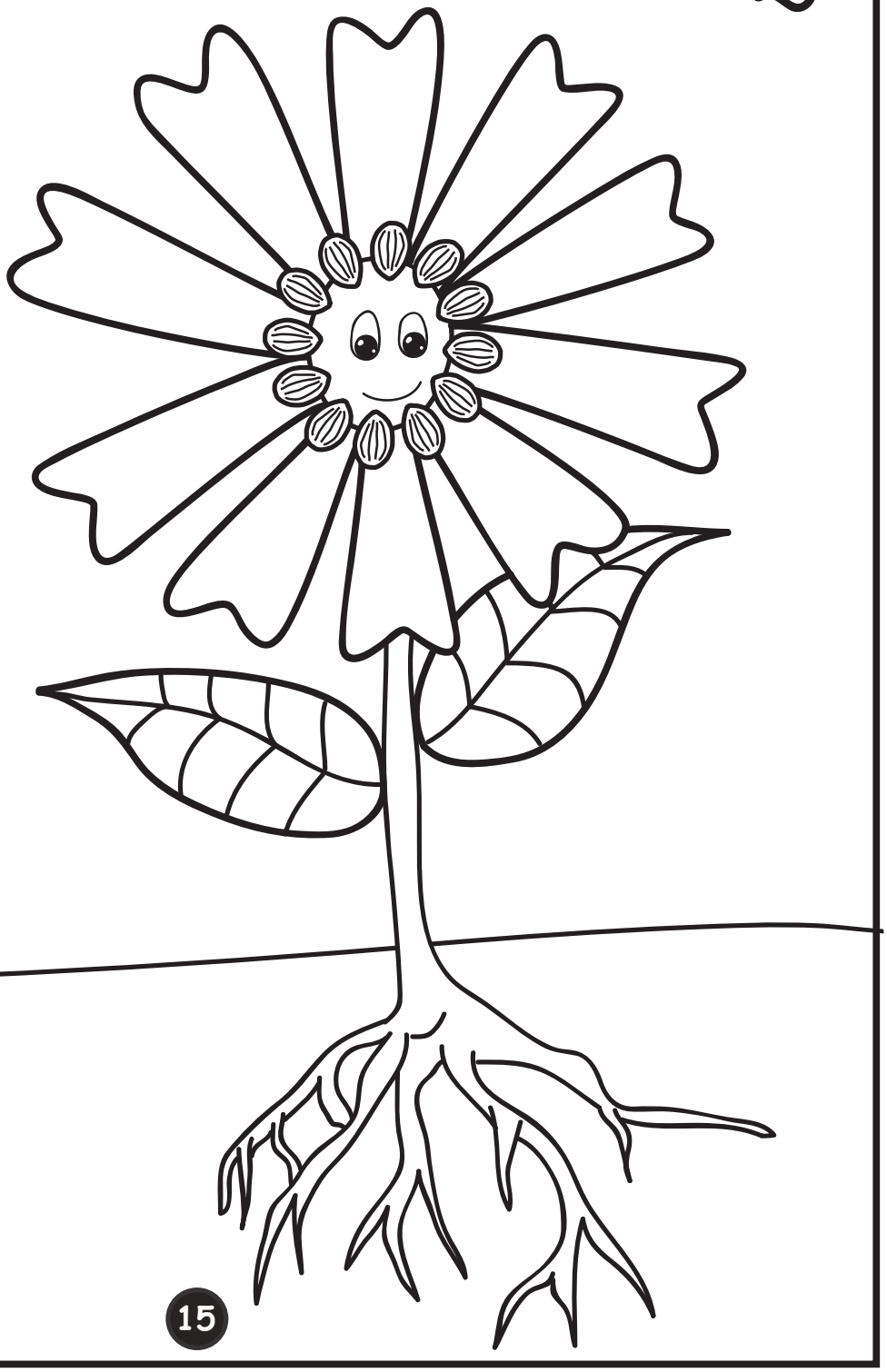
Circle one.



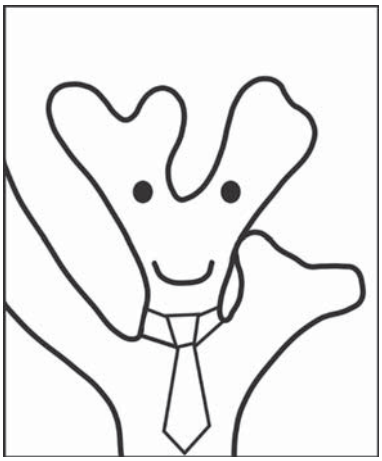
Can you find the plant parts?

Draw a line to Sally's...

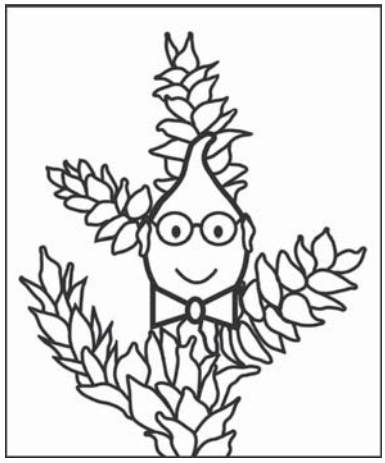
1. Petals
2. Seeds
3. Stem
4. Roots



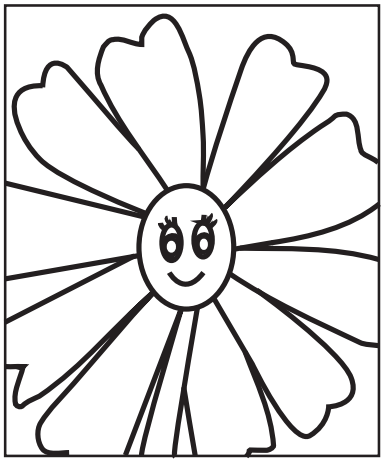
This is Sally's family album.
"I grew from a very old family.
My family changed a lot over the years.
That is what makes me what I am today!"



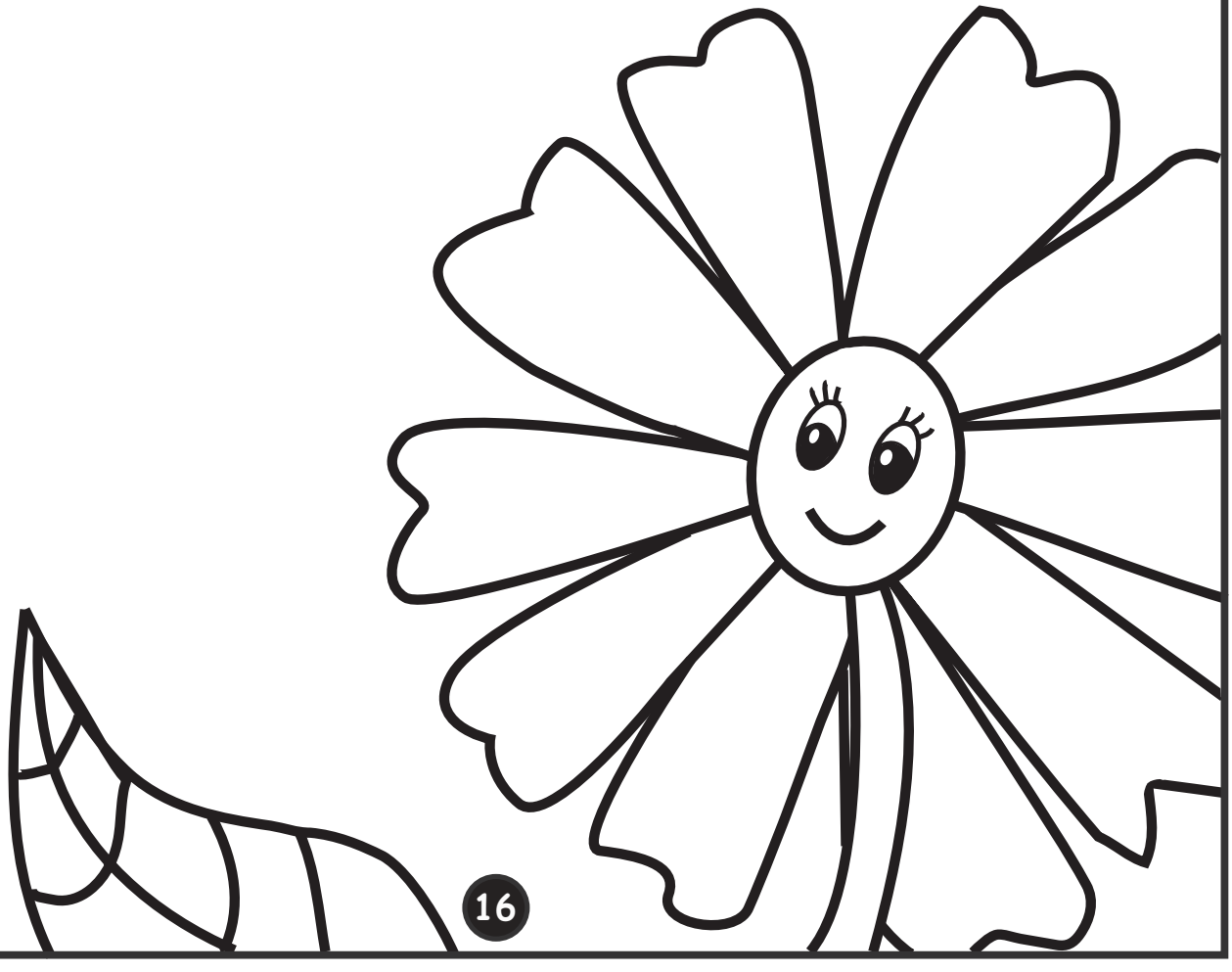
GREAT GRANDPA
ALGAE



GRANDPA
MOSS



ME!



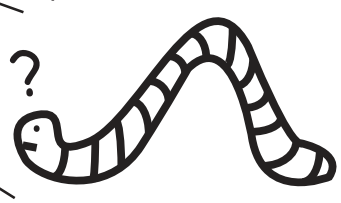
"Now tell me about **your** family!
Can you draw your family album too?"

MOM

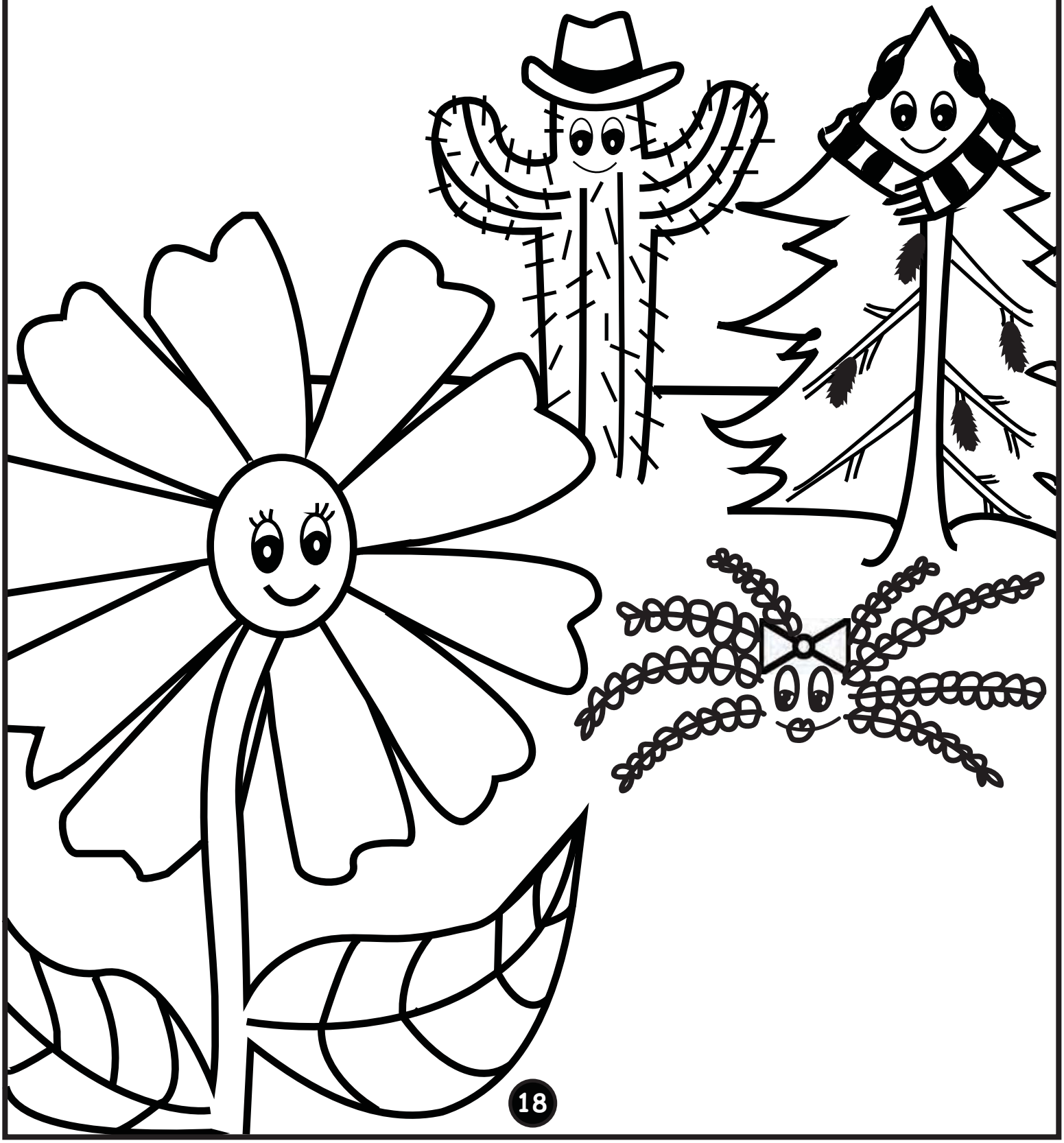
DAD

Write your name here

Do your eyes look more like your Mom's or your Dad's?



"My friends come in all shapes and sizes."

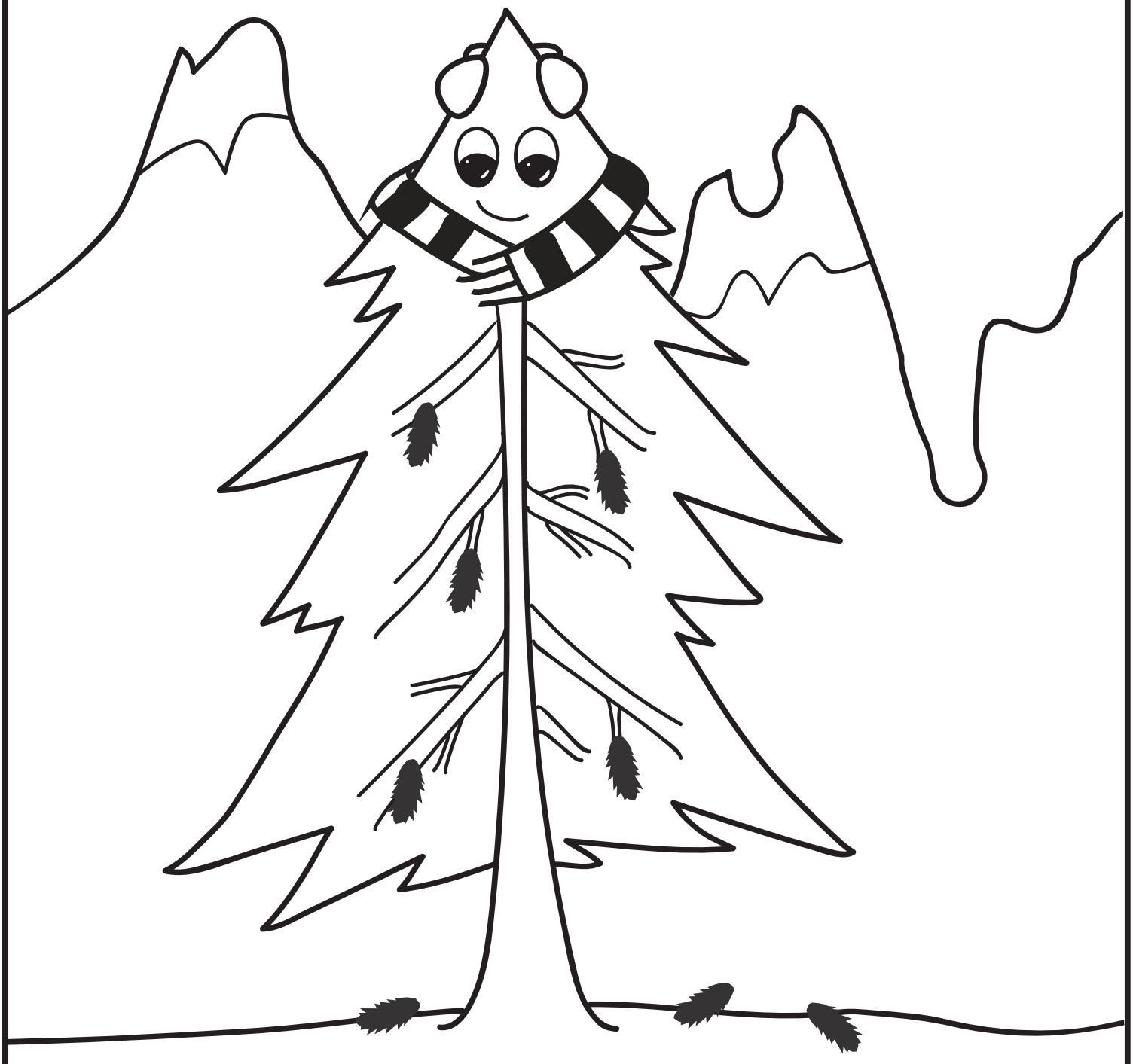


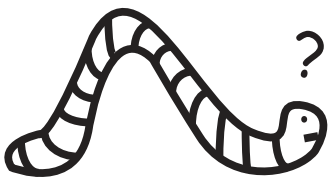
Go explore!
Draw and color what you see!

Find leaves of different shapes and sizes.

Find plants and animals living together.

"Hi! I'm Douglas Fir.
I live in the mountains.
I keep my skinny leaves all year.
Baby firs grow from seeds in cones."

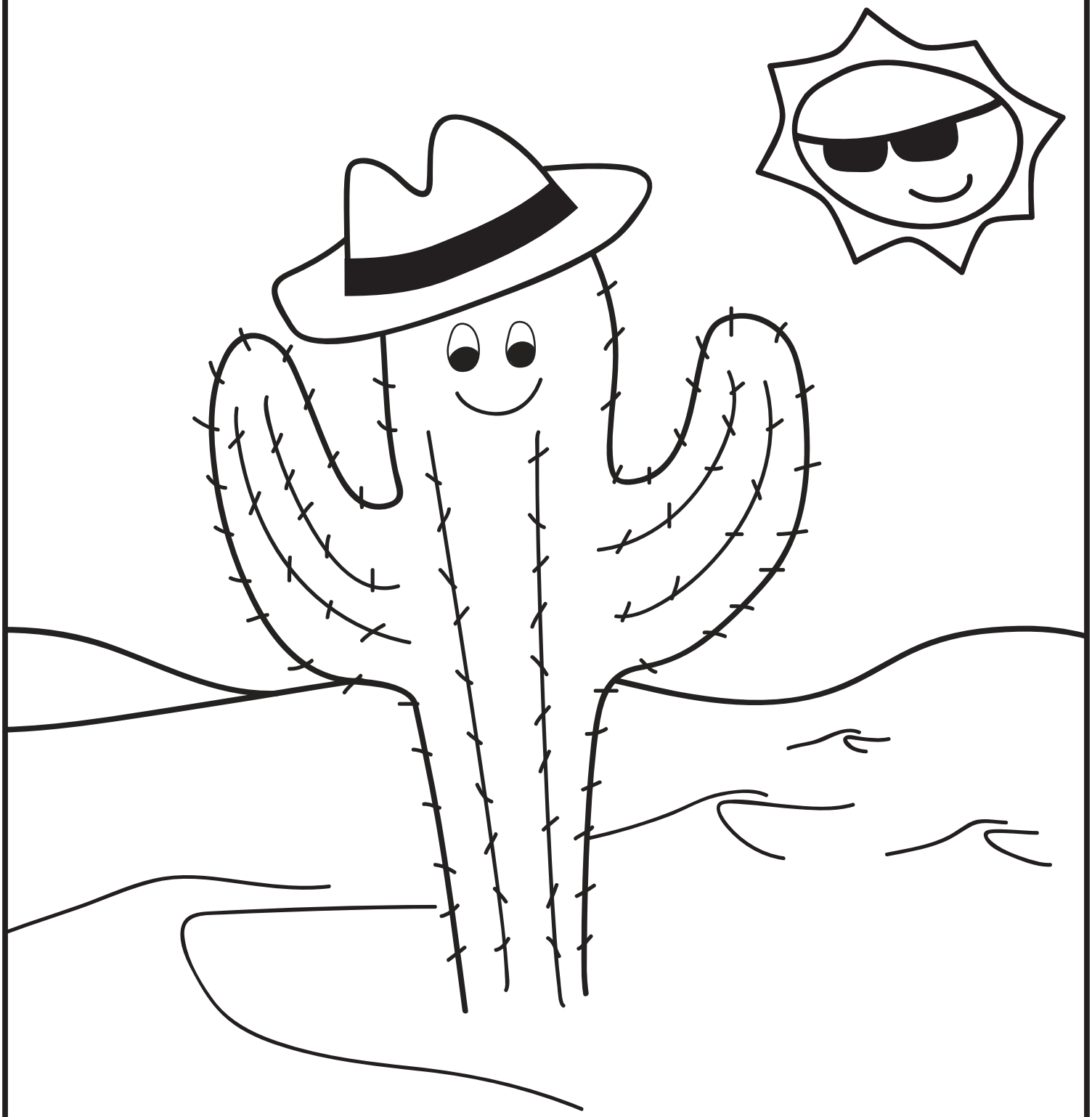




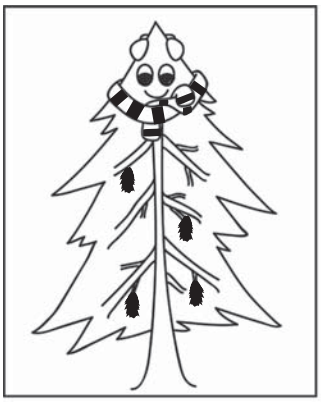
"I wonder how many baby firs
could grow beside Douglas?"

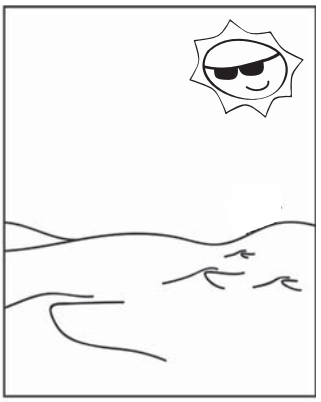
"Hi! I'm Fran Fern.
I live in shady areas below the trees."

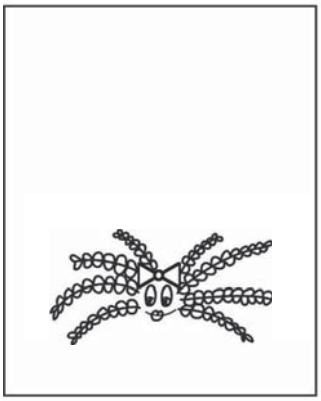
"Hi! I'm Charlie Cactus.
I live in the desert where it is hot and dry."

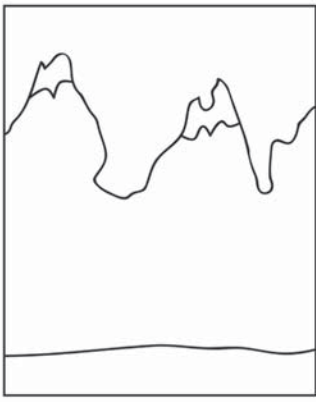


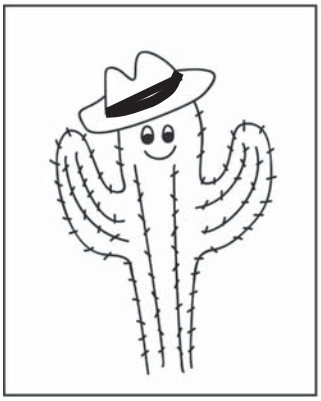
Can you match the plant to where it lives?

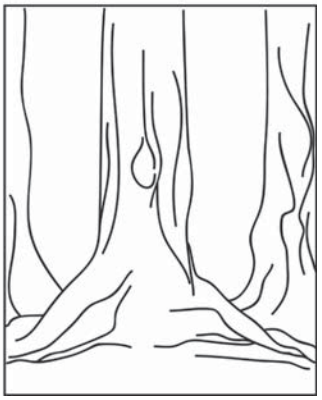












Draw YOU

Draw where YOU live

"All of this growing and playing has made me thirsty! I'd better drink some water (H_2O) and breathe deeply!"

Helping Hands

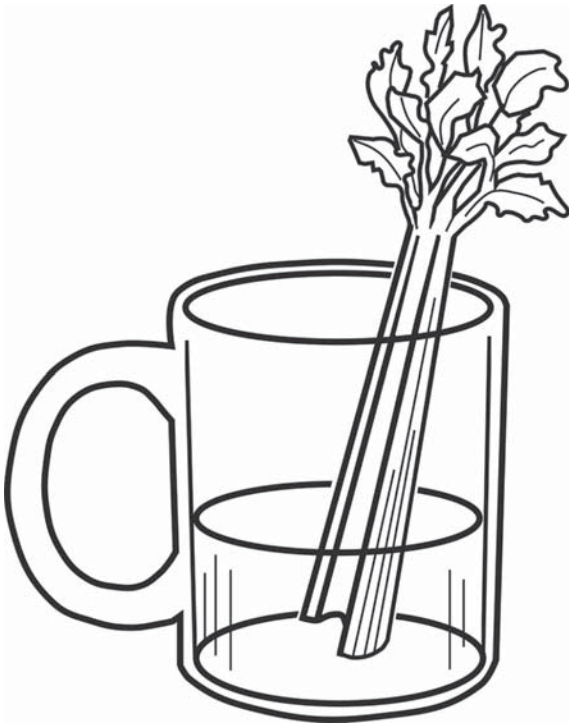
Plant Plumbing

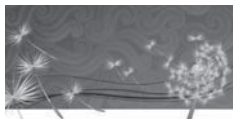
What you need:

- 1 mug (heavy cup that won't tip over)
- 1 celery stalk
- food coloring

1. Fill mug halfway with water.
2. Add 4 drops of food coloring and stir.
3. Trim one end of the celery stalk.
4. Put celery stalk in the water. Put the cut end down.
5. What will happen to the celery? Draw your prediction.
6. See what happens. Check every 6 hours.
7. What do you see now? Draw it.
8. Cut the stalk open. What's inside? Draw it.

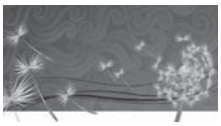
Repeat with other plants that have long stems. What happens that is the same? What is not the same?

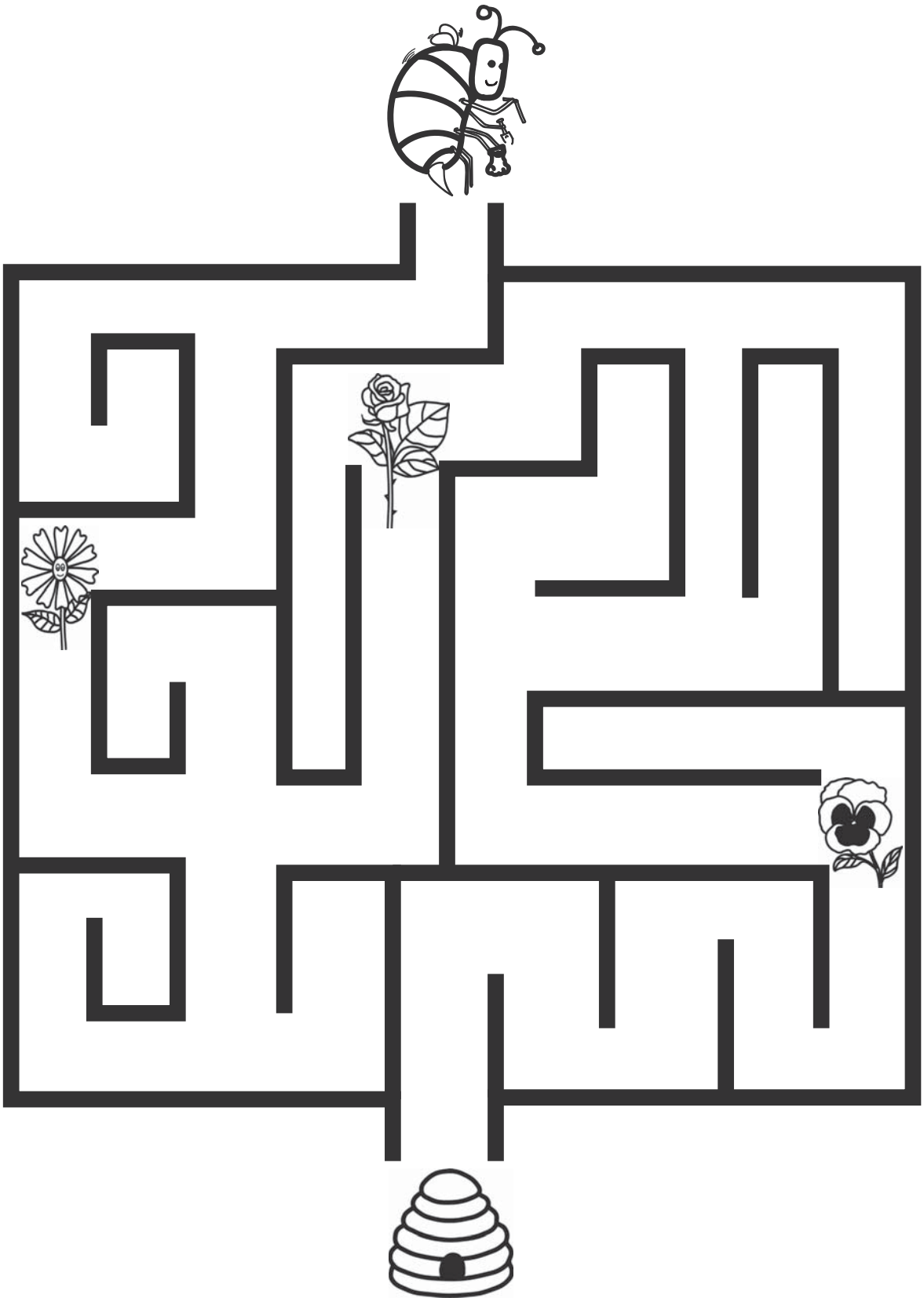


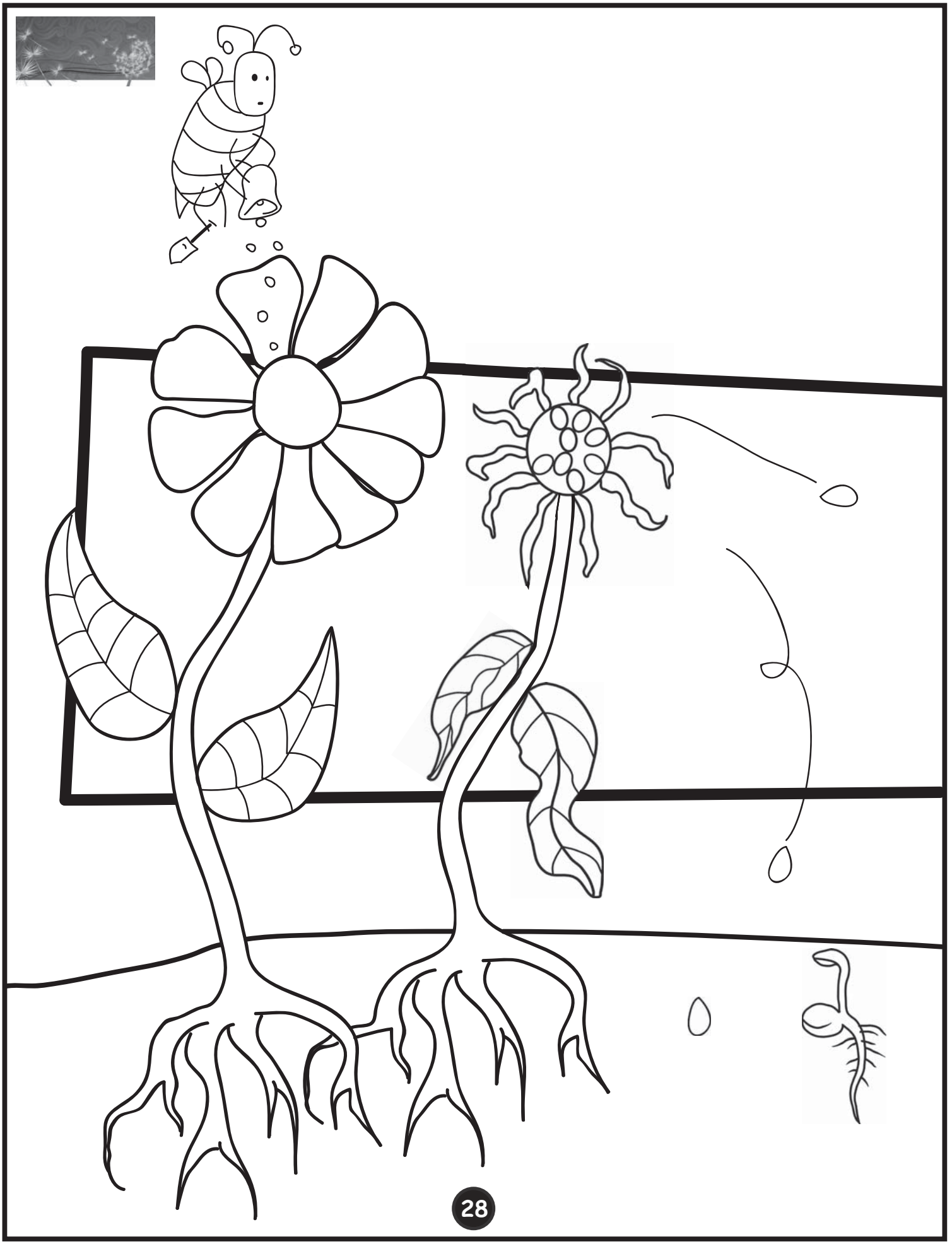


"My friend Barry Bee helps spread my pollen.
He works hard!
I like to share my sweet nectar with Barry."

Guide Barry Bee to the beehive, picking up pollen as you go!

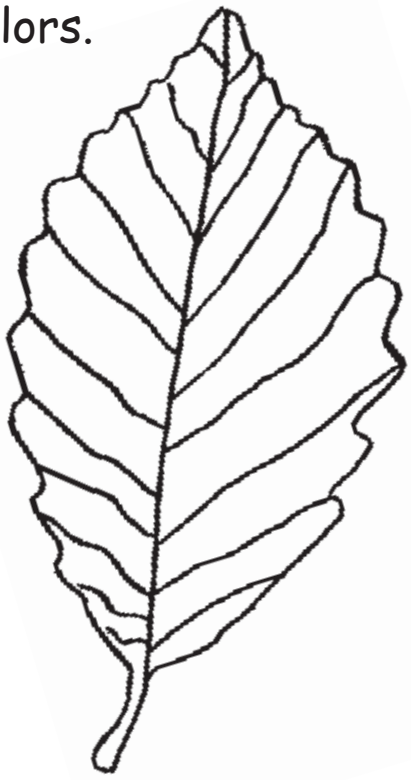


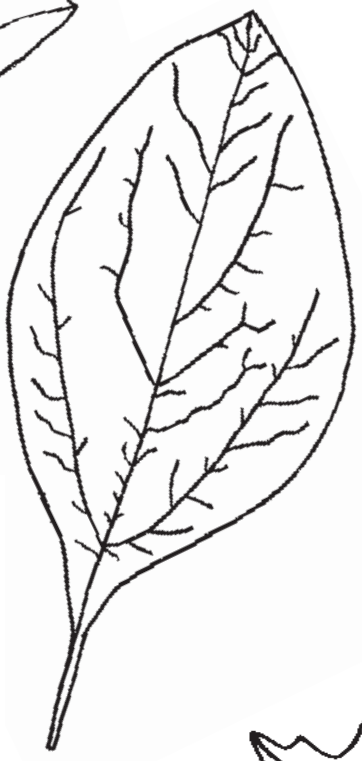


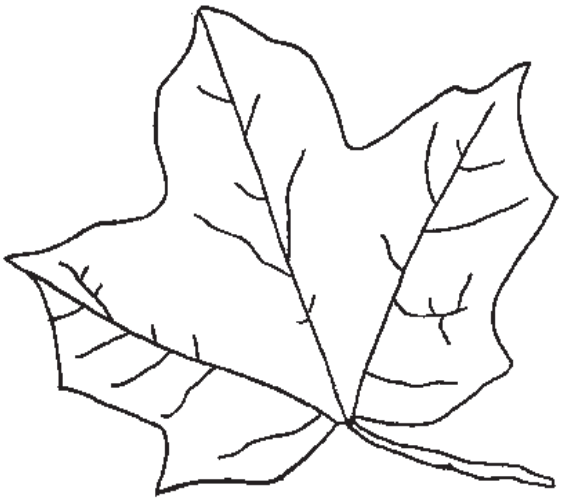


Autumn Leaves

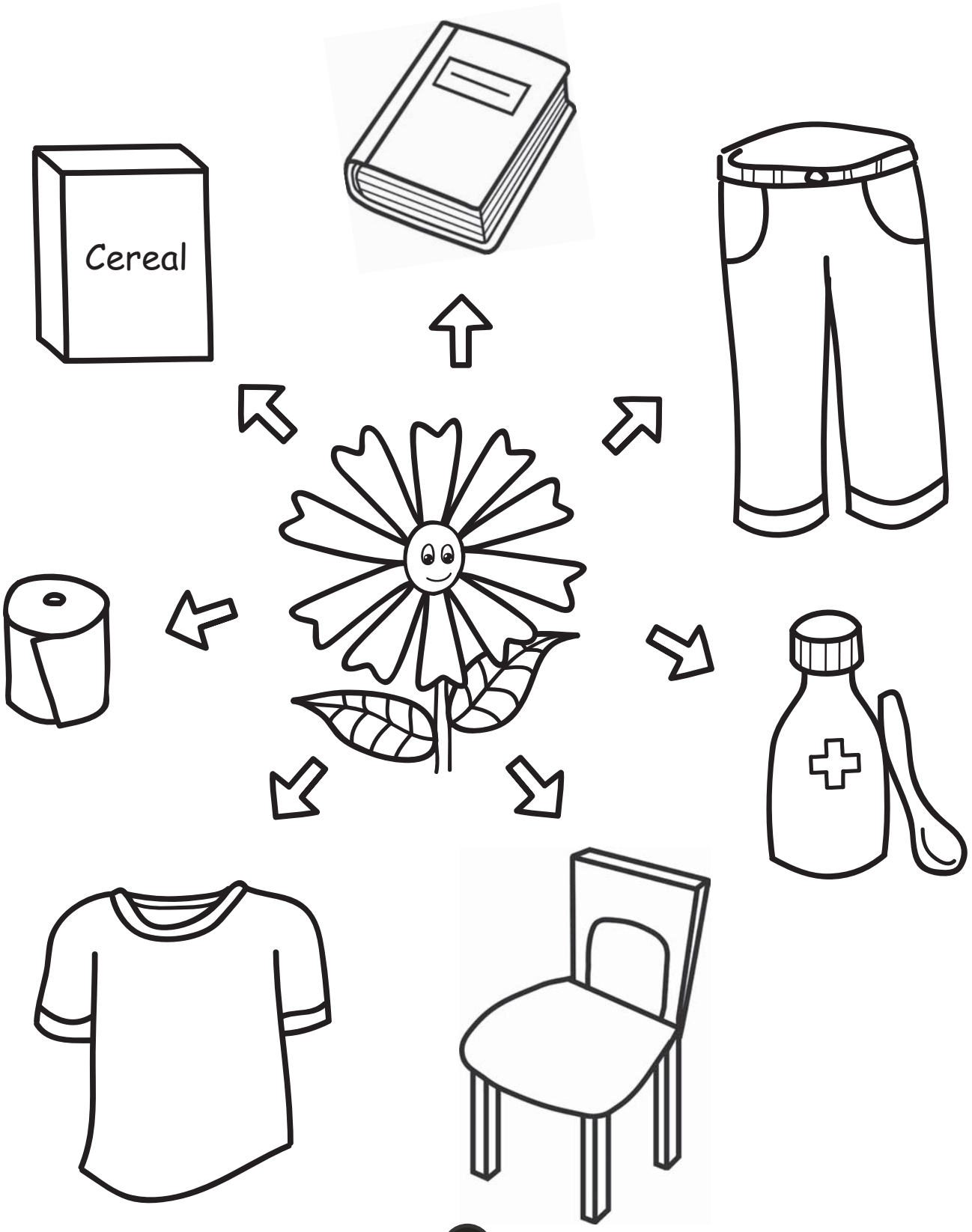
In the autumn, leaves stop using green chlorophyll.
The green color fades.
Color the leaves in autumn colors.







All sorts of things are made from plants.



Circle the items that are made from plants.

Painting with Plants Activity

What you need:

- A variety of colorful vegetables, fruits, flowers, and spices, such as blueberries (fresh or frozen), carrots, coffee (instant works well), prepared mustard, greens (dark lettuces, spinach), curry powder, and others you might want to try
- Small containers
- Paintbrushes or cotton swabs for painting
- Water
- Optional: lemon juice and baking soda

In different small containers, put small amounts of already ground or liquid plant material and add a very small amount of water. Mix until forming a thick liquid that can be used to paint. Some samples will need to be chopped, ground, or crushed into tiny pieces with a little water added. These include the blueberries, carrots, red peppers, and lettuces/spinach. Once crushed, the liquid can be filtered using a paper coffee filter. Lettuces can be used to make a beautiful green color by placing the dark leaf over the area to be colored and running a coin (such as a quarter) over it. The green color will be transferred to the paper. Blueberries and many purple fruits, vegetables, and flowers change color in acidic or basic conditions. If you add a small amount of vinegar to some of the blueberry liquid, it will turn pink. When you add baking soda mixed with a little water, the blueberry liquid will turn a beautiful purple. You can also use these to "dye" things like cloth, fibers, and boiled eggs.

More Activities!

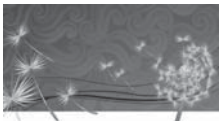
Feed Your Veggies!

What you need:

- 1 pack of bean seeds
- 2 small cups for planting seeds
- sand
- water
- plant fertilizer

Soak about 6 seeds in water overnight. Gather 2 cups and fill each with moist sand. Put 3 seeds in each cup just below the surface of the sand. Put the cups in the window and check them every day. Make sure they don't dry out! After you see the plants starting to grow, add fertilizer to 1 cup. Be sure to follow the instructions on the fertilizer container to see how much to add. Do not put fertilizer in the other cup. After 3–4 weeks, take the plants out of the sand and draw them below. How did each grow differently?

Plants with fertilizer:	Plants with no fertilizer:



More Activities!

How Plants Make More Plants!

What you need:

- lima beans, sunflower seeds, pumpkin seeds
- water
- small cups
- soil

Soak the lima beans in water for about an hour. With your parent's help, take one bean and separate it into its two parts. Look at the baby plant on the inside and find the small leaves and roots. Soak about 6–8 beans or other seeds in water overnight. Plant the seeds in cups with moist soil and put them on the windowsill. Now watch your plants grow every day! You can also cut the top off a carrot and put it in a shallow dish with water. Make sure it does not dry out and watch it grow without a seed!

Which Way to Grow?

What you need:

- lima or other bean seeds
- small pots or cups for planting seeds
- soil
- water

Soak about 6-8 bean seeds in water overnight. Gather 2 small pots or cups and fill each with moistened soil. Put about 3–4 seeds in each cup just below the surface. Place cups in the window and check them every day. Make sure they do not dry out. Once the plants have grown about 5–6 inches in height, turn one of the pots carefully on its side. What do you think will happen to the plants now? Watch what happens over the next week. After about 10 days take the plants out of each pot and wash off the soil. What has happened to each of the plants? Place these on paper and draw and color each plant on the next page. What do you think caused the change in the growth of the plants? Try this experiment again, placing one of the cups in the dark and one in the light. What do you think will happen to the plants growing in the dark? Take the plants growing in the dark out after about 10 days. What was different about the plants growing in the dark?

Draw and color your plants here.

Teachers, Parents, and Docents:
This coloring/activity book
was created with support from
the American Society of Plant Biologists
to include even the youngest learners
in the Society's vision to help all people
see the importance, relevance, and beauty
of plants in our daily lives.
This book covers the 12 Principles
of Plant Biology developed by the
ASPB Education Foundation
(see back cover)
in a way that pre- and early readers
can understand and appreciate.
It is meant to provide a fun way to learn
about plant anatomy, physiology, ecology, and
evolution. To request copies of this book or
to ask about possibilities to connect
with plant scientists in your area,
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The 12 Principles of Plant Biology

1. Plants contain the same biological processes and biochemistry as microbes and animals. However, plants are unique in that they have the ability to use energy from sunlight along with other chemical elements for growth. This process of photosynthesis provides the world's supply of food and energy.

2. Plants require certain inorganic elements for growth and play an essential role in the circulation of these nutrients within the biosphere.

3. Land plants evolved from ocean-dwelling, algae-like ancestors, and plants have played a role in the evolution of life, including the addition of oxygen and ozone to the atmosphere.

4. Reproduction in flowering plants takes place sexually, resulting in the production of a seed. Reproduction can also occur via asexual propagation.

5. Plants, like animals and many microbes, respire and utilize energy to grow and reproduce.

6. Cell walls provide structural support for the plant and also provide fibers and building materials for humans, insects, birds, and many other organisms.

7. Plants exhibit diversity in size and shape ranging from single cells to gigantic trees.

8. Plants are a primary source of fiber, medicines, and countless other important products in everyday use.

9. Plants, like animals, are subject to injury and death due to infectious diseases caused by microorganisms. Plants have unique ways to defend themselves against pests and diseases.

10. Water is the major molecule present in plant cells and organs. In addition to an essential role in plant structure, development, and growth, water can be important for the internal circulation of organic molecules and salts.

11. Plant growth and development are under the control of hormones and can be affected by external signals such as light, gravity, touch, or environmental stresses.

12. Plants live and adapt to a wide variety of environments. Plants provide diverse habitats for birds, beneficial insects, and other wildlife in ecosystems.

Please RECYCLE this book—it is made from plants.

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