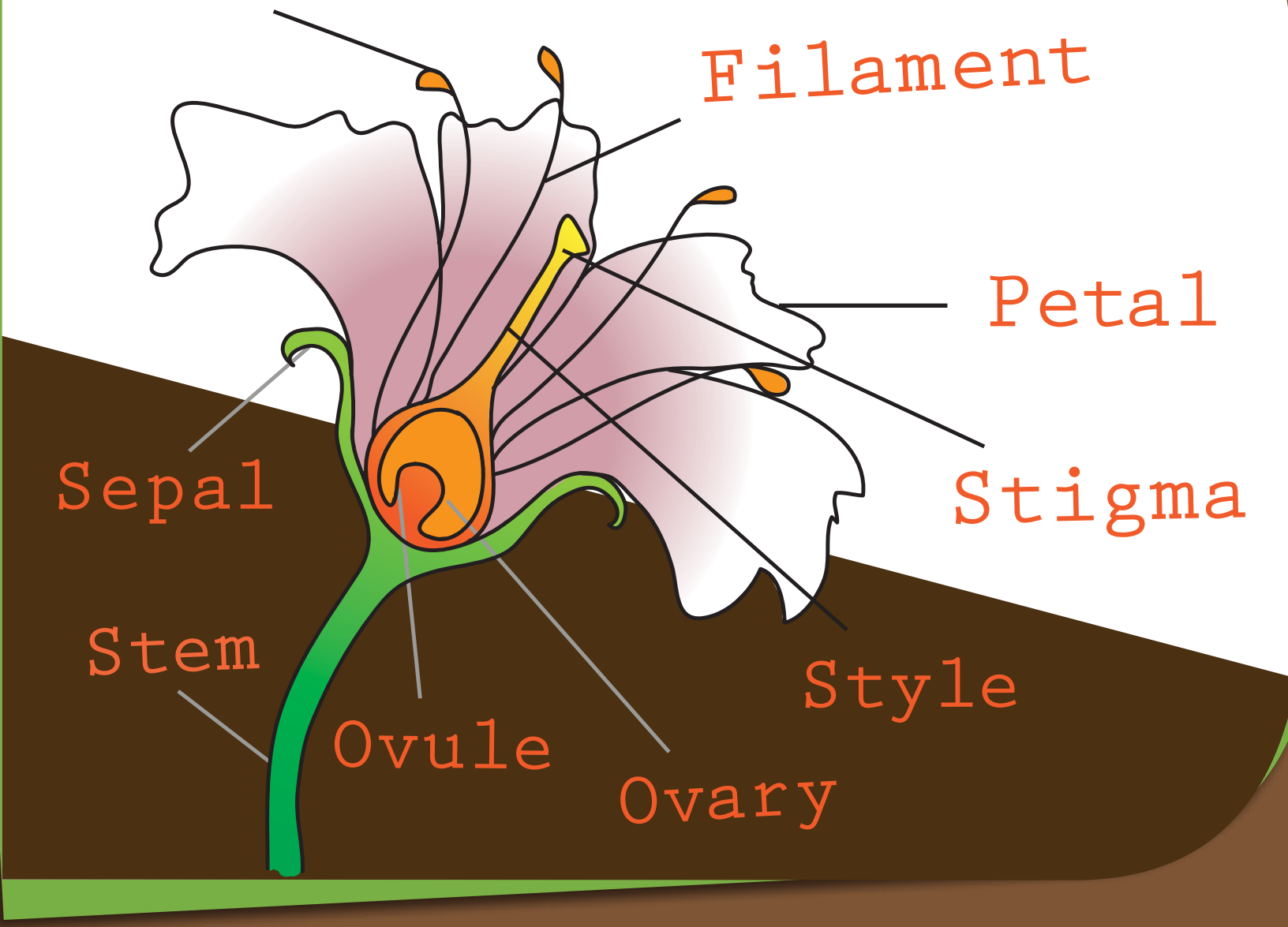
Read to Learn

Natural Science

4th Grade

Anther:
Contains the Pollen



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Read to Learn: Natural Science

** Has an Answer Sheet*

GEOLOGICAL PROCESSES

AND HOW THEY SHAPE OUR EARTH

There are many different types of geological processes; some slow, and some fast. They are constantly at work changing the face of our Earth, both destroying land, and creating new land.

EROSION

Erosion is the process of materials moving from their source to another location through weathering. There are several types of erosion, but the most common are erosion by wind, water, and ice.

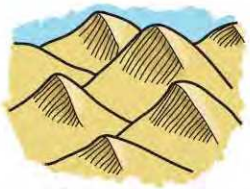
EXAMPLES

River Deltas: Water Erosion

Rivers carry sediment from farther upstream, and it is deposited at the ocean.

Glacial Valleys: Ice Erosion

Glaciers move materials from the mountains downslope as they move.



Sand Dunes: Wind Erosion

Wind moves the sand to new locations, building new dunes.

WEATHERING

Weathering is the breaking down of rock, soil, and minerals. The main types are physical (including freezing, abrasion, and thermal stress) and chemical (including dissolution, oxidation, and carbonation)

EXAMPLES

Example of Physical Weathering: Abrasion

Abrasion weathering can be caused by wind or water carrying particulate matter, and as it passes rocks or other materials, the material is worn down.

Example of Chemical Weathering: Oxidation

Oxidation is caused by the reaction of materials with oxygen. The most popular example of this is rust, which is oxidized iron. This can be seen in iron-rich rocks.

PLATE TECTONICS

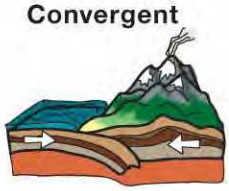
Plate tectonics states that the Earth's crust is broken up into different "plates" that slowly move and interact with each other. Where these plates meet are often very geologically active. There are three types of plate boundaries.

EXAMPLES

Transform

Transform boundaries occur where two plates slide along each other. Powerful earthquakes are common along transform boundaries.

Convergent



Convergent boundaries can result in either subduction (shown above, volcanos are commonly found here) or collision (resulting in uplift).

Divergent

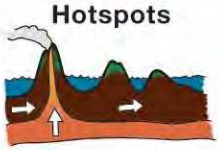
Divergent boundaries are the only constructive boundaries (resulting in newly created land). They occur where plates pull apart.

VOLCANISM

Volcanism refers to the phenomenon of magma from the Earth's mantle coming to the surface through openings. Volcanos are most common along Divergent and Subductive plate boundaries, and hotspots.

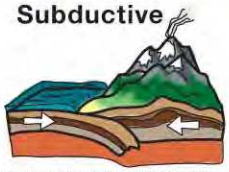
EXAMPLES

Hotspots



Hotspot are places where magma comes up through the crust, and as the crust moves from continental drift, a string of volcanos or islands are formed.

Subductive



Subduction increases volcanism due to the crust being pushed into the mantle. Often the material will rise to the surface as a volcano.

Divergent

Divergent zones will often have magma coming to the surface due to the gapcreated by the plates pulling apart from each other.

GEOLOGICAL PROCESSES REVIEW
HOW THEY SHAPE OUR EARTH!

On page two of this worksheet, you will answer questions based on the information you read on page one.

Circle the best answer.

1. Erosion is:
   - **A.** The process of moving materials from their source to another location through weathering.
   - **B.** The breaking down of rock soil and minerals.
   - **C.** Magma coming up from the Earth's mantle through openings in the crust.

2. Wind carrying abrasive materials blows against a rock formation, wearing it down over time. This is an example of:
   - **A.** Erosion
   - **B.** Weathering
   - **C.** Oxidation

3. In the Pacific Northwest in the United States, a small earthquake happens off the coast. This is caused by:
   - **A.** Volcanism
   - **B.** Weathering
   - **C.** Plate Tectonics

4. True or False? The Grand Canyon was probably formed through wind abrasion.
   - True
   - False

5. The San Andreas fault in California is where the North American plate and the Pacific plate rub against each other, north to south. This is an example of a:
   - **A.** Convergent Boundary
   - **B.** Transform Boundary
   - **C.** Volcanism

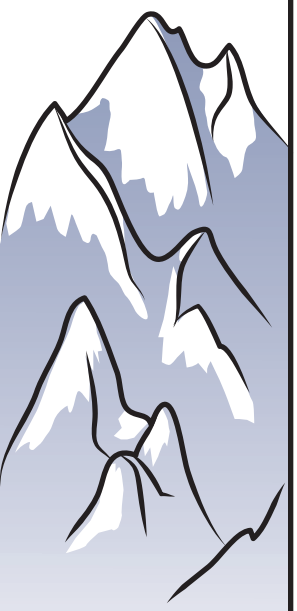
6. The Hawaiian island chain is volcanic in origin. As time passes, new islands are formed from erupting volcanoes as the Pacific plate slowly moves. What is causing the volcanoes?
   - **A.** Weathering
   - **B.** A Convergent Boundary
   - **C.** A Hotspot

7. Which one of the following is NOT one of the three types of plate boundaries?
   - **A.** Divergent
   - **B.** Hotspot
   - **C.** Convergent
   - **D.** Transform

8. True or False? Weathering is the breaking down of soil, rock, and minerals over time.
   - True
   - False

GEOLOGY Word Search

The words can be horizontal, vertical, or diagonal.



C J G E P S H L O A E R O S I O N T E
A U H S R E A O U L I A S A P L U H R
L S A U U A M U T W P L E L J K C A P
D E O B A M D R N S A G R M R V L N K
E D E D N O O N D G P H T E M O K E A
R I L U F U F U R H N O U T H L A V A
A M A C O N T I N E N T T A E C A P H
S E O T S T A G B T I E M M R A I E U
O N A I G Q M N A A A F E O N N E R S
P T P O W U G E I Z S I R R E O B M N
I A W N U A H O O U H U N P O A A K E
S R F H G G A U E W E A T H E R I N G
T Y N G N O O S J S E Y D I L G F D B
I J E M A G M A I T O W R C E U G U P

Find the terms listed below in the word search puzzle!

Volcano: A vent in Earth's surface through which molten rock and gases escape.

Continent: Large landmasses of the Earth.

Subduction: An oceanic plate is pushed underneath either another oceanic plate, or a continental plate.

Magma: A mixture of molten rock and other materials beneath the Earth's surface.

Lava: Molten rock expelled by a volcano during an eruption.

Hotspot: Areas of the mantle that are unusually hot and cause volcanic activity on the Earth's surface

Caldera: A cauldron-like volcanic featuer caused by the collapse of land after a volcanic eruption.

Weathering: The breaking down of rocks, soils, and minerals through direct contact with the Earth's atmosphere.

Erosion: The process of the transport of solids from their natural source to a different location, usually through wind, water, and ice.

Igneous: One of the three types of rocks. Igneous rock is formed through the cooling and solidification of lava or magma.

Sedimentary: One of the three types of rocks. Sedimentary rocks are formed from the deposition of mineral or organic sediments.

Metamorphic: One of the three types of rock. Metamorphic rocks are created by the transformation of existing rock through heat and pressure.

Seamount: A mountain rising from the bottom of the ocean, but that does not reach above the surface of the water.

Mountain: A landform that stands higher than the surrounding land, and often has steeper sides than a hill. They are usually formed through volcanism, plate tectonics, or occasionally erosion.

Reading

Amanda and the Panda

Number the sentences below to put them in order and form a story.

_____As soon as they walked in the gate, Amanda and Avery made a beeline for the enclosure where Penelope lived. They ran toward the bamboo plants growing high above the fence around Penelope's home.

_____One sunny Saturday morning, Amanda's family decided to take a trip to the zoo. Amanda was excited! "I can't wait to see Penelope," she exclaimed. Penelope was a panda bear who had recently come to live at the zoo. Amanda loved animals, and she liked pandas most of all.

_____When they reached the panda enclosure, however, they found it empty. The sign reading "Penelope the Panda" was missing, too. Amanda's parents soon caught up, and Amanda explained breathlessly what she and Avery had discovered. "What could've happened to Penelope?" Amanda asked.

_____Amanda noticed a crowd beginning to gather nearby. "Look over there," said Amanda's mother. "I think I see your friend," said Amanda's father. Amanda turned to look.
What she saw made her gasp with delight. There was Penelope, looking healthy as ever, lumbering through a big door into her enclosure. She sat down, broke off a piece of bamboo, and began to eat.

_____"Maybe she's sick," Avery responded, "or maybe worse!" Amanda frowned and turned away from the enclosure. She couldn't bear the thought of never seeing Penelope again.
"How could the zoo have let that happen?" Amanda lamented. "They're supposed to keep the animals safe and healthy! Isn't that why they're here?" Avery put a comforting hand on his big sister's shoulder.

_____Amanda looked back at Penelope's enclosure and saw a second panda bear enter through Penelope's door. "That's Peter. He just moved here from another zoo," the man in the uniform explained. "If we're lucky, this time next year, you might see a panda cub in this same place."

_____"A baby panda! That would be just about the best thing I've ever seen," said Amanda. "Me, too!" Avery agreed. They watched as Peter went to sit beside Penelope, breaking off his own piece of bamboo to eat. "I think they're going to get along just fine," said Amanda.

_____"Penelope's alright!" Amanda exclaimed. "She's better than alright," said a smiling man in a uniform, who stood nearby holding a large sign. He hung the sign on the pole where the old sign once hung, and Amanda saw that it now read "Penelope and Peter."

Diagramming Sentences: The Secret Garden

In Frances Hodgson Burnett's novel *The Secret Garden,* Mary Lennox discovers more than a garden. She learns to love and take care of something. In this passage, we feel the wonder and suspense of her discovery.

DIRECTIONS

Circle the noun that is the subject of every sentence. There may be more than one!
Underline every verb that shows the action in each sentence. One sentence can have more than one verb!
Place a star next to every adjective.
Place parentheses ( ) around every preposition.

Mary Lennox always said that what happened at that moment was Magic.

One of the nice little gusts of wind rushed down the walk.

Suddenly the gust of wind swung aside some loose ivy trails.

She jumped toward it and caught it in her hand.

She had seen something under it—a round knob which had been covered by the leaves hanging over it.

It was the knob of a door.

She put her hands under the leaves and began to pull and push them aside.

Mary's heart began to thump and her hands to shake a little in her delight and excitement.

It was the lock of the door which had been closed ten years.

She put her hand in her pocket, drew out the key and found it fitted the keyhole.

She put the key in and turned it.

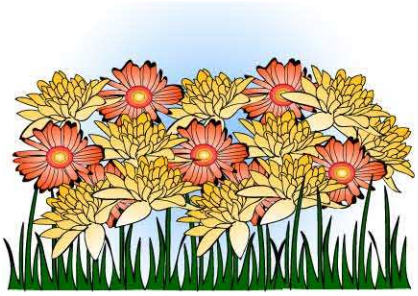
She took a long breath and looked behind her up the long walk to see if any one was coming.

She held back the swinging curtain of ivy and pushed back the door which opened slowly—slowly.

Then she slipped through it, and shut it behind her, and stood with her back against it, looking about her and breathing quite fast with excitement, and wonder, and delight.

She was standing inside the secret garden.

Gail's Garden



Complete the story by writing in the empty boxes below.

Gail knelt in her garden, pulling weeds in her tomato patch. Sunlight streamed through the leaves of the apple tree, casting pretty shadows across the yard. A bluebird perched on top of the fence, singing a little song.

Suddenly, a rustling came from behind the sage bushes. Gail turned just in time to see her cat Geranium dash across the yard!

"Geranium!" Gail called. "Come back here! What are you chasing--or, what's chasing you?"

Gail picked up Geranium and cradled her in her arms.

"I sure am glad you're okay," she told the purring cat. "I guess the weeds aren't the only wild thing in the garden!"

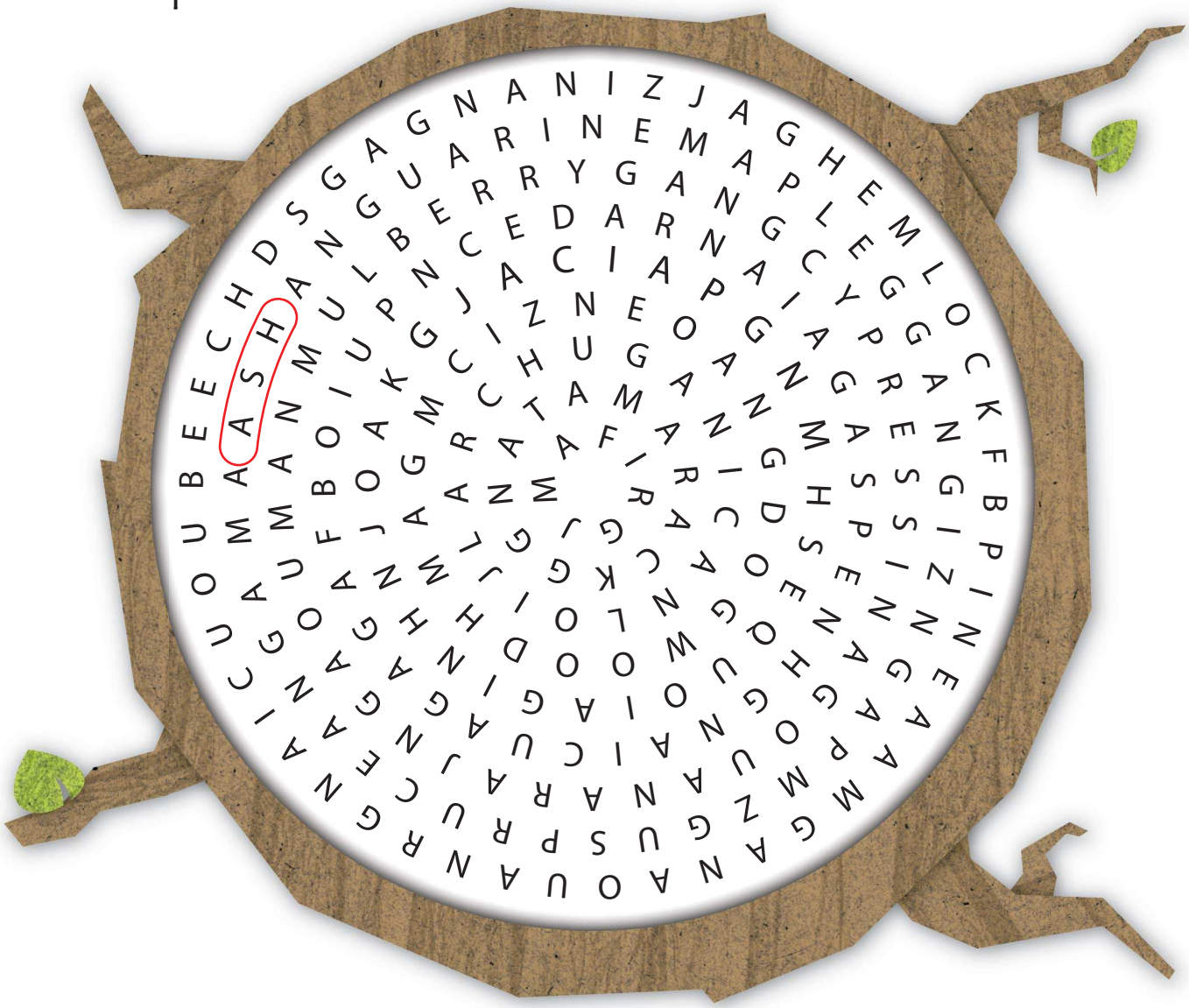
Tree Vocabulary

Tree Types

4TH GRADE
EARTH SCIENCE

Most trees fall into one of two categories: **coniferous** or **deciduous**. Conifers typically have long, thin needles as foliage while deciduous trees have broad leaves. All coniferous trees are cone bearing, hence the name **con**-iferous. The leaves of deciduous trees change color in the process of falling to the ground and regrowing each year.

The coniferous and deciduous trees listed at the bottom of the page are hidden in the circular word search. Rotate the page to find each tree. All words are spelled forwards on a circular path.



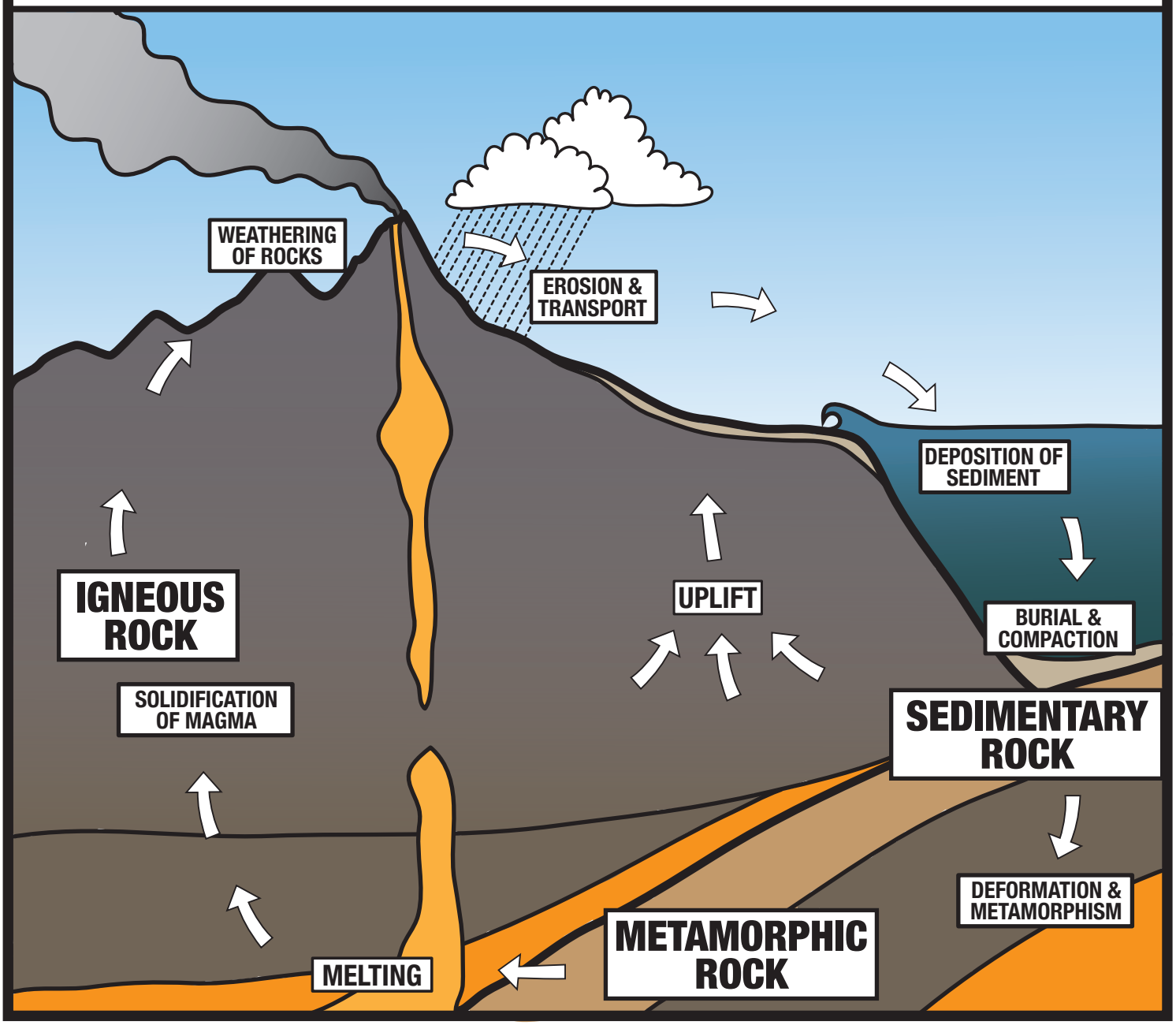
Deciduous

- Ash ✔
- Aspen
- Beech
- Cypress
- Dogwood
- Maple
- Mulberry
- Oak

Coniferous

- Cedar
- Fir
- Hemlock
- Larch
- Pine
- Sequoia
- Spruce
- Tamarack

All About The Rock Cycle



The rock cycle describes the change and movement of materials on and inside the Earth. The cycle is essentially a loop; stating that materials are neither created nor destroyed, they only change form when the environment changes. Sediments eroded from solid rocks are transported to a new location; in this diagram, the sediments are carried into the ocean where they settle and compact. Sedimentary rocks are created at the end of this stage. As the sedimentary rocks are buried deeper and deeper, heat and pressure cause physical or chemical changes in the rock, and they change to metamorphic rock. When the rock is pushed deep into the Earth, they can melt into magma. Once this magma solidifies, either inside the crust or after being expelled by a volcano, they change to igneous rocks. Eventually the rocks are worn down through weathering, and the process begins anew with the erosion and transport of the new sediments.

All About The Rock Cycle

On page two of this worksheet, you will answer questions based on the information you read on page one.

Circle the best answer.

1. The Nile river carries sediments to the ocean. Over time, the sediments are compressed as more sediments are deposited on top of them. Which type of rock will be formed?

A. Sedimentary
B. Metamorphic
C. Igneous

2. The volcano Kilauea on the big island of Hawai'i is erupting and lava is ejected from the volcano vent. The lava solidifies to form what type of rock?

A. Sedimentary
B. Metamorphic
C. Igneous

3. Off the coast of the Pacific Northwest in the United States, the Pacific plate is being pushed underneath the North American plate in a subduction zone, caused by plate tectonics. As the rock from the Pacific plate is pushed under the North American plate, it is subjected to high temperatures and pressures. Which rock will be created from this process?

A. Sedimentary
B. Metamorphic
C. Igneous

4. In the Arizona desert, a sudden rainstorm washes sand and sediment into the Colorado river, which eventually deposits the sediments into the ocean. This process is called:

A. Erosion & Transport
B. Deposition
C. Weathering

5. In the desert, wind picks up and carries fine particles of sand and dirt. As the wind blows against the rocks, the particles rub against the rocks and wear them down in a process called:

A. Weathering
B. Transport
C. Erosion

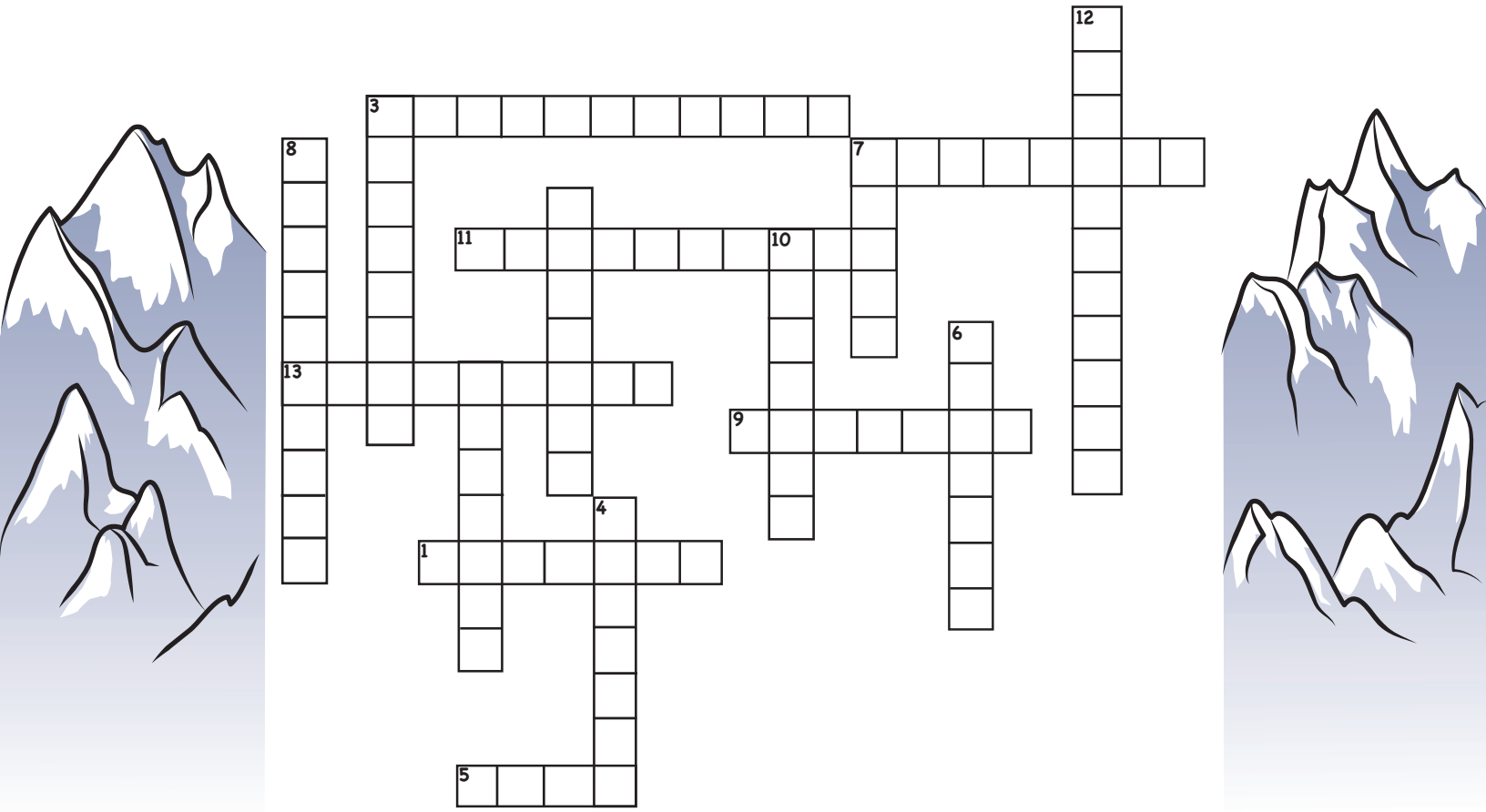
6. Which one of the following is NOT one of the three types of rock?

A. Sedimentary
B. Lava
C. Metamorphic
D. Igneous

7. True or False? Magma is lava that has been ejected from beneath the Earth's crust through a volcano.

True
False

GEOLOGY Crossword



Choose from the listed terms to match the description listed for each crossword space.

Volcano, Weathering, Continent, Sedimentary, Hotspot, Seamount, Metamorphic, Caldera, Erosion, Magma, Subduction, Igneous, Lava, Mountain

Across

1. A vent in Earth's surface through which molten rock and gases escape.

3. One of the three types of rocks. These rocks are formed from the deposition of mineral or organic sediments.

5. Molten rock expelled by a volcano during an eruption.

7. A landform that stands higher than the surrounding land, and often has steeper sides than a hill. They are usually formed through volcanism, plate tectonics, or occasionally erosion.

9. Areas of the mantle that are unusually hot and cause volcanic activity on the Earth's surface.

11. The breaking down of rocks, soils, and minerals through direct contact with the Earth's atmosphere.

13. Large landmasses of the Earth.

Down

3. A mountain rising from the bottom of the ocean, but that does not reach above the surface of the water.

4. A cauldron-like volcanic featuer caused by the collapse of land after a volcanic eruption.

6. The process of the transport of solids from their natural source to a different location, usually through wind, water, and ice.

7. A mixture of molten rock and other materials beneath the Earth's surface.

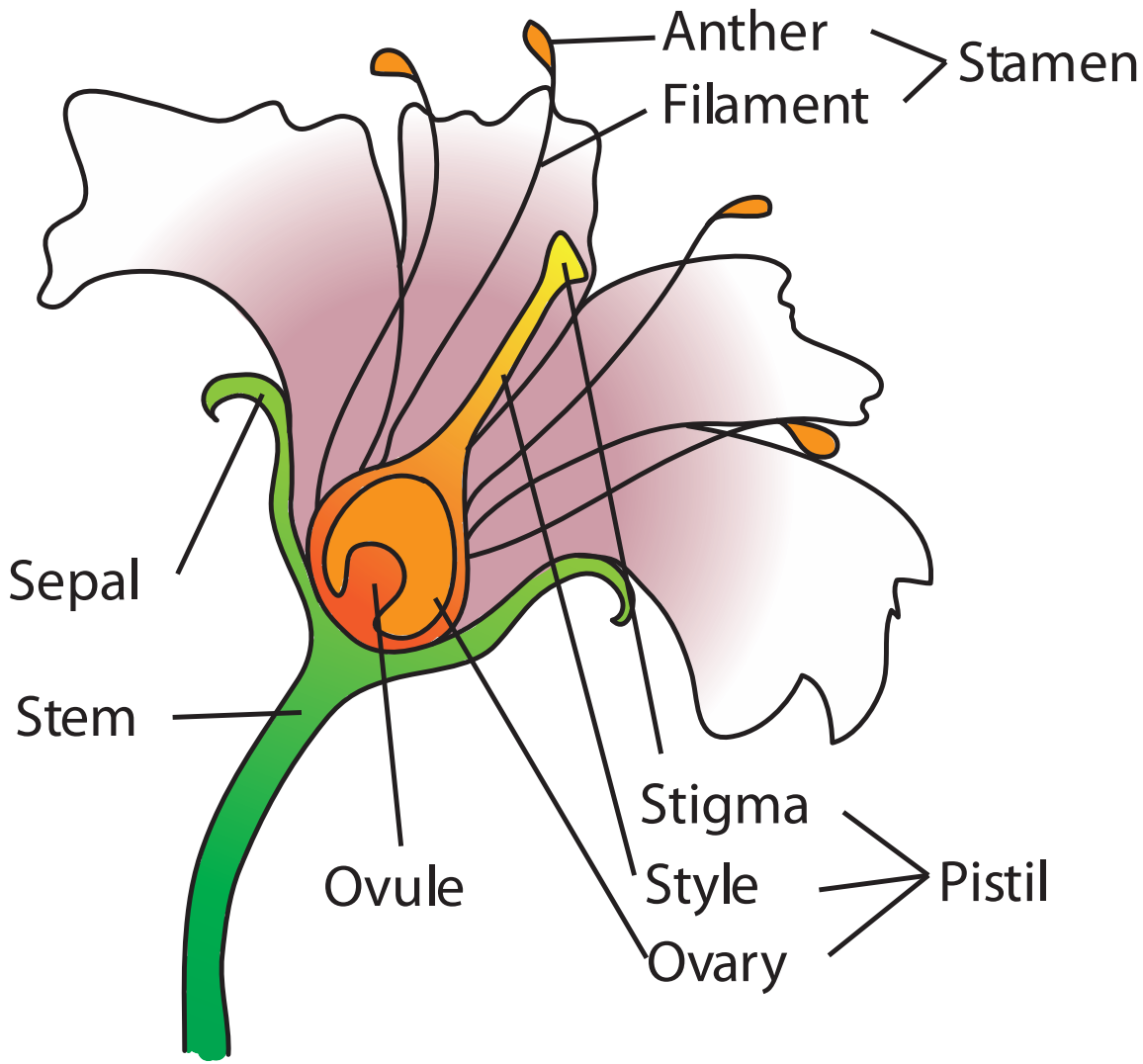
8. An oceanic plate is pushed underneath either another oceanic plate, or a continental plate.

10. One of the three types of rocks. These rocks are formed through the cooling and solidification of lava or magma.

12. One of the three types of rock. These rocks are created by the transformation of existing rock through heat and pressure.

Anatomy of a Flower

Flowers may look very different, but most of them are made up of the same parts!



Anther: Contains the pollen.

Filament: The stalk supporting the anther.

Ovule: This will become the seed.

Stigma: The receptacle for the pollen.

Style: The stalk between the stigma and the ovary.

Ovary: This surrounds the seed as it matures. In some plants, this becomes a fruit.

Sepal: These are modified leaves that suurround the flower when it is still a bud.

Stem: The stalk that supports the whole flower.

Petal: These are modified leaves that surround the reproductive parts. Often they are brightly colored to attract pollinating insects and animals.

4th Grade Spelling Test #7

Going Green

Rewrite these spelling words.

1. conservation _____
2. ecological _____
3. resources _____
4. environment _____
5. reusable _____
6. recycling _____
7. biodegradable _____
8. reduce _____
9. emissions _____
10. natural _____

Use your spelling words to complete these tips on staying green.

1. Use _____ bags and containers whenever possible.

2. _____ your family's carbon _____ by unplugging appliances when no one is using them.

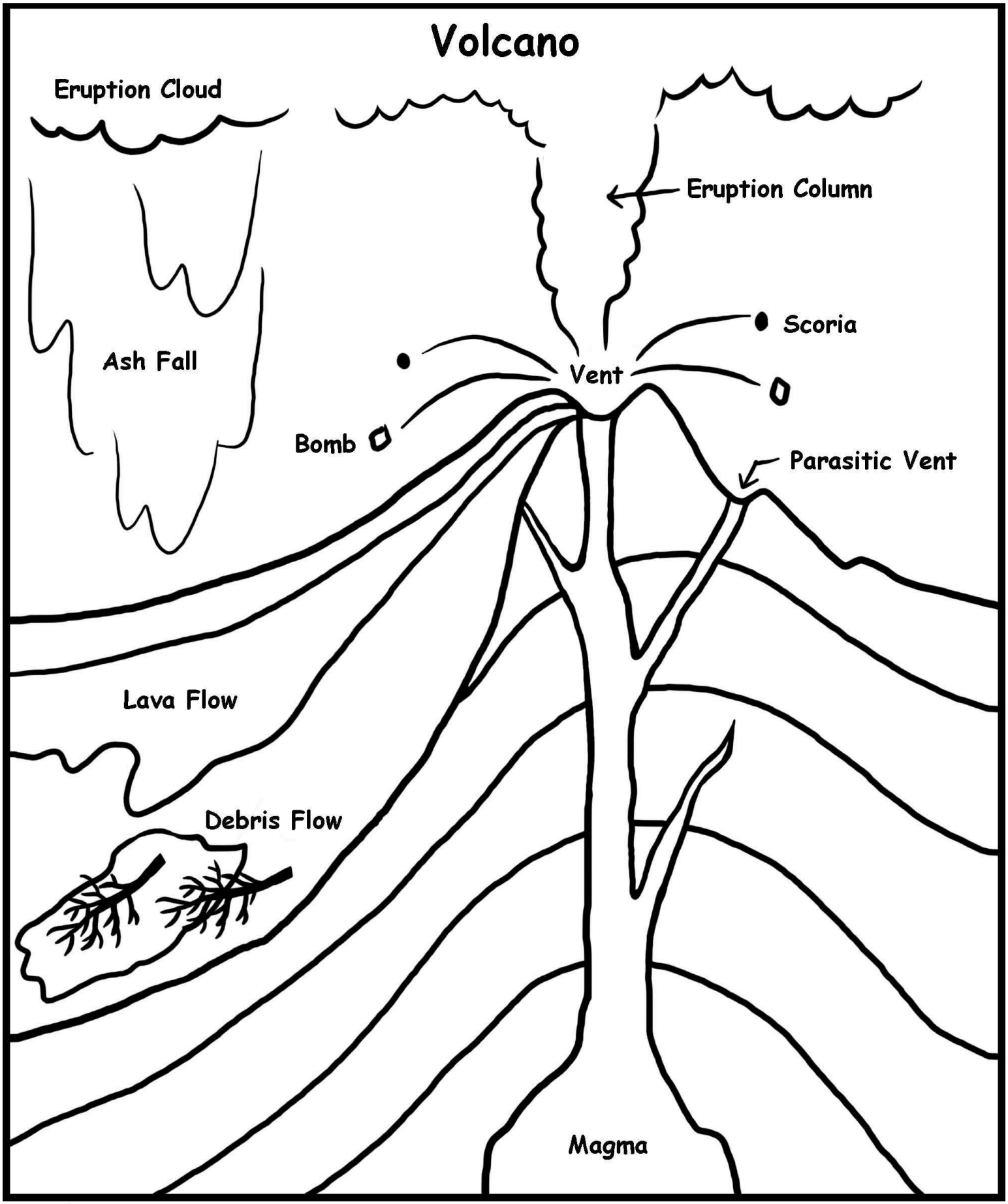
3. Put plastic packaging marked **1-7** in the _____ instead of the trash.

Answers: 1. reusable/ biodegradable 2. reduce/ emissions 3. recycling

Creative Writing

What if humans lived under water? What would we eat? How would we move around? Write a brief paragraph describing how humans would live under water.

Volcano



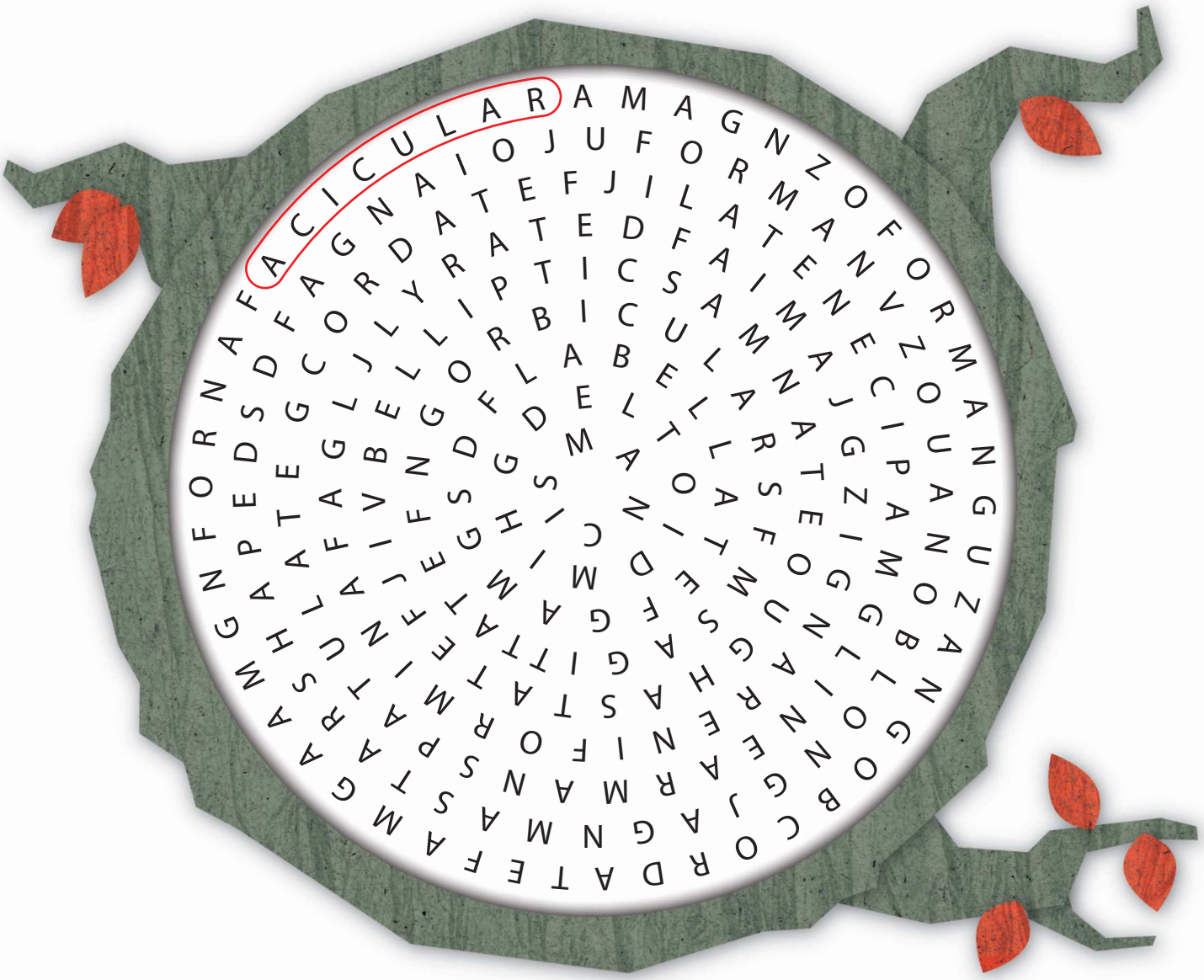
Tree Vocabulary

Leaf Shapes

4TH GRADE
EARTH SCIENCE

Each plant produces it's own leaf which has many subtle characteristics that separate it from the leaves of other plants. Many leaf shapes, however, are very similar and have been given names to categorize them more easily.

Some leaf shapes are listed below and hidden in the circular word search. Rotate the page to find each leaf. All words are spelled forwards on a circular path.




Acicular ✔
(needle-shaped)


Cordate


Deltoid


Elliptic


Flabellate
(fan-shaped)


Hastate


Linear


Lyrate


Obcordate


Oblong


Orbicular

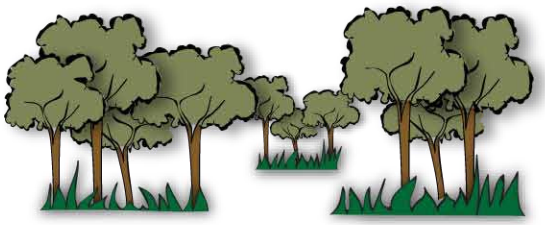

Reniform


Sagittate


Spatulate


Star Shaped

A Walk Through the Forest



Complete the story by writing in the empty boxes below.

Franka went walking through the forest with her mom and dad. It was a bright, warm day, and Franka liked the way the sunlight filtered down through the trees.

"The forest can be a safe place," said Franka's mom, "as long as you're careful and stay on the trail."

"I will," Franka promised.

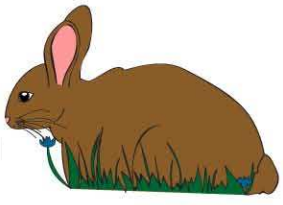
"Look at that rabbit!" Franka's father exclaimed. Franka turned just in time to see a fluffy, brown tail disappear into a blackberry bramble.

"I missed it," Franka said sadly. Just then, the rabbit darted out of the bush. Before she could stop herself, Franka dashed after it. She broke through the bushes and found herself tumbling down a hill!

"You're lucky it was just a small hill," said Franka's dad.

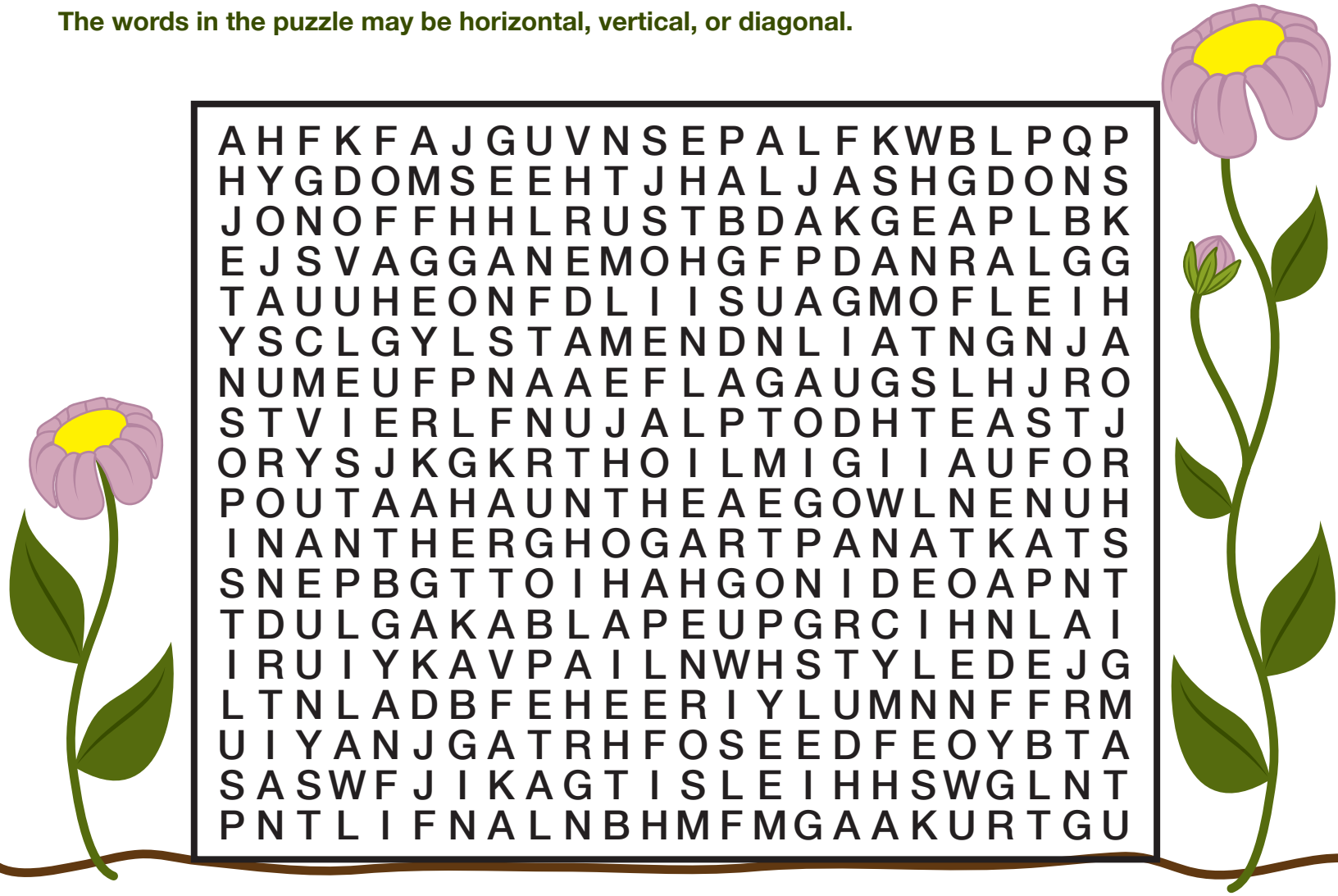
Franka nodded, rubbing her sore elbow. "The forest is a great place to be..."

"...As long as you pay attention and stay on the trail," said Franka's mom and dad in unison.



Plant Reproduction Word Search

The words in the puzzle may be horizontal, vertical, or diagonal.



A H F K F A J G U V N S E P A L F K W B L P Q P
H Y G D O M S E E H T J H A L J A S H G D O N S
J O N O F F H H L R U S T B D A K G E A P L B K
E J S V A G G A N E M O H G F P D A N R A L G G
T A U U H E O N F D L I I S U A G M O F L E I H
Y S C L G Y L S T A M E N D N L I A T N G N J A
N U M E U F P N A A E F L A G A U G S L H J R O
S T V I E R L F N U J A L P T O D H T E A S T J
O R Y S J K G K R T H O I L M I G I I A U F O R
P O U T A A H A U N T H E A E G O W L N E N U H
I N A N T H E R G H O G A R T P A N A T K A T S
S N E P B G T T O I H A H G O N I D E O A P N T
T D U L G A K A B L A P E U P G R C I H N L A I
I R U I Y K A V P A I L N W H S T Y L E D E J G
L T N L A D B F E H E E R I Y L U M N N F F R M
U I Y A N J G A T R H F O S E E D F E O Y B T A
S A S W F J I K A G T I S L E I H H S W G L N T
P N T L I F N A L N B H M F M G A A K U R T G U

Find the terms listed below in the word search puzzle!

TERMS:

PISTIL: the female ovule-bearing part of a flower composed of ovary and style and stigma.

STAMEN: the male reproductive organ of a flower.

POLLEN: spores that contain male gametes and that are borne by an anther in a flowering plant.

SEED: refers to the whole structure that contains the zygote and endosperm, and that will germinate to grow a seedling.

OVULE: a small structure that contains the female germ cell of a plant; develops into a seed after fertilization.

GERMINATION: the process of a seedling sprouting out of a seed.

ANTHER: the part of the stamen that contains pollen; usually borne on a stalk

PETAL: modified leaves that surround the reproductive parts of flowers; they are usually brightly colored.

STIGMA: the structure that is at the end of the style and received pollen.

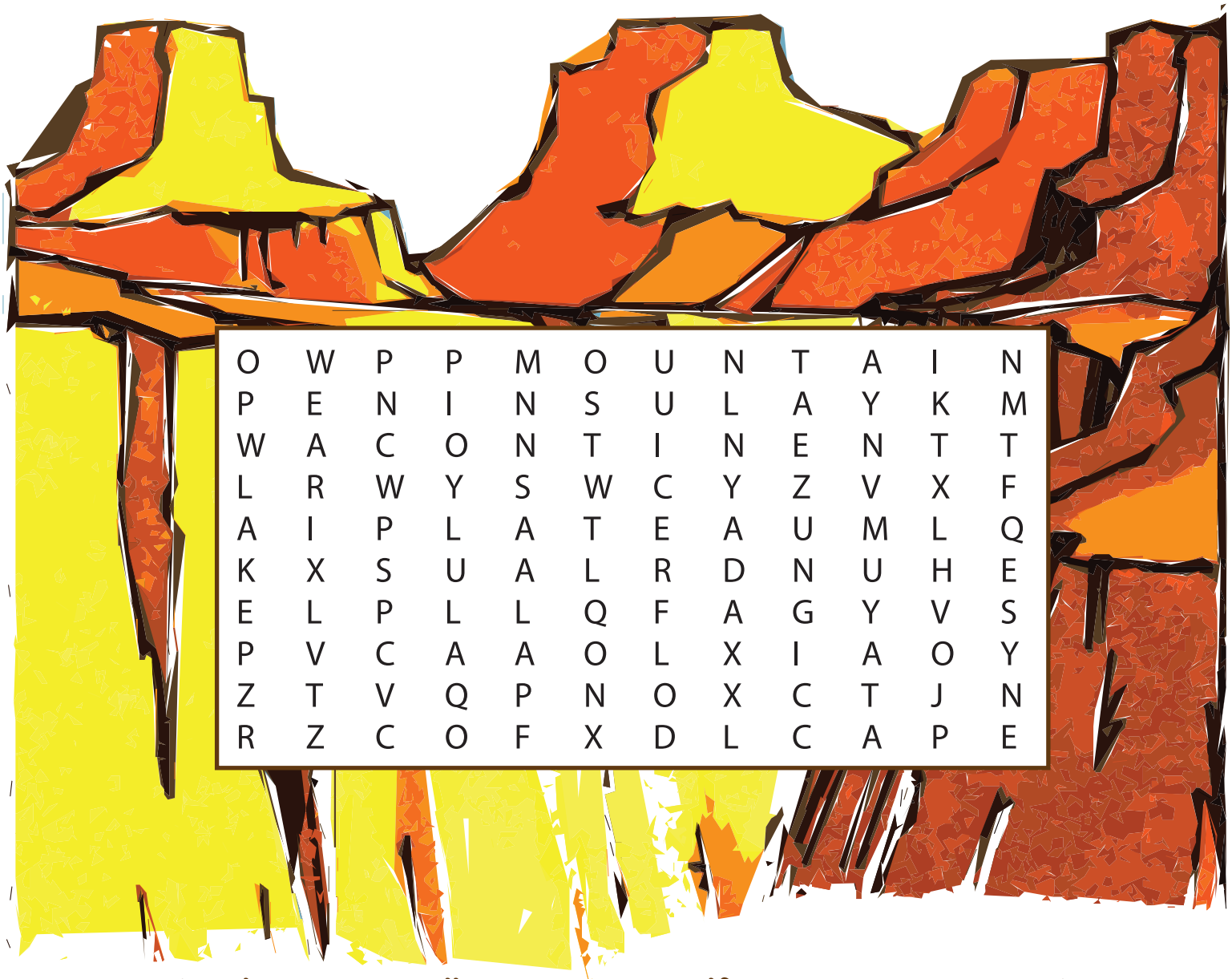
STYLE: connects the stigma to the inner female parts of the flower.

SEPAL: small modified leaves that are found underneath the petals.

Reading Vocabulary

LANDFORMS VOCABULARY

Landforms are natural features of the Earth's surface. They come in many shapes, colors, and sizes. They can be big like Mount Everest or mossy like a marsh! Try and find the different landforms in the canyon below. The words are spelled forwards, diagonal, and down.



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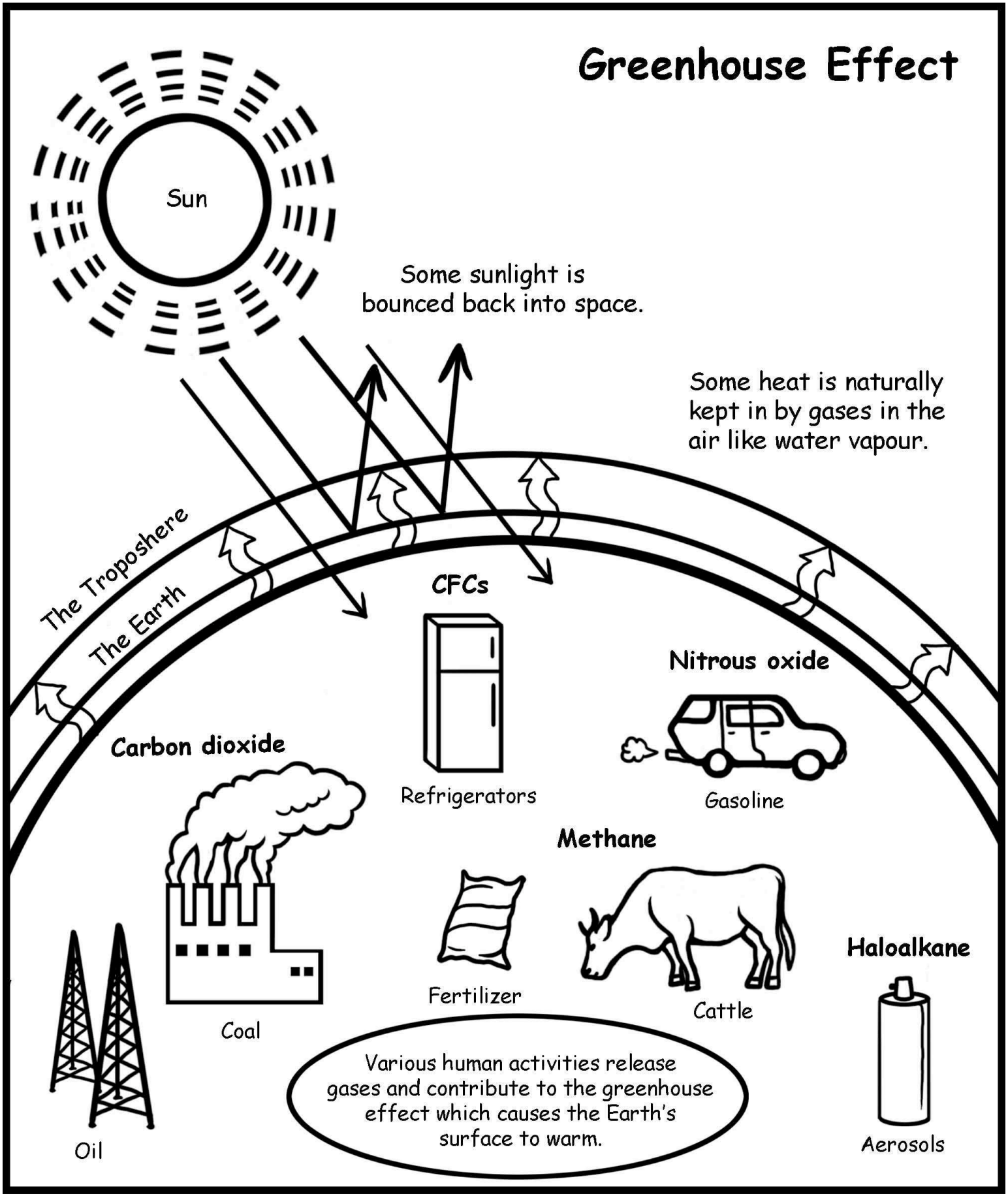
L	R	W	Y	S	W	C	Y	Z	V	X	F
A	I	P	L	A	T	E	A	U	M	L	Q
K	X	S	U	A	L	R	D	N	U	H	E
E	L	P	L	L	Q	F	A	G	Y	V	S
P	V	C	A	A	O	L	X	I	A	O	Y
Z	T	V	Q	P	N	O	X	C	T	J	N
R	Z	C	O	F	X	D	L	C	A	P	E

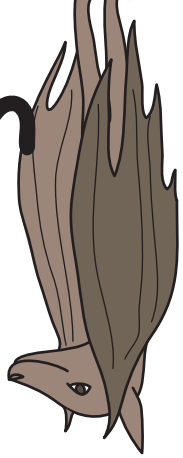
peninsula
valley
gulf
mountain
plateau
cave
lake
cape
canyon
strait
island
continent

Name some landforms near where you live.

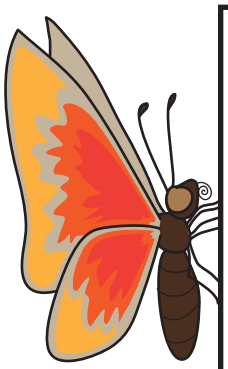
Greenhouse Effect



Pollinators Word Search



The words can be horizontal, vertical, or diagonal.



L M G B P F H R O A O R O A I P N T E
A K H U R A A U U L W A S P P A U M R
R A A T U J M Q M W E L E E J L C O P
J E O T A P D A N M J G R J R E L T K
I N E E N W O M D G I H T R M R K H A
W B I R D L F O R H L N U O H T A V A
H E A F O R T N N E A T G N E I A P L
O T O L S T A K B T P E M B R W I E I
N L A Y G Q B E E T L E N A I L E R Z
E U P O W U G Y I Z R I R T E R B M A
Y A F L Y A H L O U N U N E O E D K R
B R F K G R A O E W M A T T E N I N D
E N N E N B U M B L E B E E L R F D B
E A E P A G M R I T O W R P E I G U P

Find the terms listed below in the word search puzzle!

Hummingbird: Hummingbirds drink nectar from flowers, and they are found in many areas across the globe. They are highly specialized and have long, thin beaks and tongues well-suited to drinking nectar. Hummingbirds are one of the few birds that can hover, and are the only bird that can fly backwards.

Butterfly: Like hummingbirds, butterflies drink the nectar of flowers for energy. They can find flowers using their antennas to "smell" them.

Bumblebee: The bumblebee is like a large honeybee. They are responsible for a large majority of crop pollination across the world.

Honeybee: The honeybee will also pollinate many plants, but people use them mainly to make honey.

Bat: In some parts of the world there are bats that prefer nectar for food. Flowers that attract bats tend to be large, very fragrant, and open at night.

Wasp: Wasps are not very efficient pollinators when compared to bees, but they still will pollinate flowers.

Beetle: Beetles account for a large amount of pollination. Ancient beetles were among the first insects to start pollinating flowers.

Moth: Most moths are nocturnal, meaning they are actve at night. For this reason, many prefer flowers that open at night.

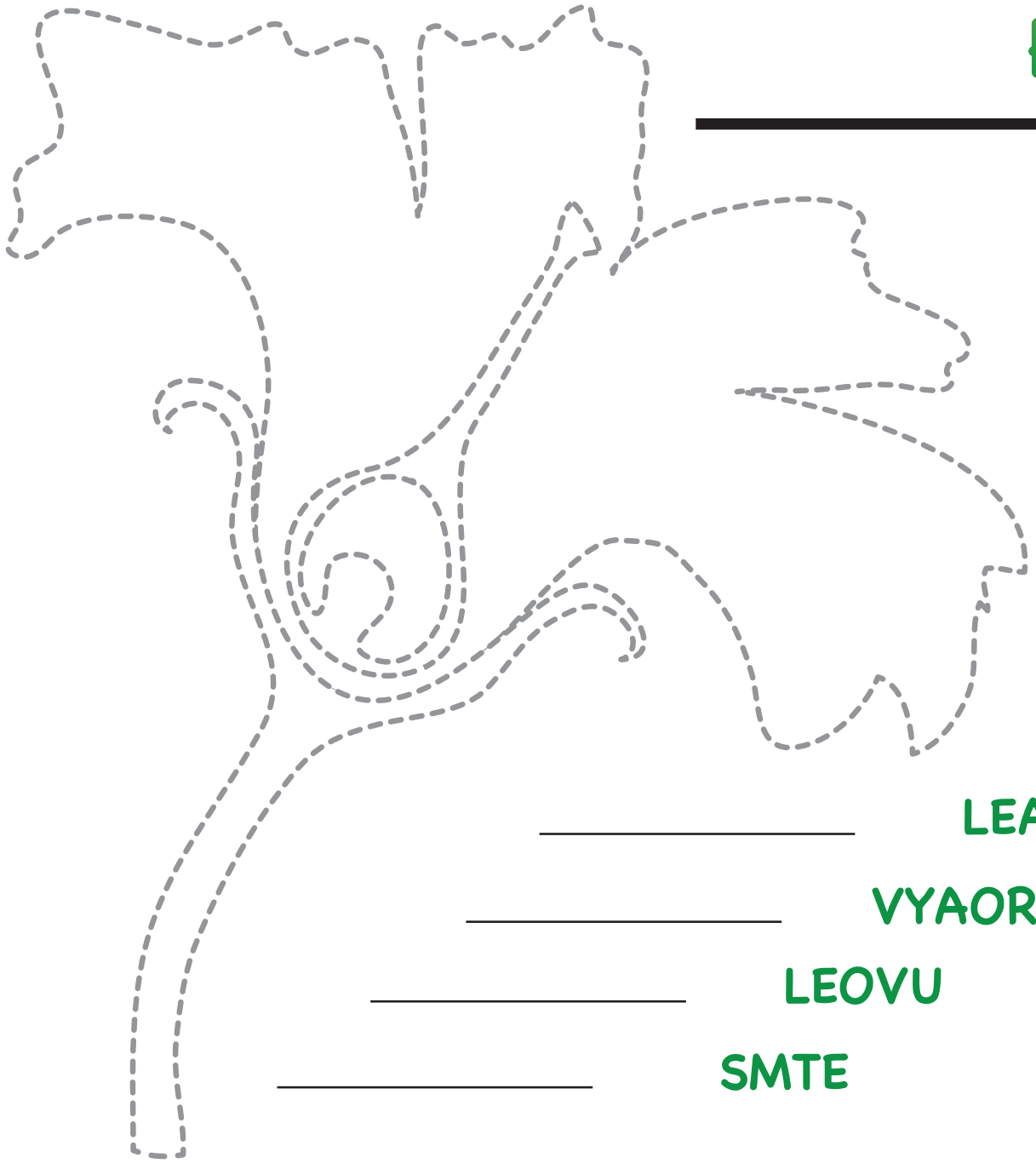
Fly: There are some types of flies that pretend to be bees, including eating the same food as bees: nectar!

Monkey: Some monkeys enjoy nectar not as a main food source, but as a sweet treat. As they visit differetn flowers looking for nectar, they distribute pollen.

Lizard: On some islands where there may not be insects up to the task, flowers adapted to attract lizards such as geckos to serve as pollinators.

Bird: Even though hummingbirds may be the most popular pollinating bird, there are many other birds that enjoy nectar and serve as pollinators.

Anatomy of a Flower Paper Project



_____ NTAHRE

_____ SGIAMT

_____ SETLY

_____ TAPEL

_____ LEASP

_____ VYAOR

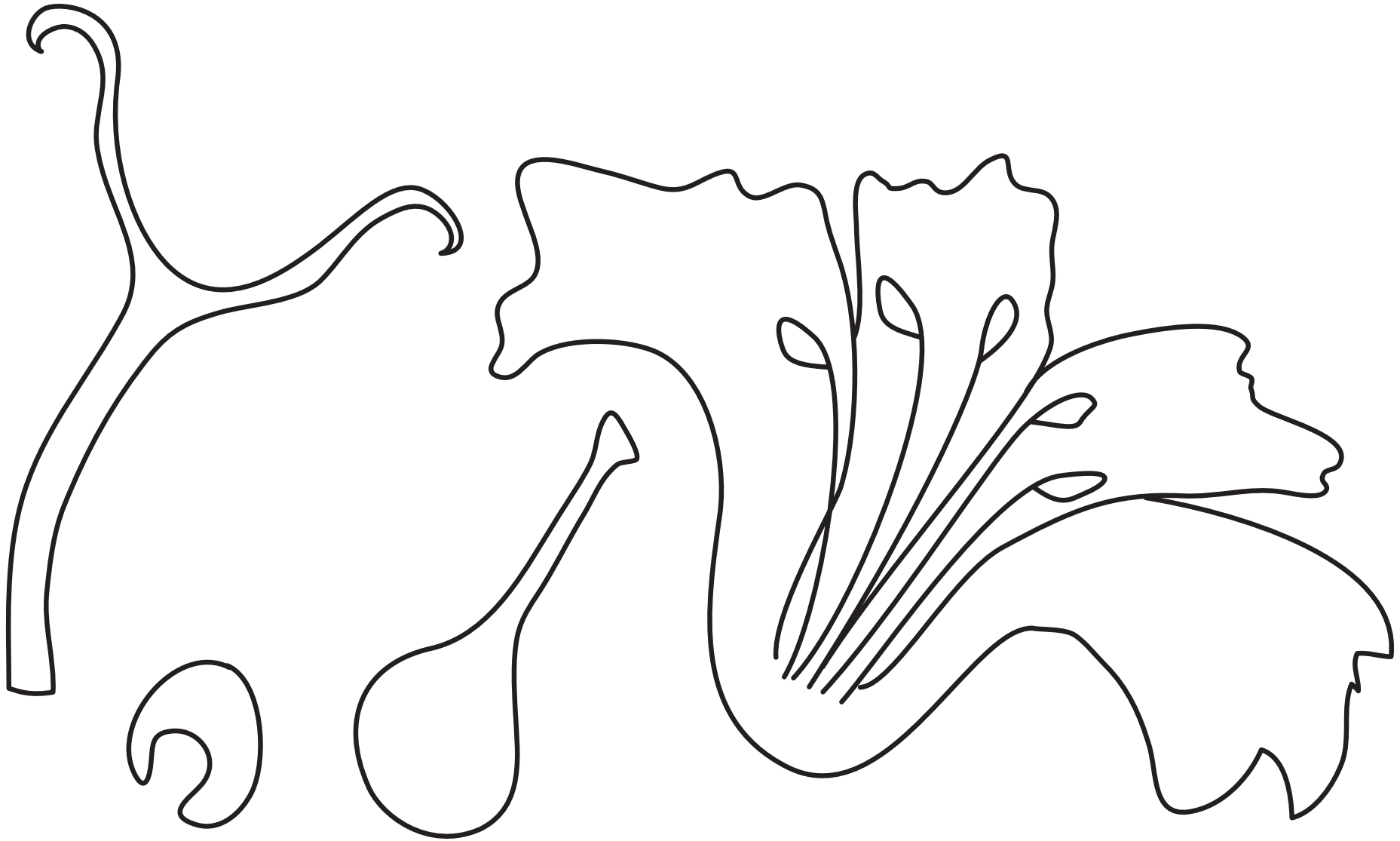
_____ LEOVU

_____ SMTE

Page 1: Glue your colored and cut out flower pieces on this page in the correct place to make your flower. Unscramble the anatomy terms on the right side of the page, and draw a line from the term to the correct part of the flower.

Anatomy of a Flower Paper Project

Page 2: Color in and cut out the flower pieces on this page, and glue them in the correct place on page 1 to assemble your flower!



Great job!

_____

is an Education.com reading superstar

Answer Sheets

Read to Learn: Natural Science

Geological Processes and How They Shape Our Earth
Geology Word Search
Amanda and the Panda
Diagramming Sentences: The Secret Garden
Tree Vocabulary: Tree Types
All About the Rock Cycle
Geology Crossword
Tree Vocabulary: Leaf Types
Plant Reproduction Word Search
Landforms Vocabulary
Pollinators Word Search
Anatomy of a Flower Paper Project

Answer Sheet

GEOLOGICAL PROCESSES REVIEW
HOW THEY SHAPE OUR EARTH!

On page two of this worksheet, you will answer questions based on the information you read on page one.

Circle the best answer.

1. Erosion is:
   - **A.** The process of moving materials from their source to another location through weathering.
   - **B.** The breaking down of rock soil and minerals.
   - **C.** Magma coming up from the Earth's mantle through openings in the crust.

2. Wind carrying abrasive materials blows against a rock formation, wearing it down over time. This is an example of:
   - **A.** Erosion
   - **B.** Weathering
   - **C.** Oxidation

3. In the Pacific Northwest in the United States, a small earthquake happens off the coast. This is caused by:
   - **A.** Volcanism
   - **B.** Weathering
   - **C.** Plate Tectonics

4. True or False? The Grand Canyon was probably formed through wind abrasion.
   - True
   - False

5. The San Andreas fault in California is where the North American plate and the Pacific plate rub against each other, north to south. This is an example of a:
   - **A.** Convergent Boundary
   - **B.** Transform Boundary
   - **C.** Volcanism

6. The Hawaiian island chain is volcanic in origin. As time passes, new islands are formed from erupting volcanoes as the Pacific plate slowly moves. What is causing the volcanoes?
   - **A.** Weathering
   - **B.** A Convergent Boundary
   - **C.** A Hotspot

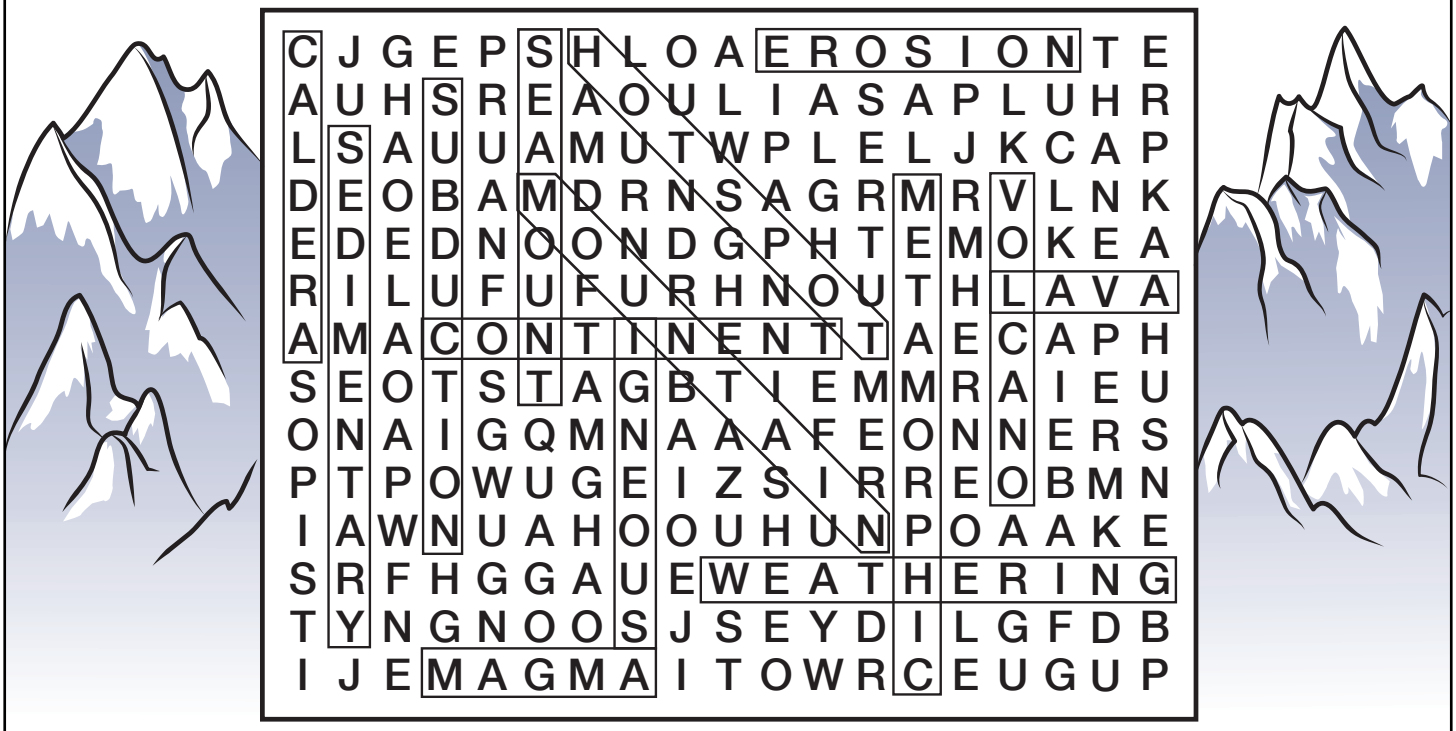
7. Which one of the following is NOT one of the three types of plate boundaries?
   - **A.** Divergent
   - **B.** Hotspot
   - **C.** Convergent
   - **D.** Transform

8. True or False? Weathering is the breaking down of soil, rock, and minerals over time.
   - True
   - False

Answer Sheet

GEOLOGY Word Search

The words can be horizontal, vertical, or diagonal.



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D	E	O	B	A	M	D	R	N	S	A	G	R	M	R	V	L	N	K
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P	T	P	O	W	U	G	E	I	Z	S	I	R	R	E	O	B	M	N
I	A	W	N	U	A	H	O	O	U	H	U	N	P	O	A	A	K	E
S	R	F	H	G	G	A	U	E	W	E	A	T	H	E	R	I	N	G
T	Y	N	G	N	O	O	S	J	S	E	Y	D	I	L	G	F	D	B
I	J	E	M	A	G	M	A	I	T	O	W	R	C	E	U	G	U	P

Find the terms listed below in the word search puzzle!

Volcano: A vent in Earth's surface through which molten rock and gases escape.

Continent: Large landmasses of the Earth.

Subduction: An oceanic plate is pushed underneath either another oceanic plate, or a continental plate.

Magma: A mixture of molten rock and other materials beneath the Earth's surface.

Lava: Molten rock expelled by a volcano during an eruption.

Hotspot: Areas of the mantle that are unusually hot and cause volcanic activity on the Earth's surface

Caldera: A cauldron-like volcanic featuer caused by the collapse of land after a volcanic eruption.

Weathering: The breaking down of rocks, soils, and minerals through direct contact with the Earth's atmosphere.

Erosion: The process of the transport of solids from their natural source to a different location, usually through wind, water, and ice.

Igneous: One of the three types of rocks. Igneous rock is formed through the cooling and solidification of lava or magma.

Sedimentary: One of the three types of rocks. Sedimentary rocks are formed from the deposition of mineral or organic sediments.

Metamorphic: One of the three types of rock. Metamorphic rocks are created by the transformation of existing rock through heat and pressure.

Seamount: A mountain rising from the bottom of the ocean, but that does not reach above the surface of the water.

Mountain: A landform that stands higher than the surrounding land, and often has steeper sides than a hill. They are usually formed through volcanism, plate tectonics, or occasionally erosion.

Answer Sheet

Reading Answer Sheet

Amanda and the Panda

Number the sentences below to put them in order and form a story.

__2__ As soon as they walked in the gate, Amanda and Avery made a beeline for the enclosure where Penelope lived. They ran toward the bamboo plants growing high above the fence around Penelope's home.

__1__ One sunny Saturday morning, Amanda's family decided to take a trip to the zoo. Amanda was excited! "I can't wait to see Penelope," she exclaimed. Penelope was a panda bear who had recently come to live at the zoo. Amanda loved animals, and she liked pandas most of all.

__3__ When they reached the panda enclosure, however, they found it empty. The sign reading "Penelope the Panda" was missing, too. Amanda's parents soon caught up, and Amanda explained breathlessly what she and Avery had discovered. "What could've happened to Penelope?" Amanda asked.

__5__ Amanda noticed a crowd beginning to gather nearby. "Look over there," said Amanda's mother. "I think I see your friend," said Amanda's father. Amanda turned to look.
What she saw made her gasp with delight. There was Penelope, looking healthy as ever, lumbering through a big door into her enclosure. She sat down, broke off a piece of bamboo, and began to eat.

__4__ "Maybe she's sick," Avery responded, "or maybe worse!" Amanda frowned and turned away from the enclosure. She couldn't bear the thought of never seeing Penelope again.
"How could the zoo have let that happen?" Amanda lamented. "They're supposed to keep the animals safe and healthy! Isn't that why they're here?" Avery put a comforting hand on his big sister's shoulder.

__7__ Amanda looked back at Penelope's enclosure and saw a second panda bear enter through Penelope's door. "That's Peter. He just moved here from another zoo," the man in the uniform explained. "If we're lucky, this time next year, you might see a panda cub in this same place."

__8__ "A baby panda! That would be just about the best thing I've ever seen," said Amanda. "Me, too!" Avery agreed. They watched as Peter went to sit beside Penelope, breaking off his own piece of bamboo to eat. "I think they're going to get along just fine," said Amanda.

__6__ "Penelope's alright!" Amanda exclaimed. "She's better than alright," said a smiling man in a uniform, who stood nearby holding a large sign. He hung the sign on the pole where the old sign once hung, and Amanda saw that it now read "Penelope and Peter."

Answer Sheet

Diagramming Sentences: The Secret Garden

In Frances Hodgson Burnett's novel *The Secret Garden,* Mary Lennox discovers more than a garden. She learns to love and take care of something. In this passage, we feel the wonder and suspense of her discovery.

DIRECTIONS

Circle the noun that is the subject of every sentence. There may be more than one!
Underline every verb that shows the action in each sentence. One sentence can have more than one verb!
Place a star next to every adjective.
Place parentheses ( ) around every preposition.

Mary Lennox always said that what happened (at) that moment was Magic.

One of the *nice* *little* gusts (of) wind rushed (down) the walk.

Suddenly the gust (of) wind swung aside some *loose* ivy trails.

She jumped (toward) it and caught it (in) her hand.

She had seen something (under) it—a *round* knob which had been covered (by) the leaves hanging (over) it.

It was the knob (of) a door.

She put her hands (under) the leaves and began to pull and push them aside.

Mary's heart began to thump and her hands to shake a little (in) her delight and excitement.

It was the lock (of) the door which had been closed *ten* years.

She put her hand (in) her pocket, drew out the key and found it fitted the keyhole.

She put the key in and turned it.

She took a long breath and looked (behind) her (up) the long walk to see if any one was coming.

She held back the *swinging* curtain of ivy and pushed back the door which opened slowly—slowly.

Then she slipped (through) it, and shut it (behind) her, and stood with her back against it, looking about her and breathing quite *fast* with excitement, and wonder, and delight.

She was standing (inside) the *secret* garden.

Answer Sheet

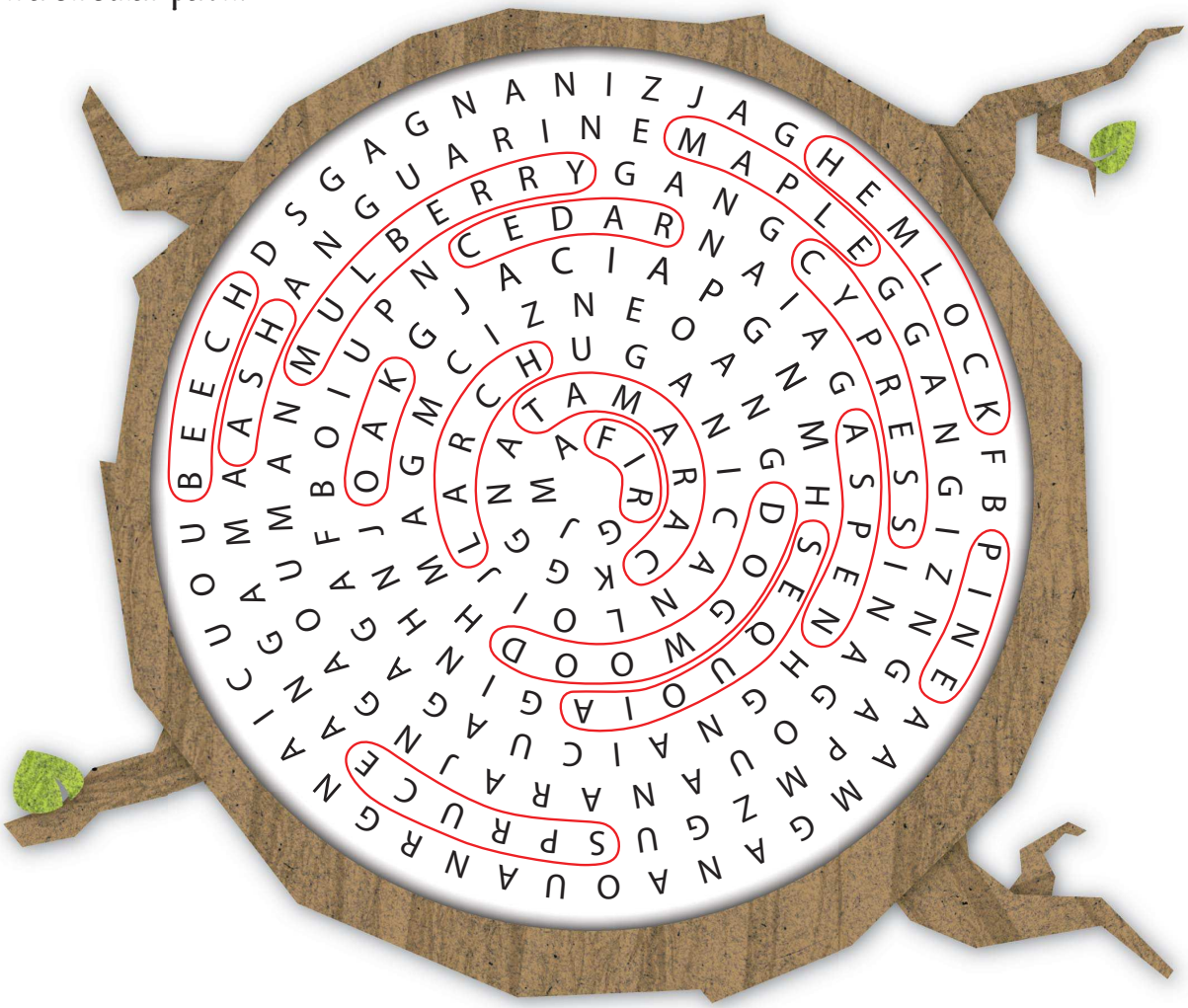
Tree Vocabulary

Tree Types

4TH GRADE
EARTH SCIENCE
Answer Sheet

Most trees fall into one of two categories: **coniferous** or **deciduous**. Conifers typically have long, thin needles as foliage while deciduous trees have broad leaves. All coniferous trees are cone bearing, hence the name **con**-iferous. The leaves of deciduous trees change color in the process of falling to the ground and regrowing each year.

The coniferous and deciduous trees listed at the bottom of the page are hidden in the circular word search. Rotate the page to find each tree. All words are spelled forwards on a circular path.



Deciduous

- Ash ✔
- Aspen ✔
- Beech ✔
- Cypress ✔
- Dogwood ✔
- Maple ✔
- Mulberry ✔
- Oak ✔

Coniferous

- Cedar ✔
- Fir ✔
- Hemlock ✔
- Larch ✔
- Pine ✔
- Sequoia ✔
- Spruce ✔
- Tamarack ✔

Answer Sheet

All About The Rock Cycle

On page two of this worksheet, you will answer questions based on the information you read on page one.

Circle the best answer.

1. The Nile river carries sediments to the ocean. Over time, the sediments are compressed as more sediments are deposited on top of them. Which type of rock will be formed?

A. Sedimentary
B. Metamorphic
C. Igneous

2. The volcano Kilauea on the big island of Hawai'i is erupting and lava is ejected from the volcano vent. The lava solidifies to form what type of rock?

A. Sedimentary
B. Metamorphic
C. Igneous

3. Off the coast of the Pacific Northwest in the United States, the Pacific plate is being pushed underneath the North American plate in a subduction zone, caused by plate tectonics. As the rock from the Pacific plate is pushed under the North American plate, it is subjected to high temperatures and pressures. Which rock will be created from this process?

A. Sedimentary
B. Metamorphic
C. Igneous

4. In the Arizona desert, a sudden rainstorm washes sand and sediment into the Colorado river, which eventually deposits the sediments into the ocean. This process is called:

A. Erosion & Transport
B. Deposition
C. Weathering

5. In the desert, wind picks up and carries fine particles of sand and dirt. As the wind blows against the rocks, the particles rub against the rocks and wear them down in a process called:

A. Weathering
B. Transport
C. Erosion

6. Which one of the following is NOT one of the three types of rock?

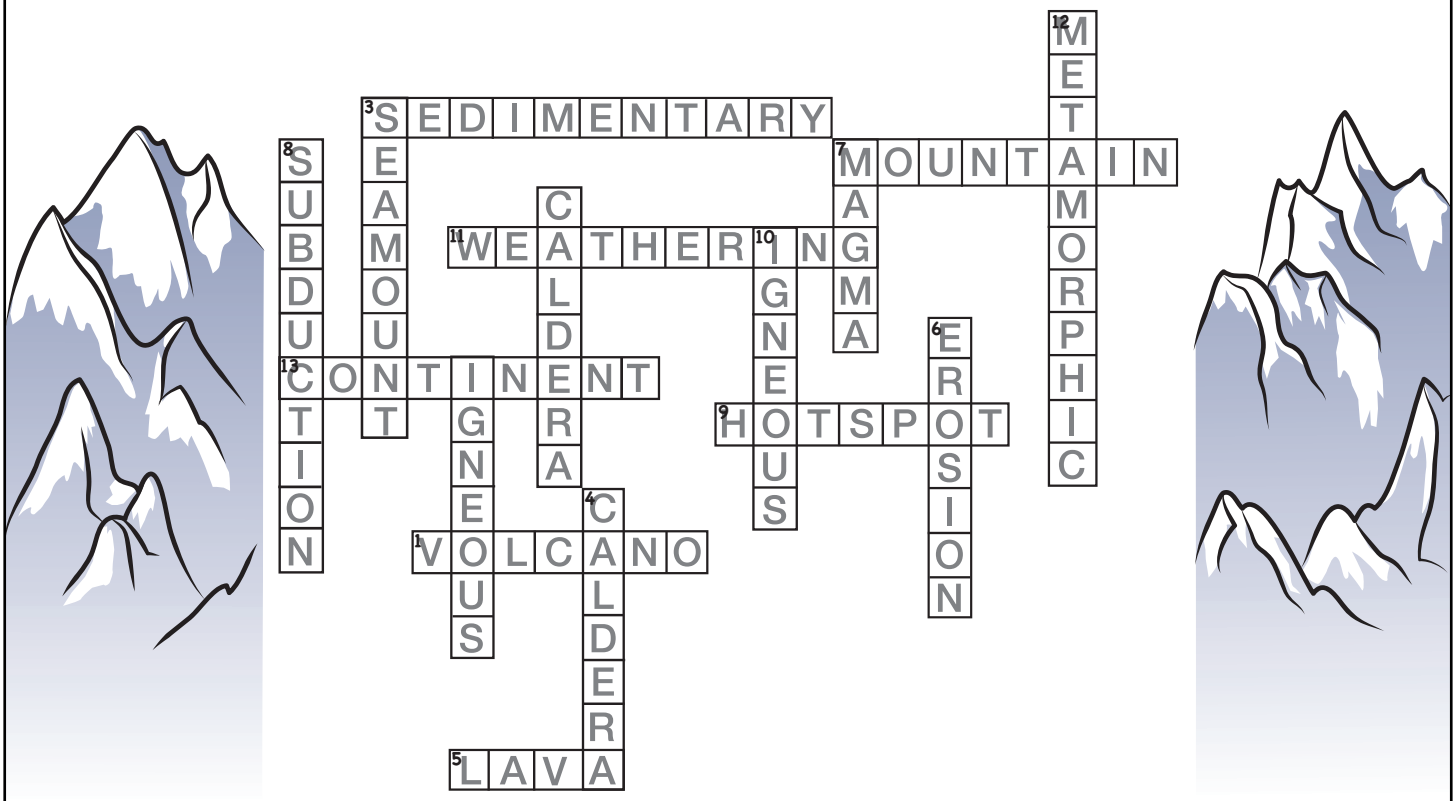
A. Sedimentary
B. Lava
C. Metamorphic
D. Igneous

7. True or False? Magma is lava that has been ejected from beneath the Earth's crust through a volcano.

True
False

Answer Sheet

GEOLOGY Crossword



Choose from the listed terms to match the description listed for each crossword space.

Volcano, Weathering, Continent, Sedimentary, Hotspot, Seamount, Metamorphic, Caldera, Erosion, Magma, Subduction, Igneous, Lava, Mountain

Across

1. A vent in Earth's surface through which molten rock and gases escape.

3. One of the three types of rocks. These rocks are formed from the deposition of mineral or organic sediments.

5. Molten rock expelled by a volcano during an eruption.

7. A landform that stands higher than the surrounding land, and often has steeper sides than a hill. They are usually formed through volcanism, plate tectonics, or occasionally erosion.

9. Areas of the mantle that are unusually hot and cause volcanic activity on the Earth's surface.

11. The breaking down of rocks, soils, and minerals through direct contact with the Earth's atmosphere.

13. Large landmasses of the Earth.

Down

3. A mountain rising from the bottom of the ocean, but that does not reach above the surface of the water.

4. A cauldron-like volcanic featuer caused by the collapse of land after a volcanic eruption.

6. The process of the transport of solids from their natural source to a different location, usually through wind, water, and ice.

7. A mixture of molten rock and other materials beneath the Earth's surface.

8. An oceanic plate is pushed underneath either another oceanic plate, or a continental plate.

10. One of the three types of rocks. These rocks are formed through the cooling and solidification of lava or magma.

12. One of the three types of rock. These rocks are created by the transformation of existing rock through heat and pressure.

Answer Sheet

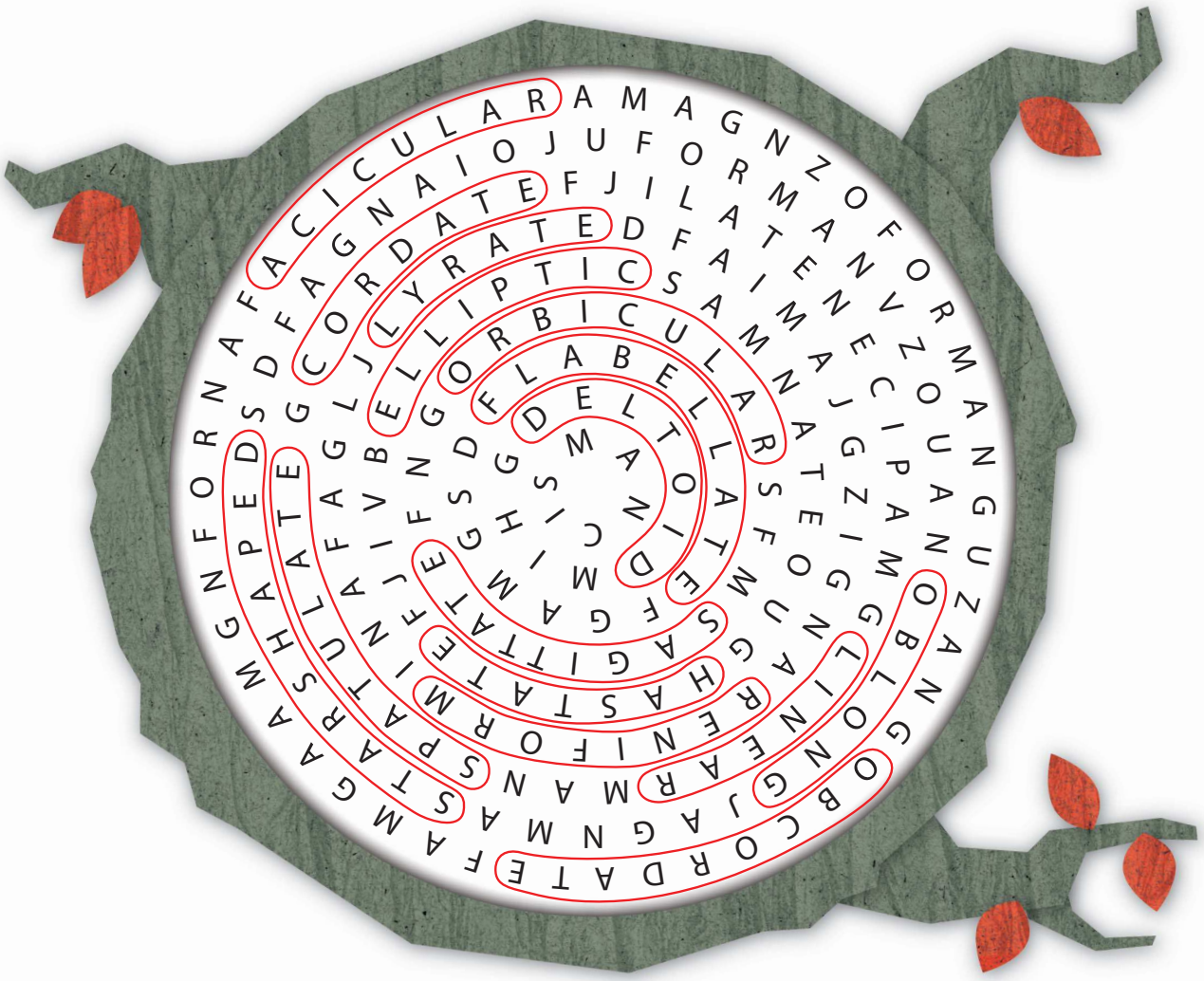
Tree Vocabulary

Leaf Shapes

4TH GRADE
EARTH SCIENCE
Answer Sheet

Each plant produces it's own leaf which has many subtle characteristics that separate it from the leaves of other plants. Many leaf shapes, however, are very similar and have been given names to categorize them more easily.

Some leaf shapes are listed below and hidden in the circular word search. Rotate the page to find each leaf. All words are spelled forwards on a circular path.

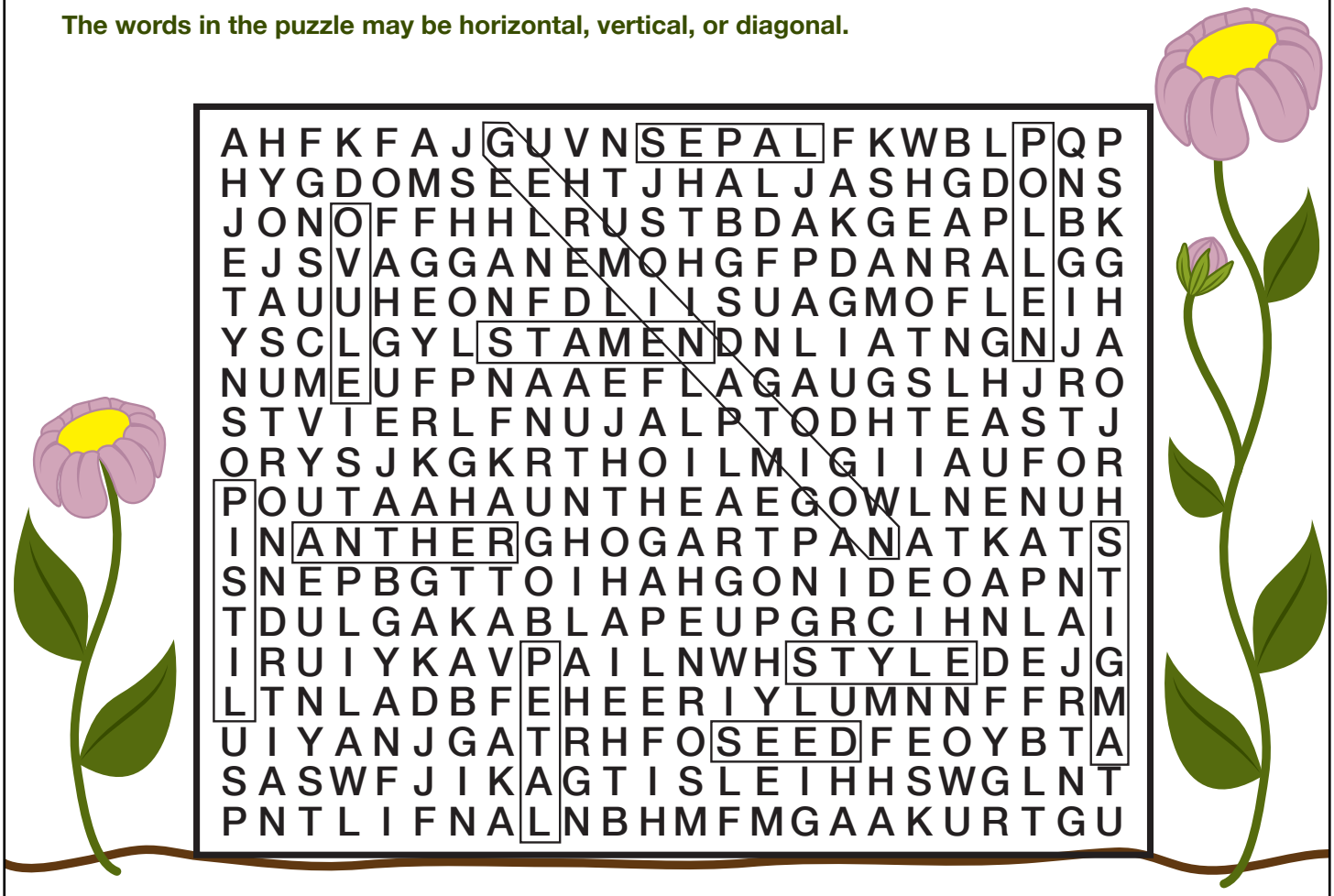


- Acicular (needle-shaped) ✔
- Cordate ✔
- Deltoid ✔
- Elliptic ✔
- Flabellate (fan-shaped) ✔
- Hastate ✔
- Linear ✔
- Lyrate ✔
- Obcordate ✔
- Oblong ✔
- Orbicular ✔
- Reniform ✔
- Sagittate ✔
- Spatulate ✔
- Star Shaped ✔

Answer Sheet

Plant Reproduction Word Search

The words in the puzzle may be horizontal, vertical, or diagonal.



Find the terms listed below in the word search puzzle!

TERMS:

PISTIL: the female ovule-bearing part of a flower composed of ovary and style and stigma.

STAMEN: the male reproductive organ of a flower.

POLLEN: spores that contain male gametes and that are borne by an anther in a flowering plant.

SEED: refers to the whole structure that contains the zygote and endosperm, and that will germinate to grow a seedling.

OVULE: a small structure that contains the female germ cell of a plant; develops into a seed after fertilization.

GERMINATION: the process of a seedling sprouting out of a seed.

ANTHER: the part of the stamen that contains pollen; usually borne on a stalk

PETAL: modified leaves that surround the reproductive parts of flowers; they are usually brightly colored.

STIGMA: the structure that is at the end of the style and received pollen.

STYLE: connects the stigma to the inner female parts of the flower.

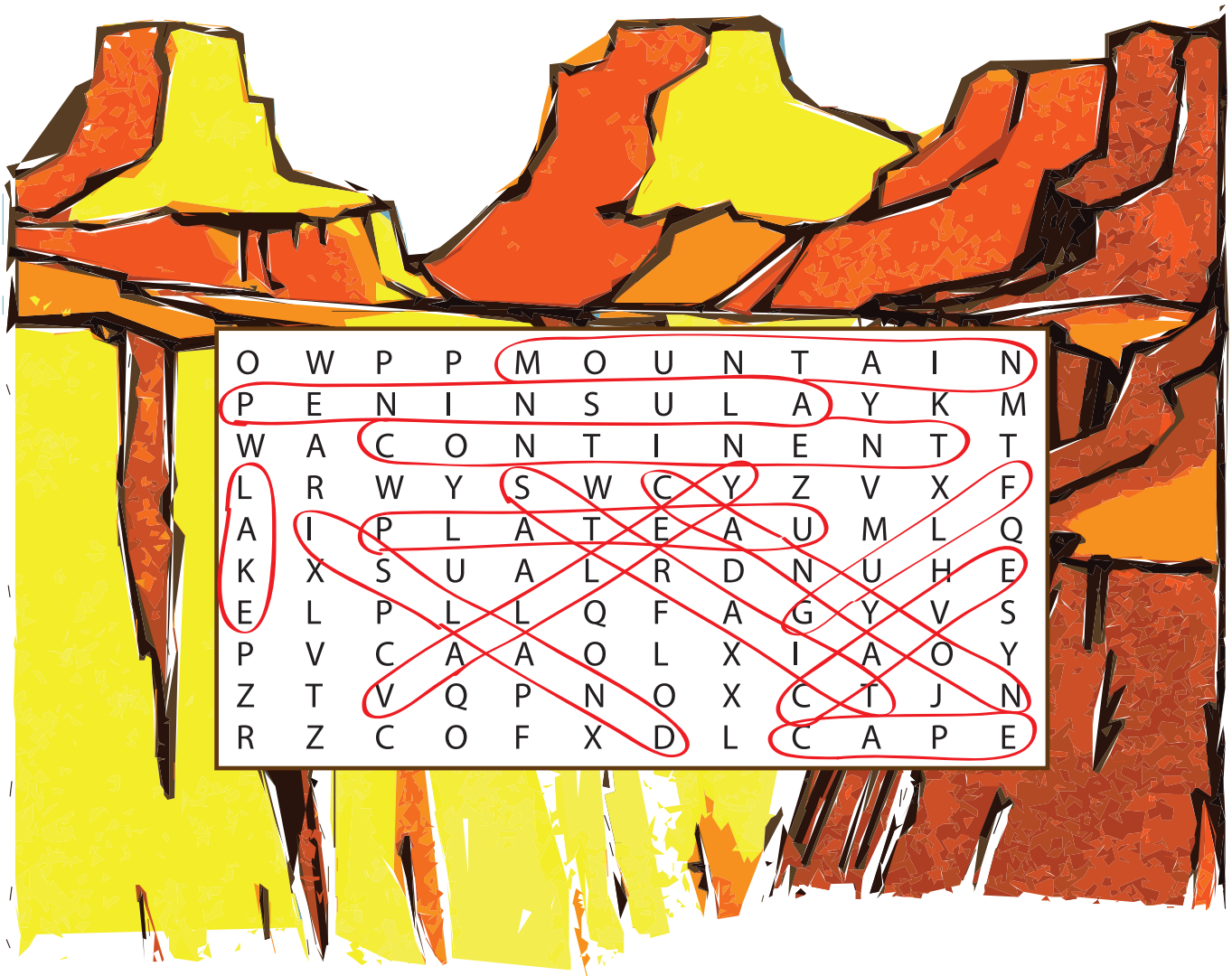
SEPAL: small modified leaves that are found underneath the petals.

Answer Sheet

Reading Vocabulary

LANDFORMS ANSWER SHEET VOCABULARY

Landforms are natural features of the Earth's surface. They come in many shapes, colors, and sizes. They can be big like Mount Everest or mossy like a marsh! Try and find the different landforms in the canyon below. The words are spelled forwards, diagonal, and down.



peninsula valley gulf mountain

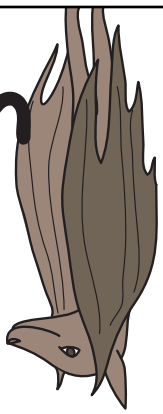
plateau cave lake cape

canyon strait island continent

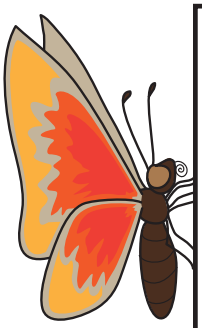
★ Name some landforms near where you live.

Answer Sheet

Pollinators Word Search



The words can be horizontal, vertical, or diagonal.



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R	A	A	T	U	J	M	Q	M	W	E	L	E	E	J	L	C	O	P
J	E	O	T	A	P	D	A	N	M	J	G	R	J	R	E	L	T	K
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E	U	P	O	W	U	G	Y	I	Z	R	I	R	T	E	R	B	M	A
Y	A	F	L	Y	A	H	L	O	U	N	U	N	E	O	E	D	K	R
B	R	F	K	G	R	A	O	E	W	M	A	T	T	E	N	I	N	D
E	N	N	E	N	B	U	M	B	L	E	B	E	E	L	R	F	D	B
E	A	E	P	A	G	M	R	I	T	O	W	R	P	E	I	G	U	P

Find the terms listed below in the word search puzzle!

Hummingbird: Hummingbirds drink nectar from flowers, and they are found in many areas across the globe. They are highly specialized and have long, thin beaks and tongues well-suited to drinking nectar. Hummingbirds are one of the few birds that can hover, and are the only bird that can fly backwards.

Butterfly: Like hummingbirds, butterflies drink the nectar of flowers for energy. They can find flowers using their antennas to "smell" them.

Bumblebee: The bumblebee is like a large honeybee. They are responsible for a large majority of crop pollination across the world.

Honeybee: The honeybee will also pollinate many plants, but people use them mainly to make honey.

Bat: In some parts of the world there are bats that prefer nectar for food. Flowers that attract bats tend to be large, very fragrant, and open at night.

Wasp: Wasps are not very efficient pollinators when compared to bees, but they still will pollinate flowers.

Beetle: Beetles account for a large amount of pollination. Ancient beetles were among the first insects to start pollinating flowers.

Moth: Most moths are nocturnal, meaning they are actve at night. For this reason, many prefer flowers that open at night.

Fly: There are some types of flies that pretend to be bees, including eating the same food as bees: nectar!

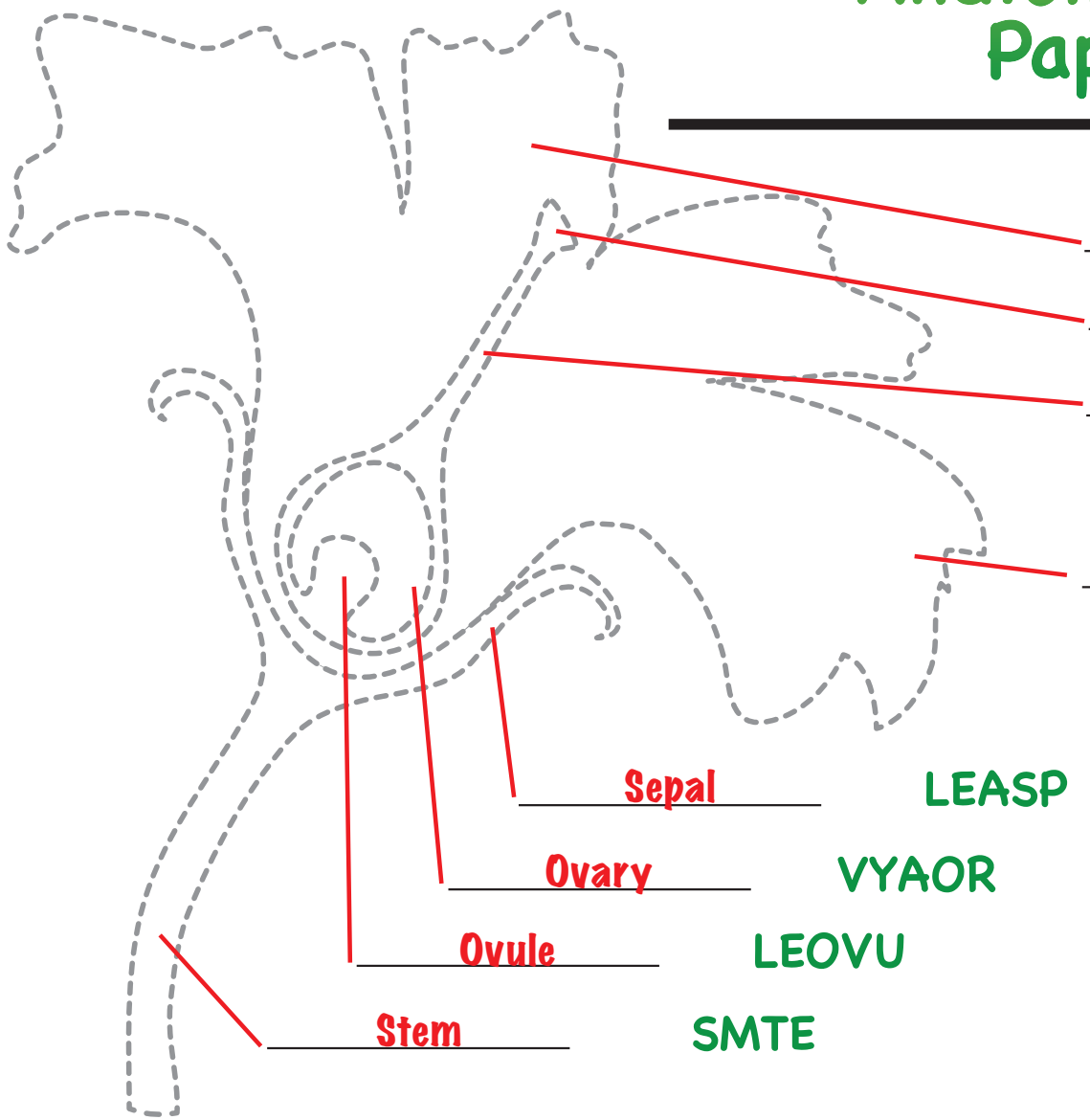
Monkey: Some monkeys enjoy nectar not as a main food source, but as a sweet treat. As they visit differetn flowers looking for nectar, they distribute pollen.

Lizard: On some islands where there may not be insects up to the task, flowers adapted to attract lizards such as geckos to serve as pollinators.

Bird: Even though hummingbirds may be the most popular pollinating bird, there are many other birds that enjoy nectar and serve as pollinators.

Answer Sheet

Anatomy of a Flower Paper Project



Anther (will be on glued on petals) — NTAHRE

Stigma — SGIAMT

Style — SETLY

Petal — TAPEL

Sepal — LEASP

Ovary — VYAOR

Ovule — LEOVU

Stem — SMTE

Page 1: Glue your colored and cut out flower pieces on this page in the correct place to make your flower. Unscramble the anatomy terms on the right side of the page, and draw a line from the term to the correct part of the flower.