Discussion

Teacher: can use different robot expressions/emotions from the pictures below in response to children's stories.

Guiding questions:

Earth's "Ecosystem cycles"

· What do you think happens to the rain when it falls on the ground?

· How do the plants and flowers grow here? What do they need?

· Earth's ecosystem cycles: What do you think they are?

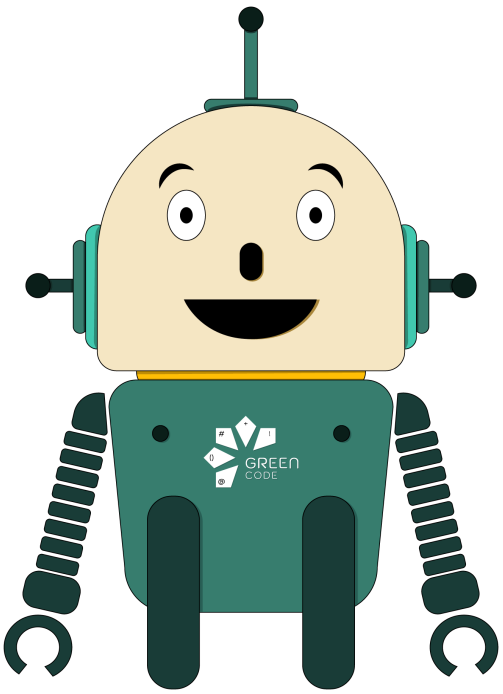
"Food chain"

· How do you think the trees help the animals?

· Why do you think birds fly to different places during the year?

· What do the insects do in the park, and how do they help other living things?

· "Food chain". What do you think that is?



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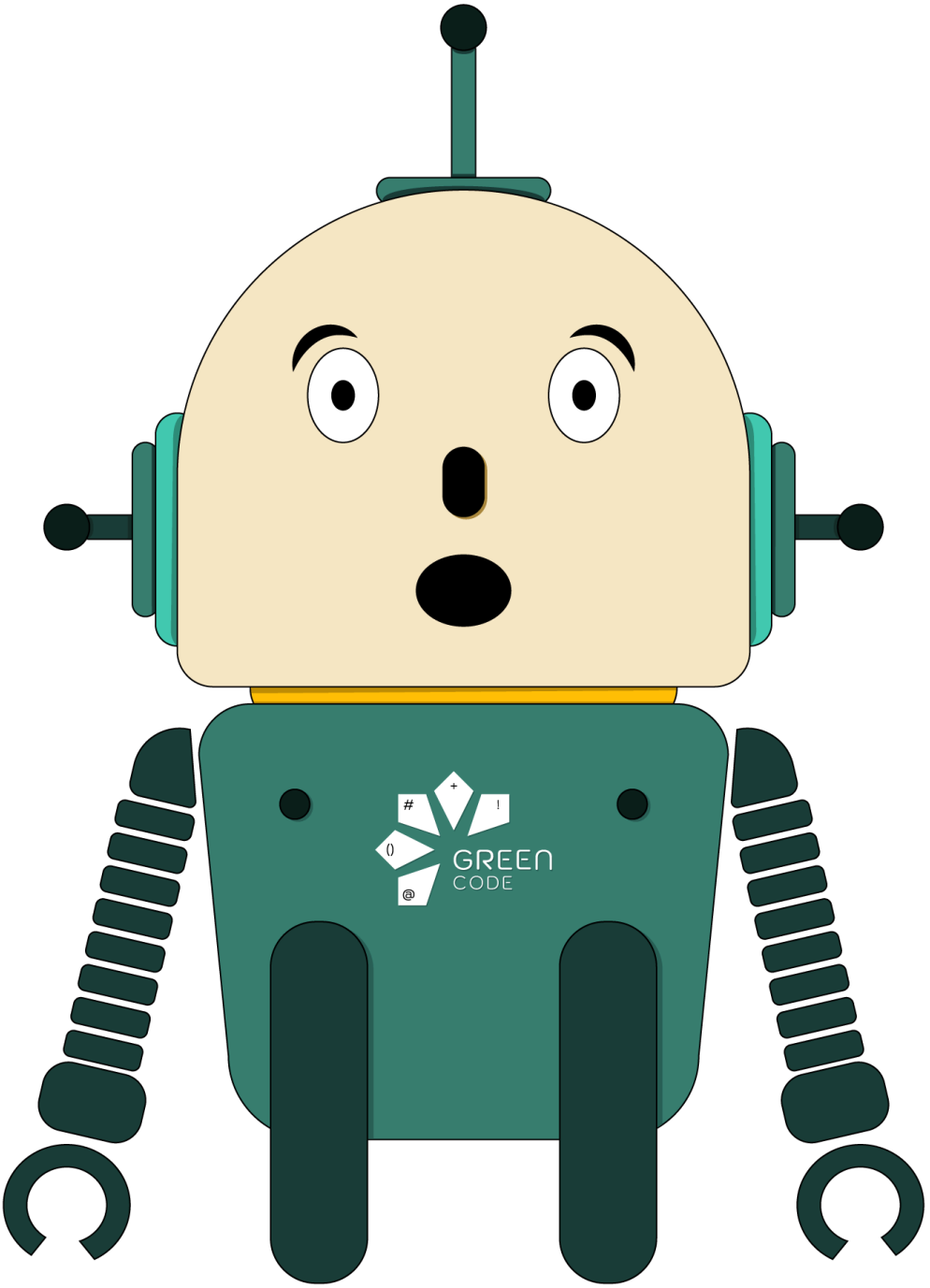
Reco is surprised



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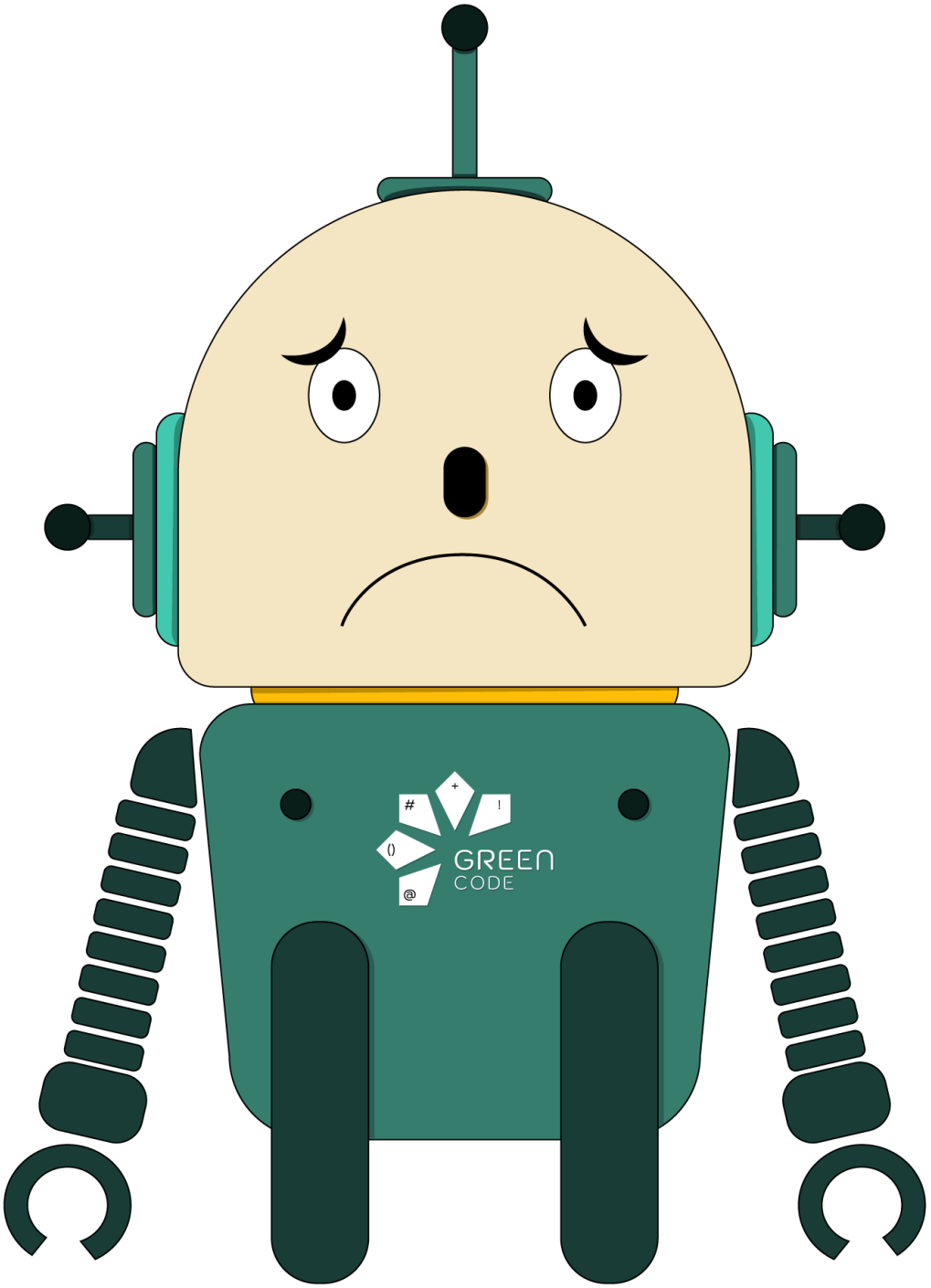
Reco is sad



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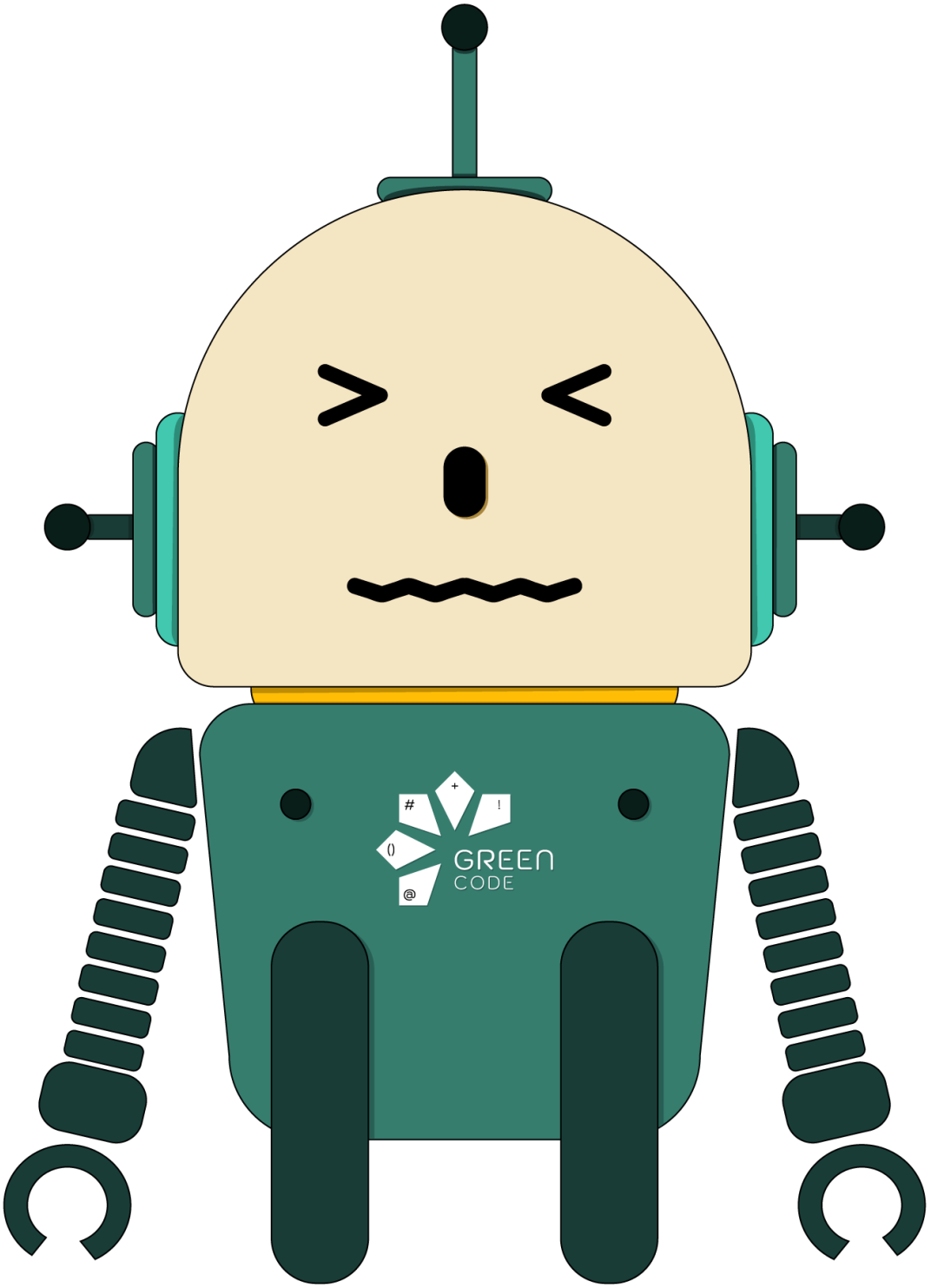
Reco is impatient



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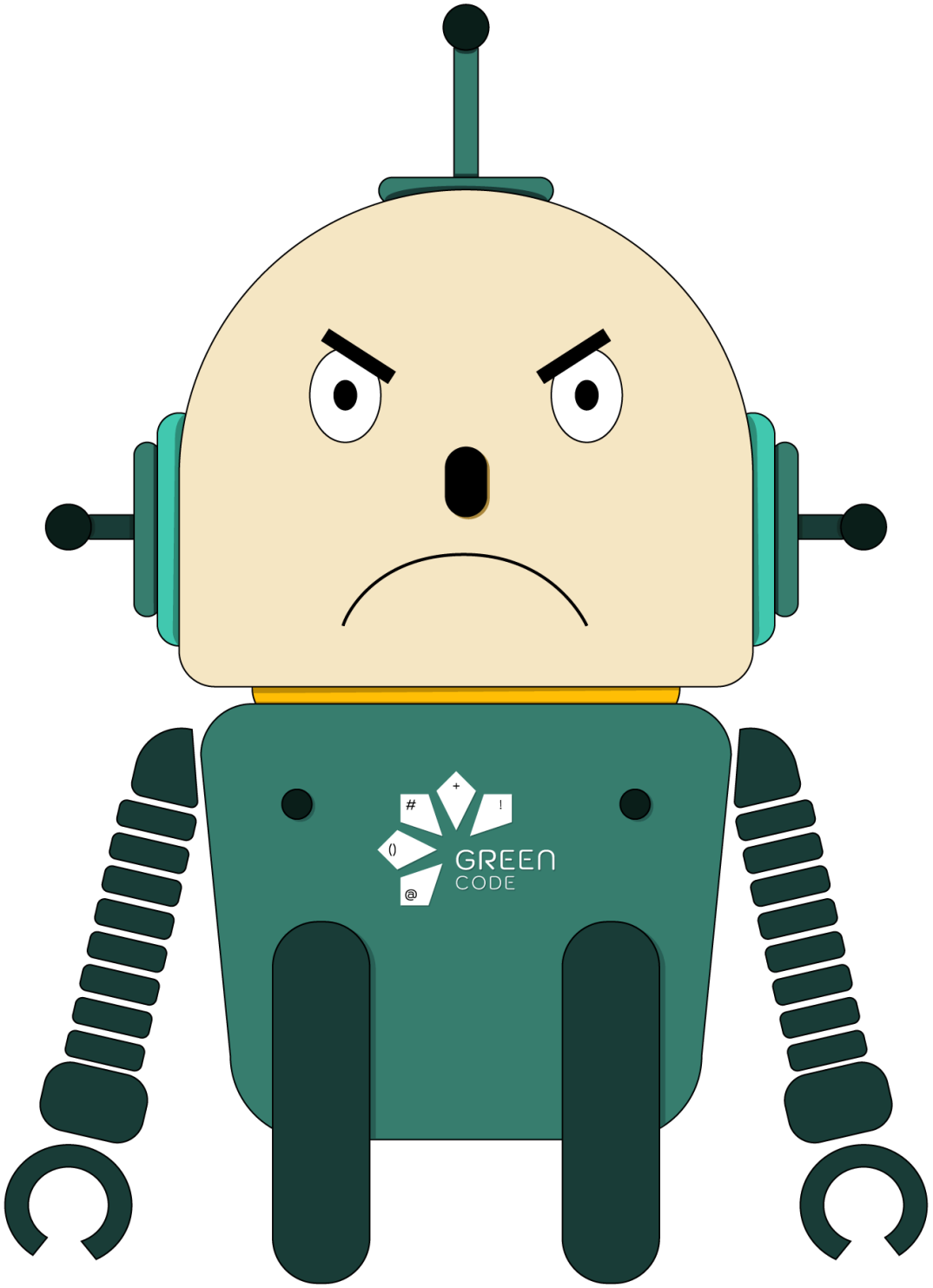
Reco is angry



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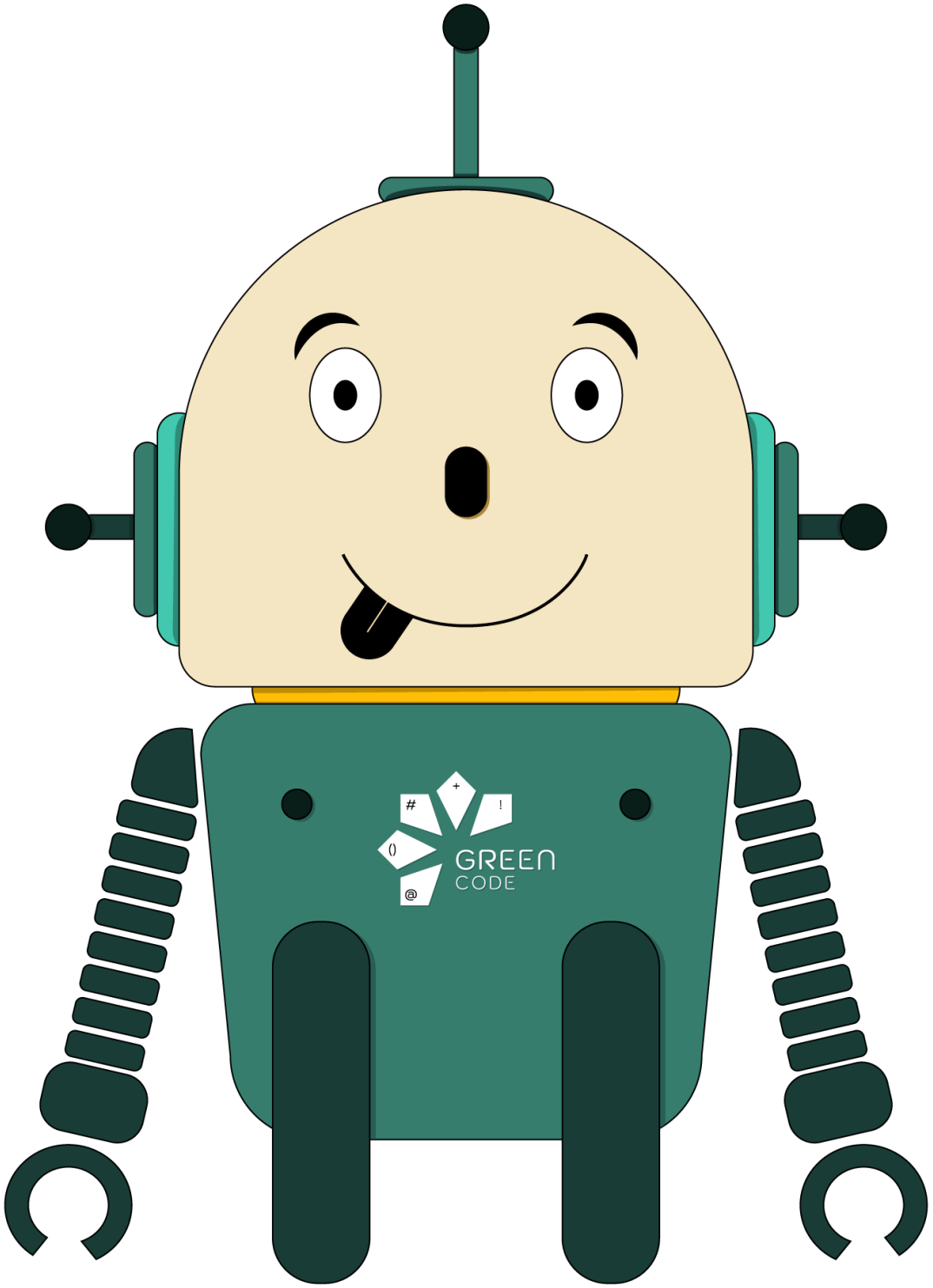
Reco is wild



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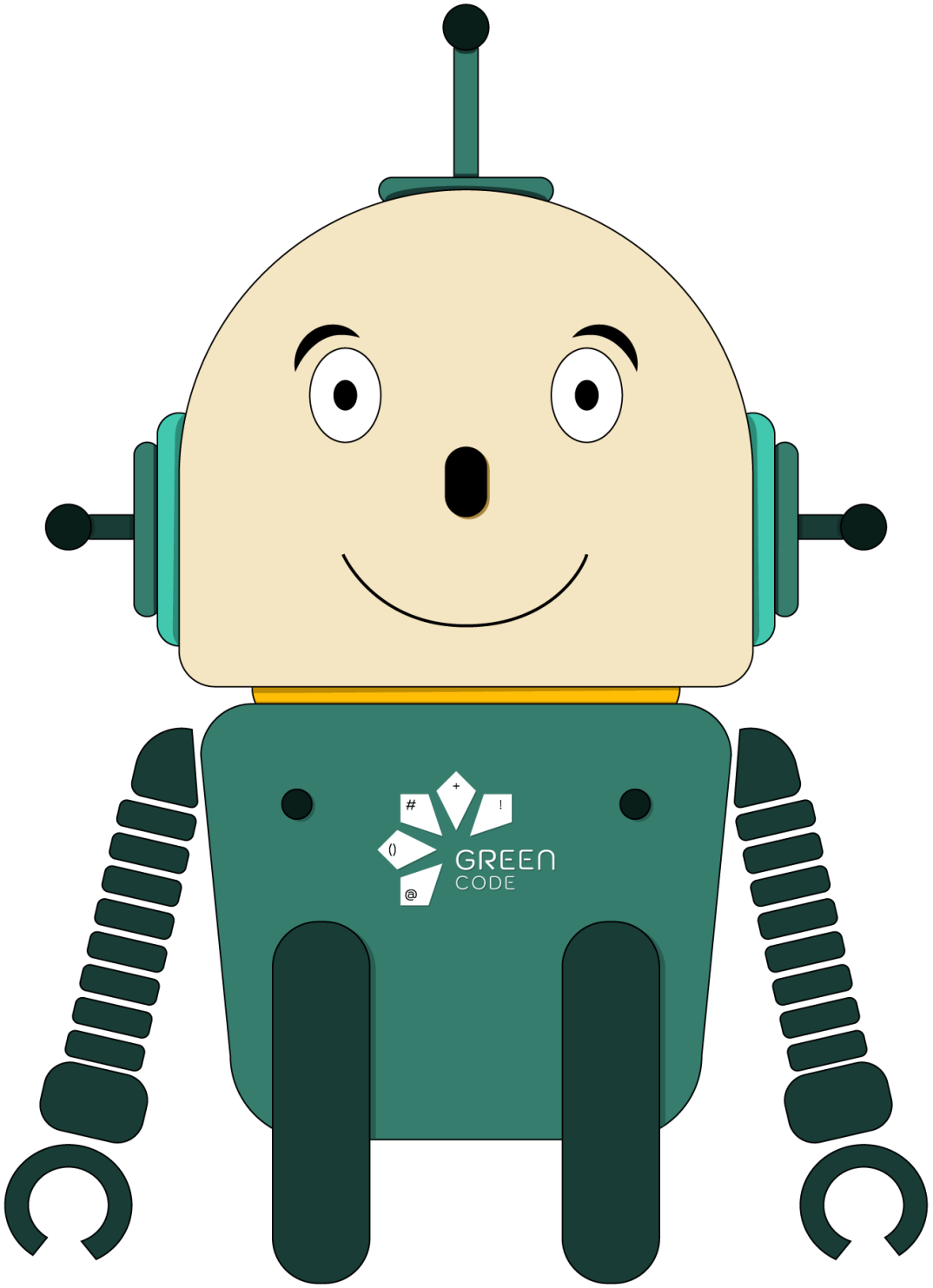
Reco is friendly



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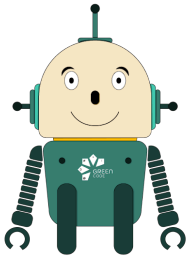
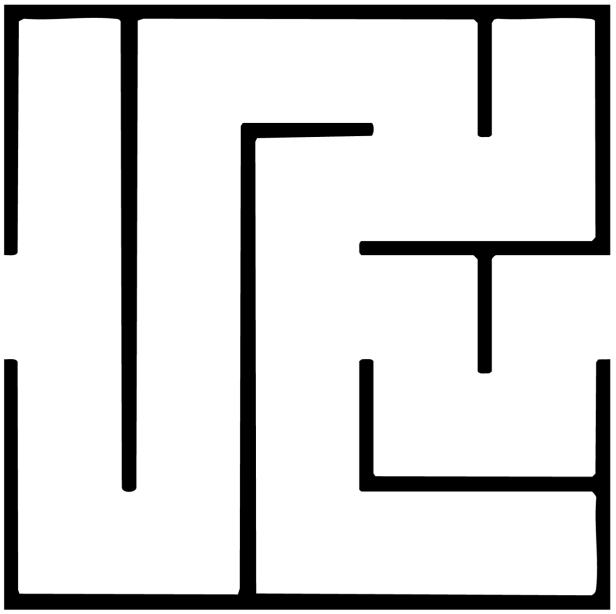
Maze

Level 1





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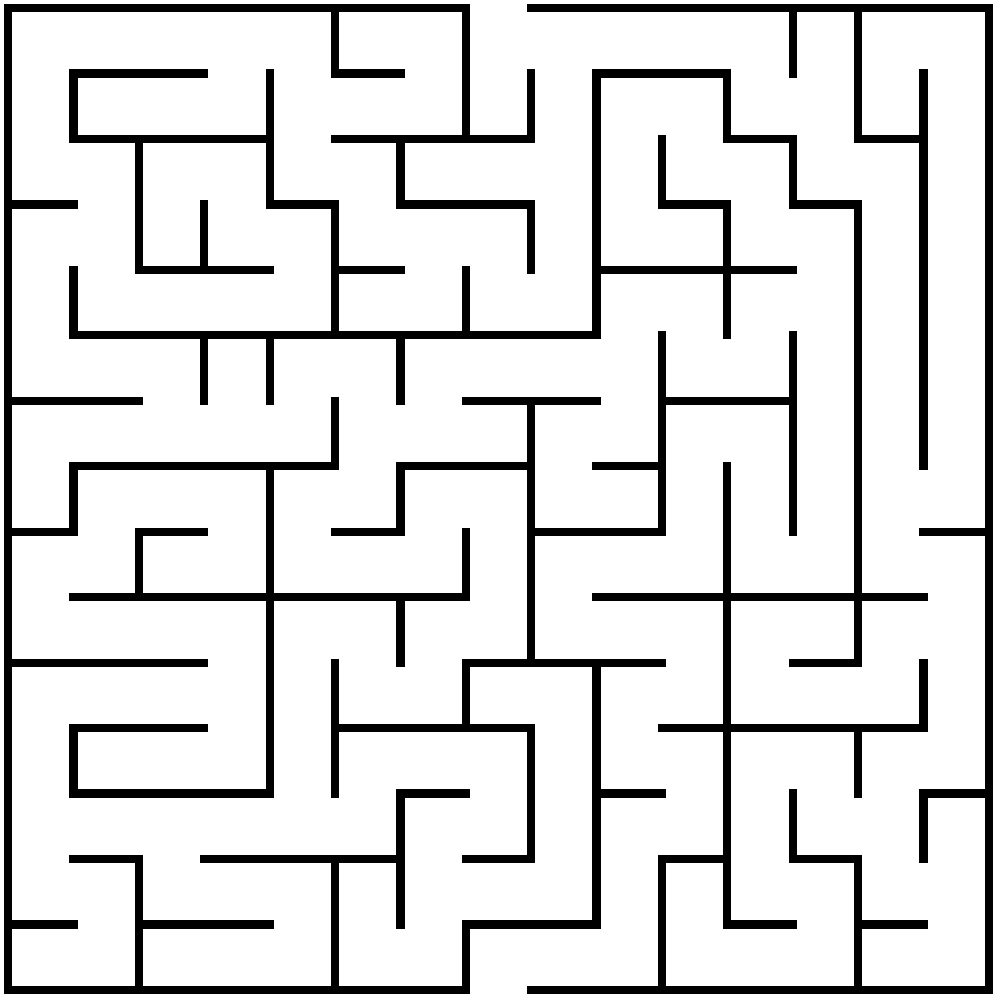
Level 2



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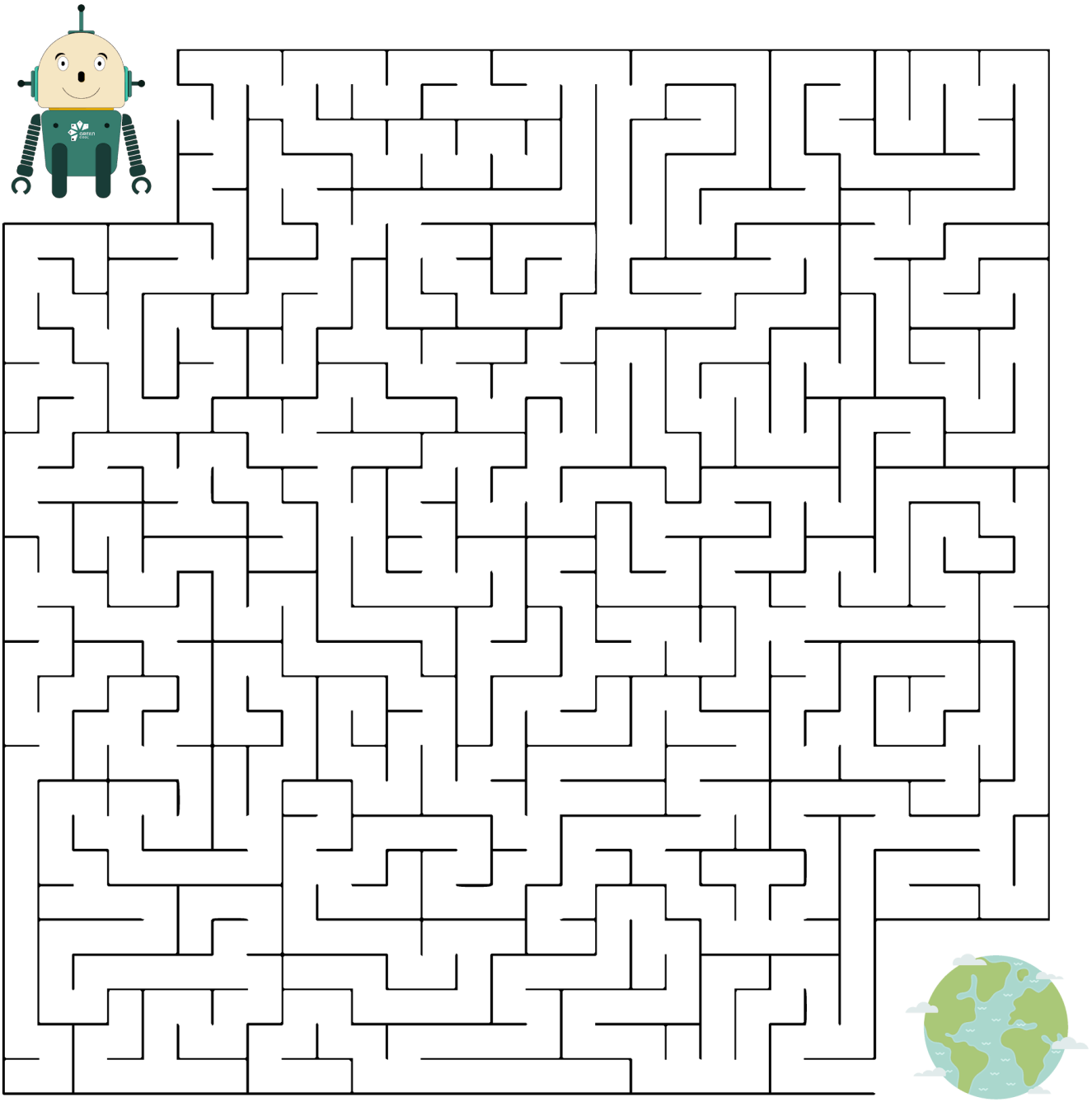
Level 3



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Storytelling

Storytelling card about the "food chain" **#1**

The busy ants and the frog

In a green meadow, a group of tiny ants was working hard to gather seeds and bits of food. They didn't know it, but a little frog was watching from a nearby pond. The frog liked to eat ants when he was hungry. The ants didn't mind because they knew they were part of a big food chain. The seeds fed the ants, the ants fed the frog, and one day, a stork might eat the frog! "That's how nature works," said the frog. "We are all connected, from the tiniest ants to the tallest trees."

Fold the page in half so you can show the picture to the children and read the story at the same time

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Storytelling card about the "food chain" **#2**

The big fish and the little fish

In a big blue ocean, tiny fish were swimming together. These little fish loved eating the smallest creatures in the water, called plankton. One day, a bigger fish came by and said, "Hello, little fish! You help keep the water clean by eating plankton." The big fish was hungry too, so he gently ate a few little fish. "We are all part of a food chain!" the big fish said. "The plankton feeds you, and you feed me!" Everything in the ocean works together like a puzzle!

Fold the page in half so you can show the picture to the children and read the story at the same time

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Storytelling card about the "food chain" **#3**

The hungry little caterpillar and the sun

Once upon a time, there was a little caterpillar. She was very hungry! Every morning, she saw the big bright Sun shining in the sky, and it helped the plants grow big and green. The caterpillar loved munching on the juicy leaves. One day, a little bird flew by and said, "Thank you, caterpillar, for eating the leaves and getting strong. You help me too!" And guess what? The Sun, the plants, the caterpillar, and the bird were all part of a special chain. The Sun gives energy to the plants, the caterpillar eats the plants, and the bird eats the caterpillar. They are all connected!

Fold the page in half so you can show the picture to the children and read the story at the same time

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Storytelling

Storytelling card about the "Earth's ecosystem cycles" **#1**

The story is called "The adventures of Little Raindrop, Gentle Breeze, and Tiny Pebble"

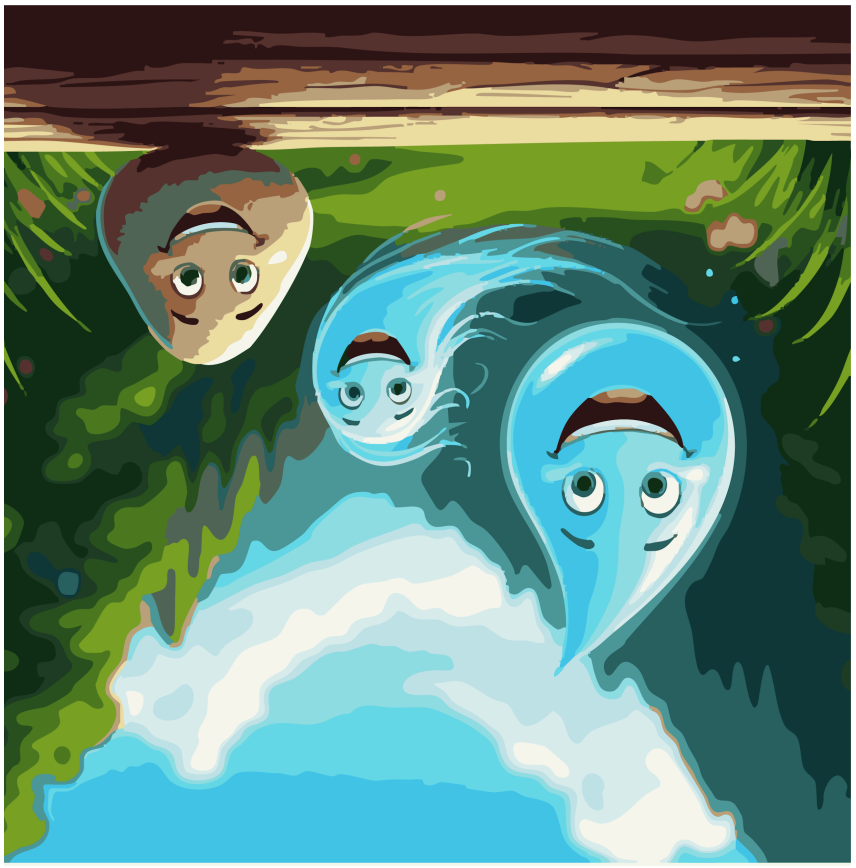
Once upon a time, in a big, beautiful world, lived three friends: Little Raindrop, Gentle Breeze, and Tiny Pebble. They loved exploring and helping all the plants and animals on Earth.

One day, Little Raindrop said, "I want to see where the rivers go! I fall from the clouds and splash into rivers, but where do they lead?"

Gentle Breeze giggled, "I can help! I blow over rivers, lakes, and oceans. I know where all the water goes."

Tiny Pebble chimed in, "Don't forget about me! The rivers flow over the land, carrying me along sometimes. We're all connected!"

Fold the page in half so you can show the picture to the children and read the story at the same time



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Storytelling card about the "Earth's ecosystem cycles" #2

So, the three friends decided to go on an adventure. Little Raindrop jumped out of a fluffy cloud and landed softly in a sparkling river. The river danced as it flowed down the mountains, carrying Little Raindrop along. As the river moved, it gently rolled over Tiny Pebble, who was resting on the riverbed.

"Look!" said Tiny Pebble. "The river carries me down to the sea. I help build new land where the river meets the ocean."

Gentle Breeze swirled above them, helping birds fly and spreading seeds across the land. "I blow the air that helps everything grow," said Gentle Breeze. "I move clouds full of raindrops to water the plants and keep the rivers flowing."

Fold the page in half so you can show the picture to the children and read the story at the same time

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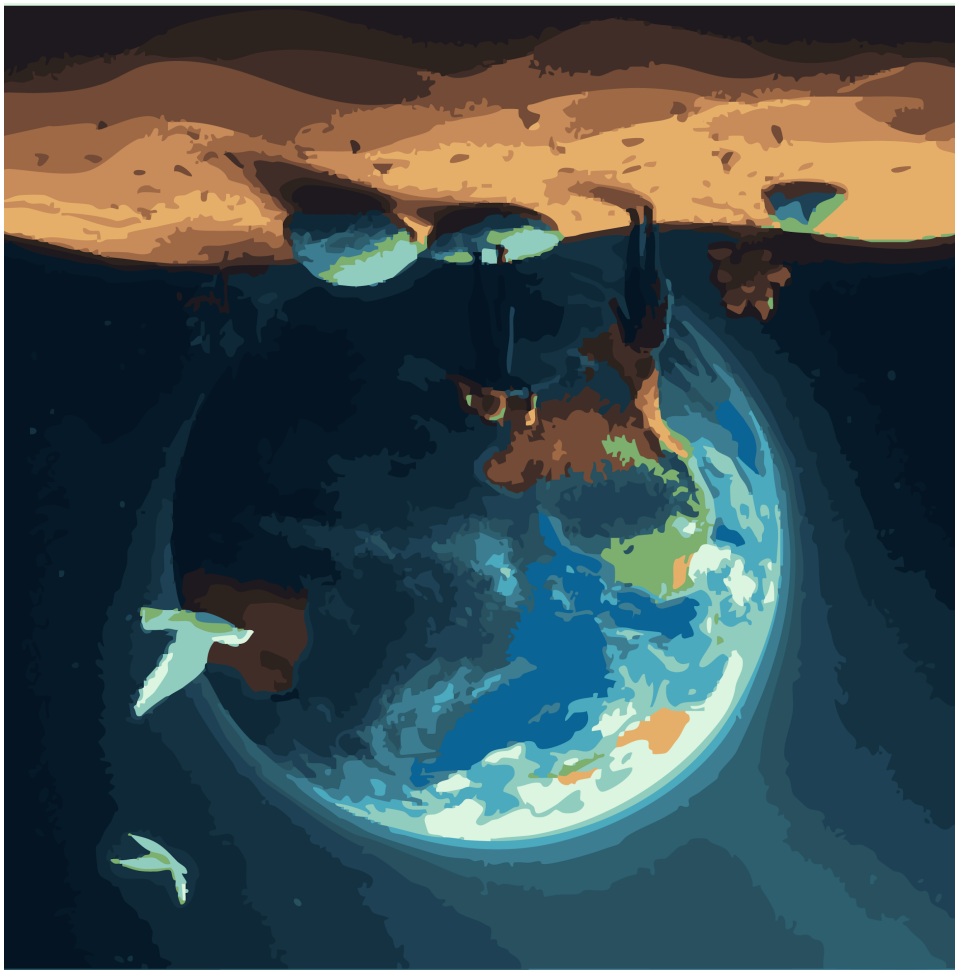
Storytelling card about the "Earth's ecosystem cycles" #3

Little Raindrop, Tiny Pebble, and Gentle Breeze travelled far and wide. Along the way, they saw trees drinking water from the ground, fish swimming in the rivers, and animals breathing the fresh air. They realized that everything on Earth is connected—land, air, and water all work together to help the world grow.

As the day ended, Little Raindrop climbed back into the clouds to rest, Tiny Pebble found a new home by the sea, and Gentle Breeze whispered through the trees, "We are all part of this Earth, and together, we keep it alive."

And from that day on, the three friends promised to always work together to take care of the Earth and all the creatures who lived there. The End.

Fold the page in half so you can show the picture to the children and read the story at the same time



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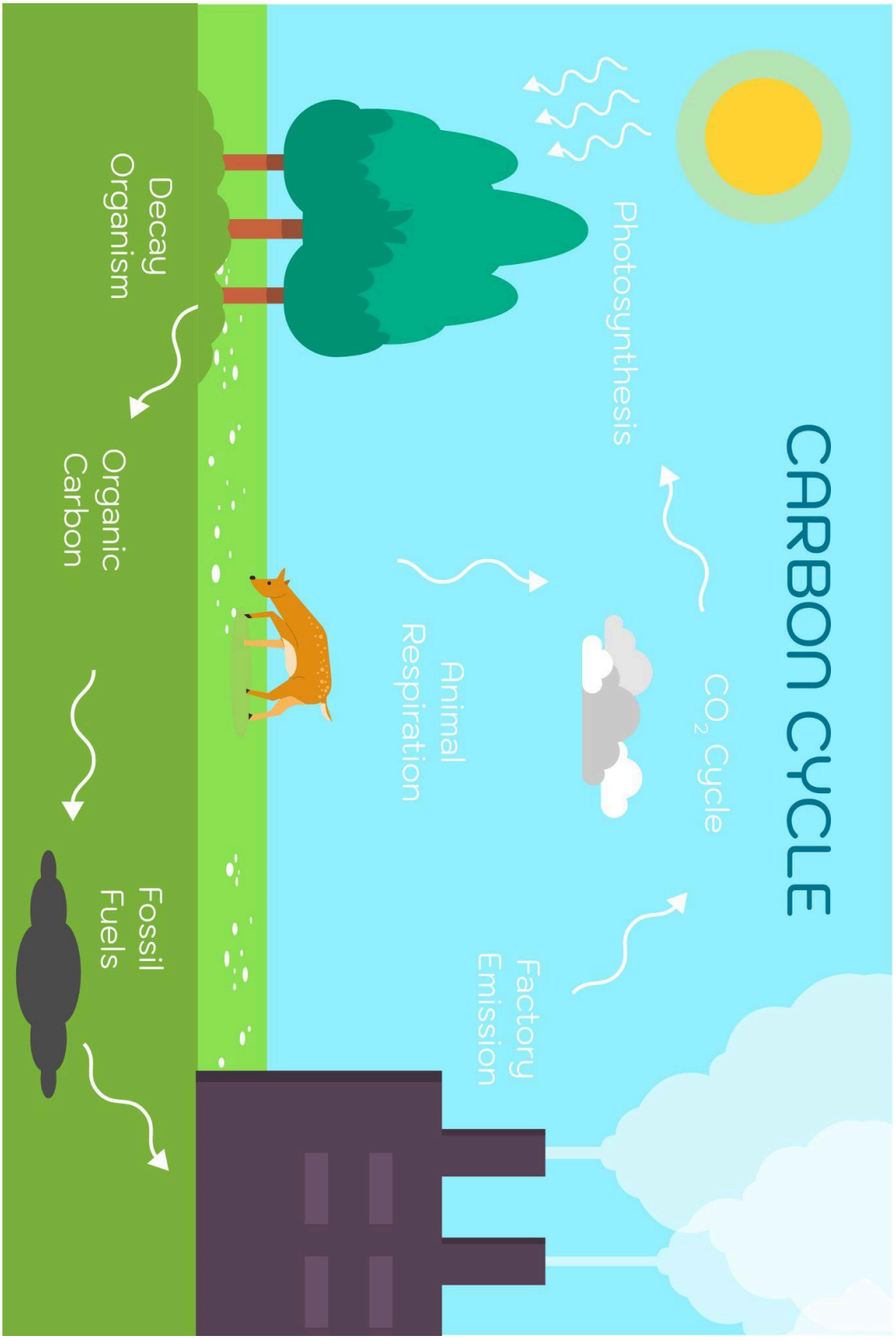
Infographics



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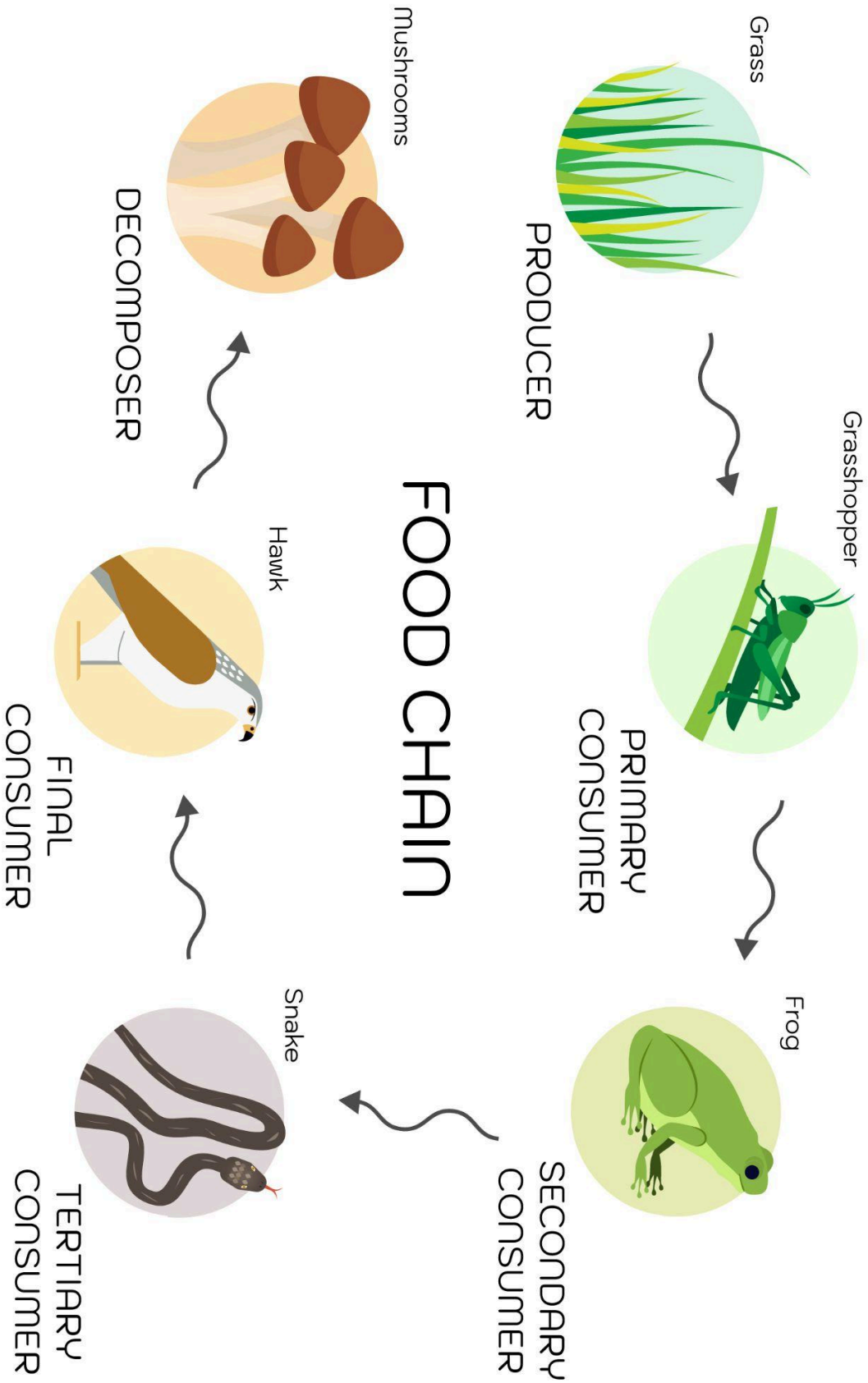
Food chain



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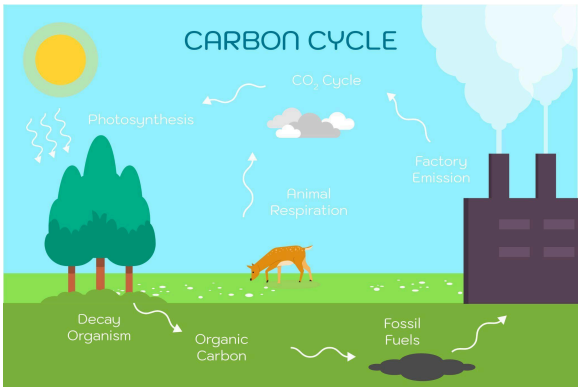
Puzzle

Teacher: use these puzzle images to help children understand and piece together key natural processes, such as the carbon cycle, oxygen cycle, water cycle, and food chains. There are three difficulty levels. Children can cut them out themselves, or you can prepare them before the lesson.

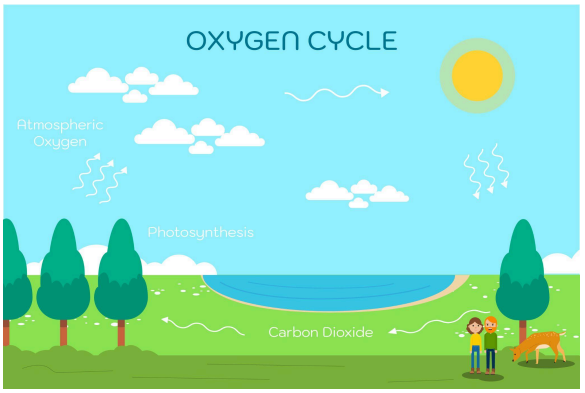
Children:

1. Cut out the whole picture and then carefully cut it into pieces.
2. Swap puzzles with a friend and try to put back together the puzzle your friend has cut out.
3. While putting the puzzle pieces together - learn how nature works, from the water cycle to food chains!

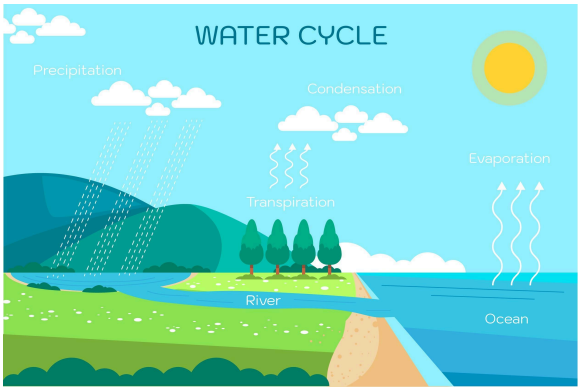
The Carbon Cycle



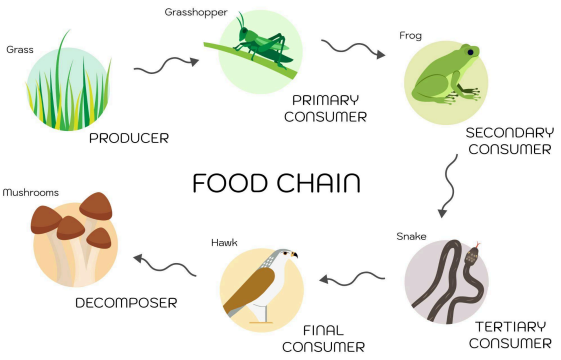
Oxygen cycle



Water cycle



Food chain example



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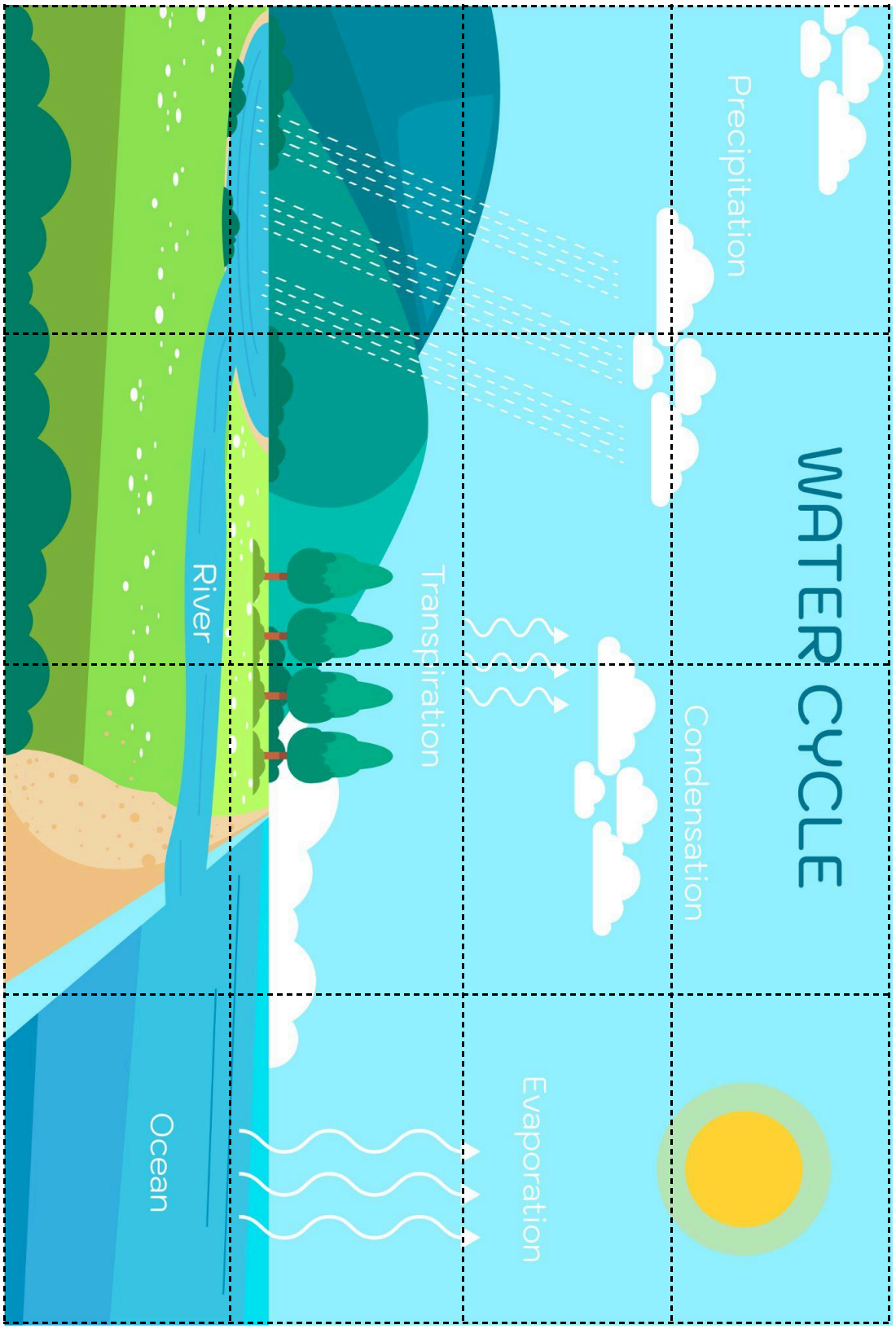

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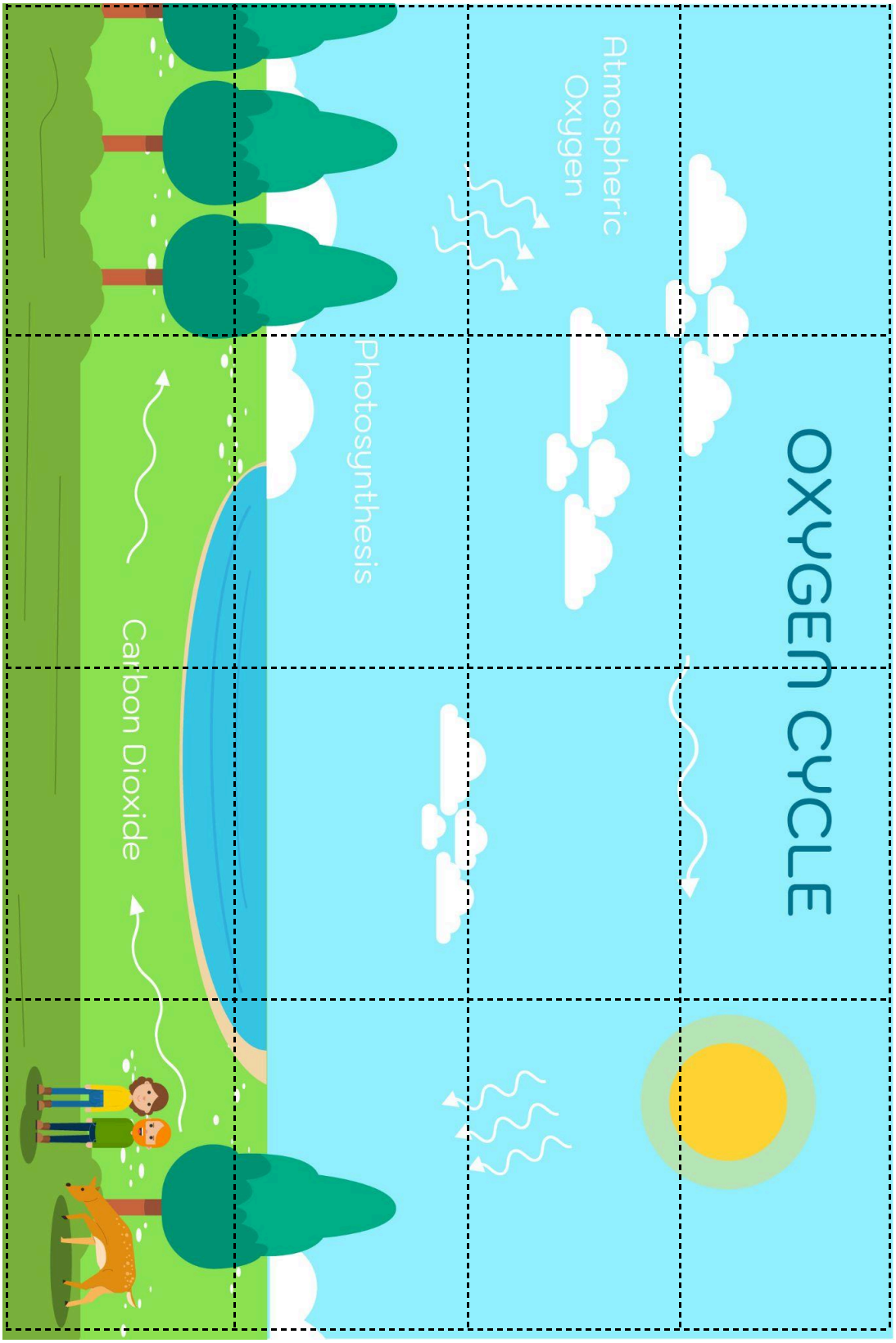

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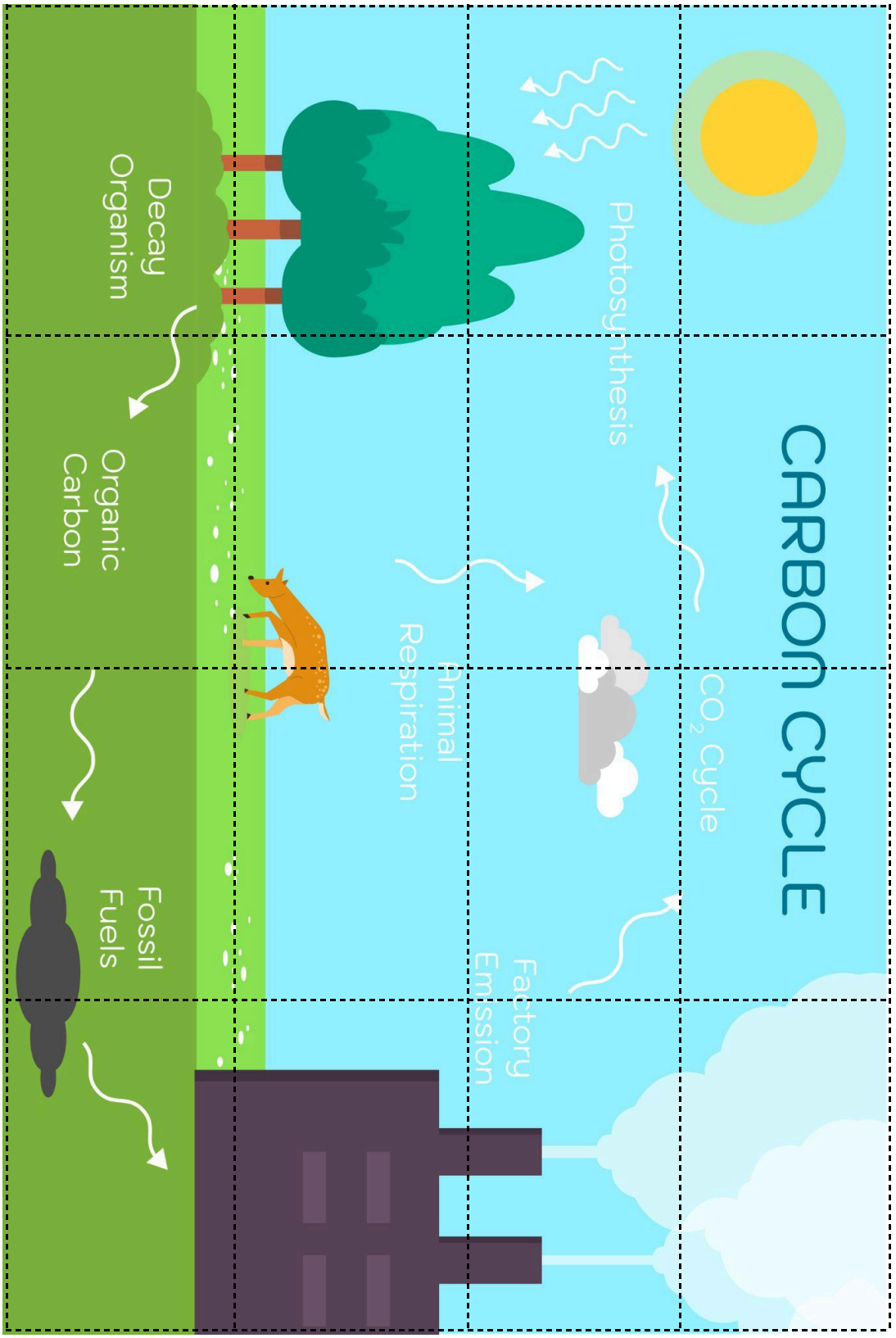

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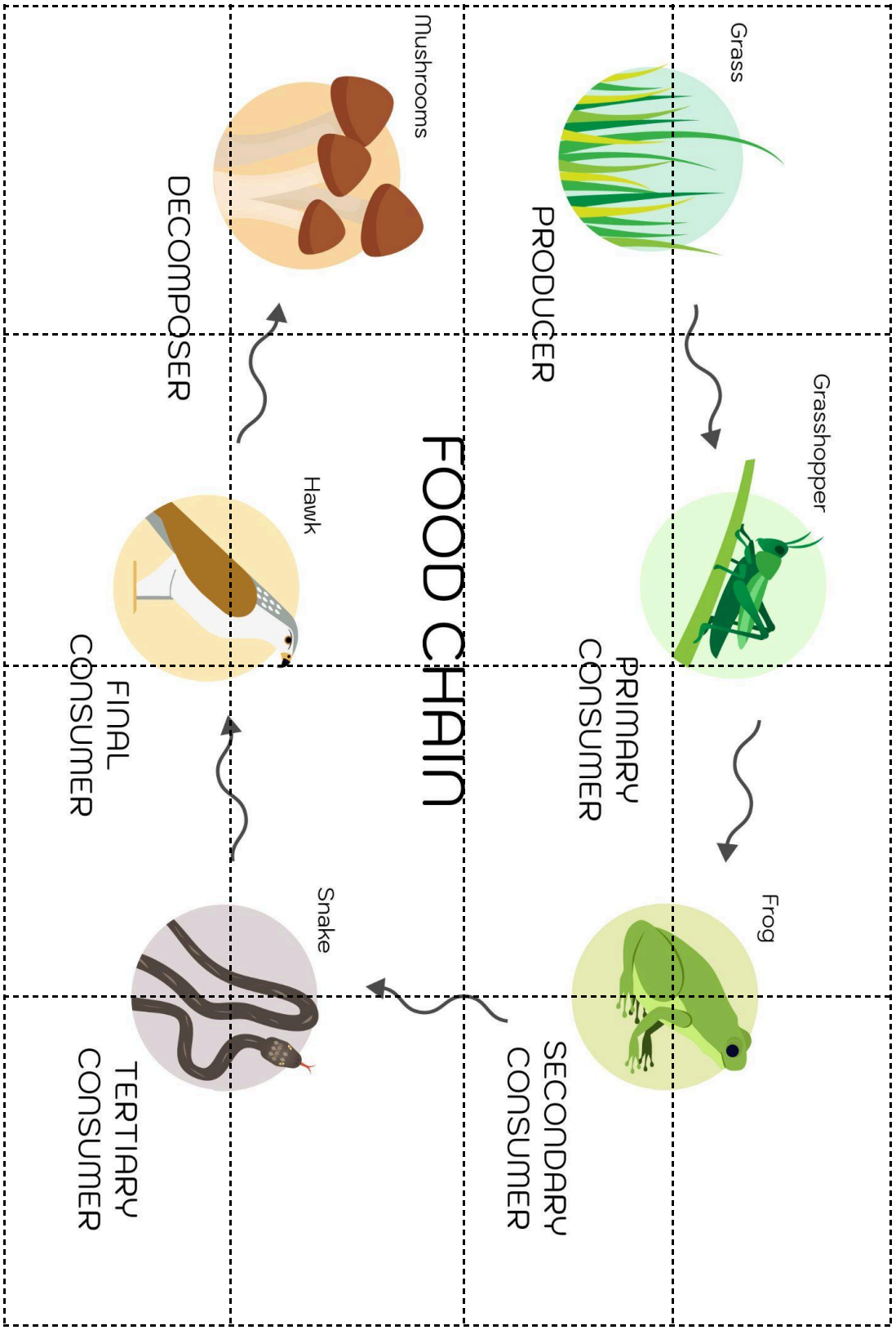

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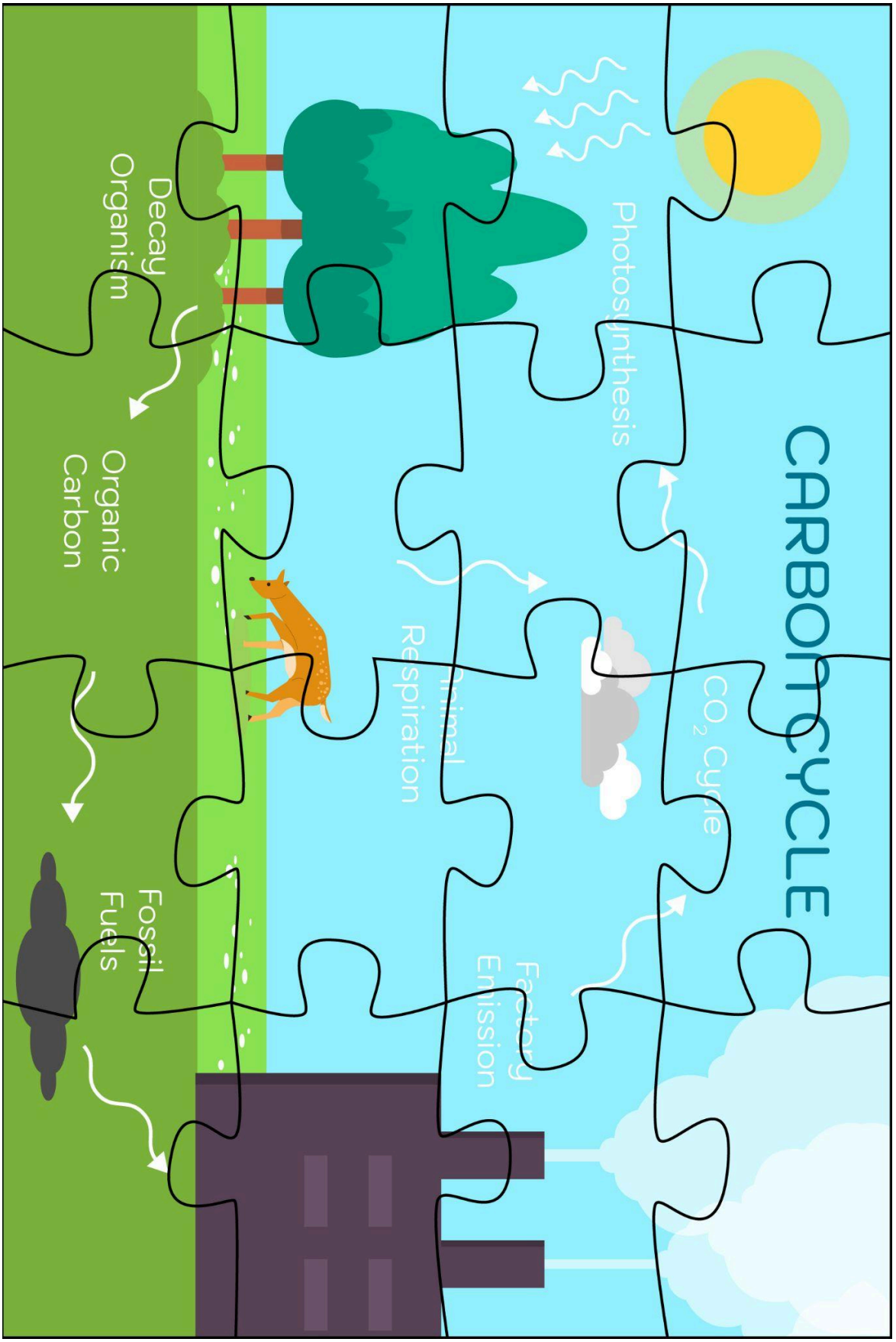

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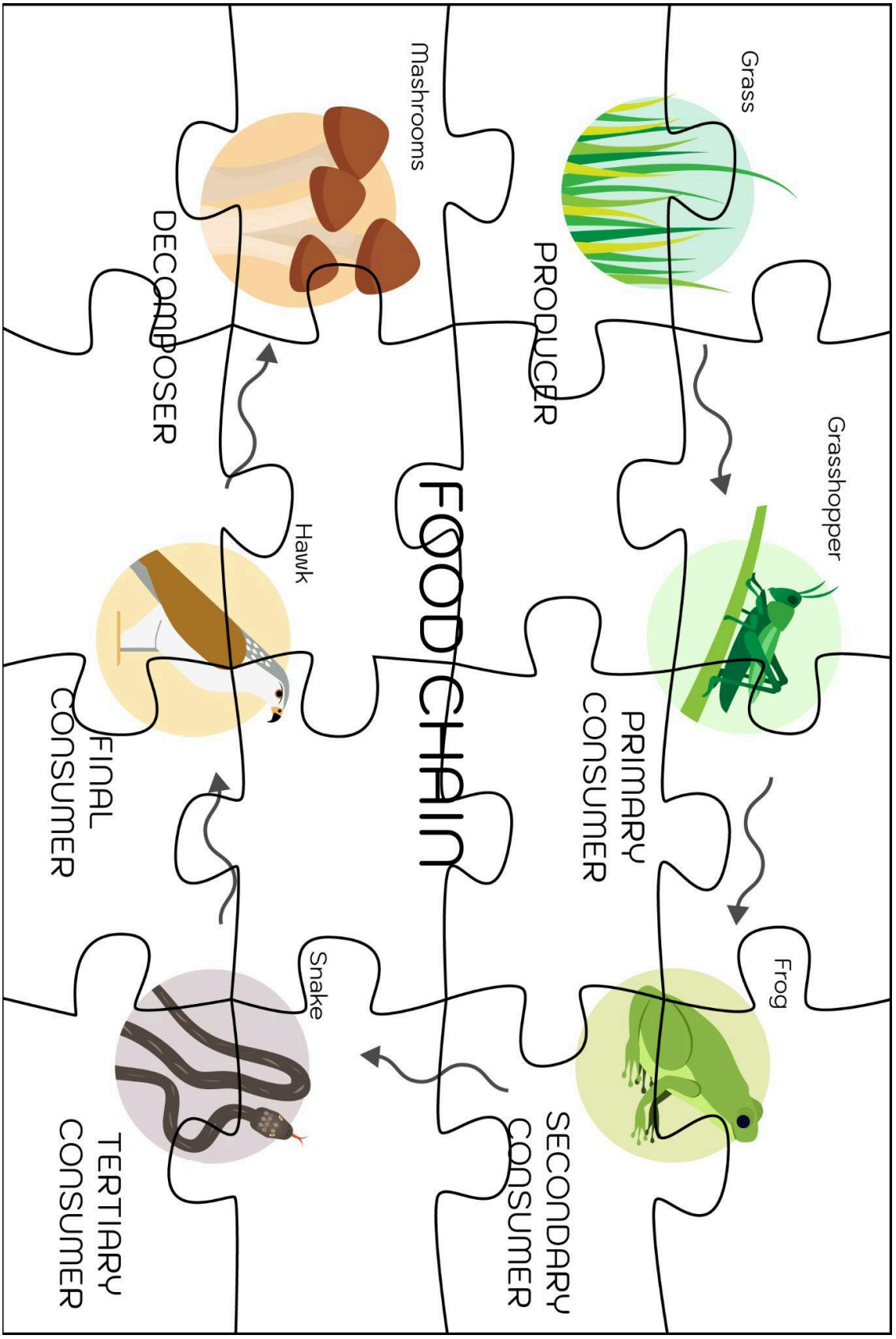

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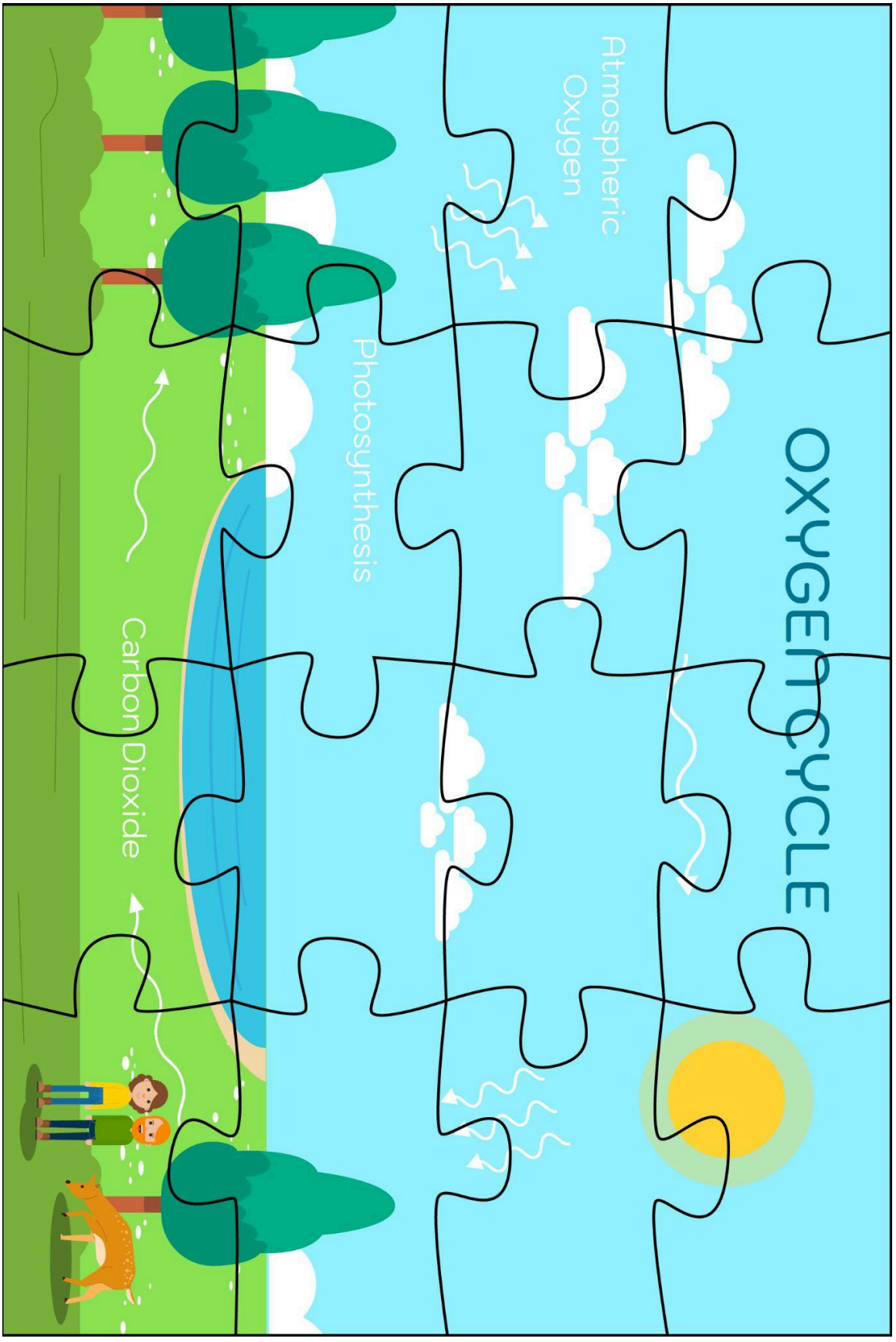

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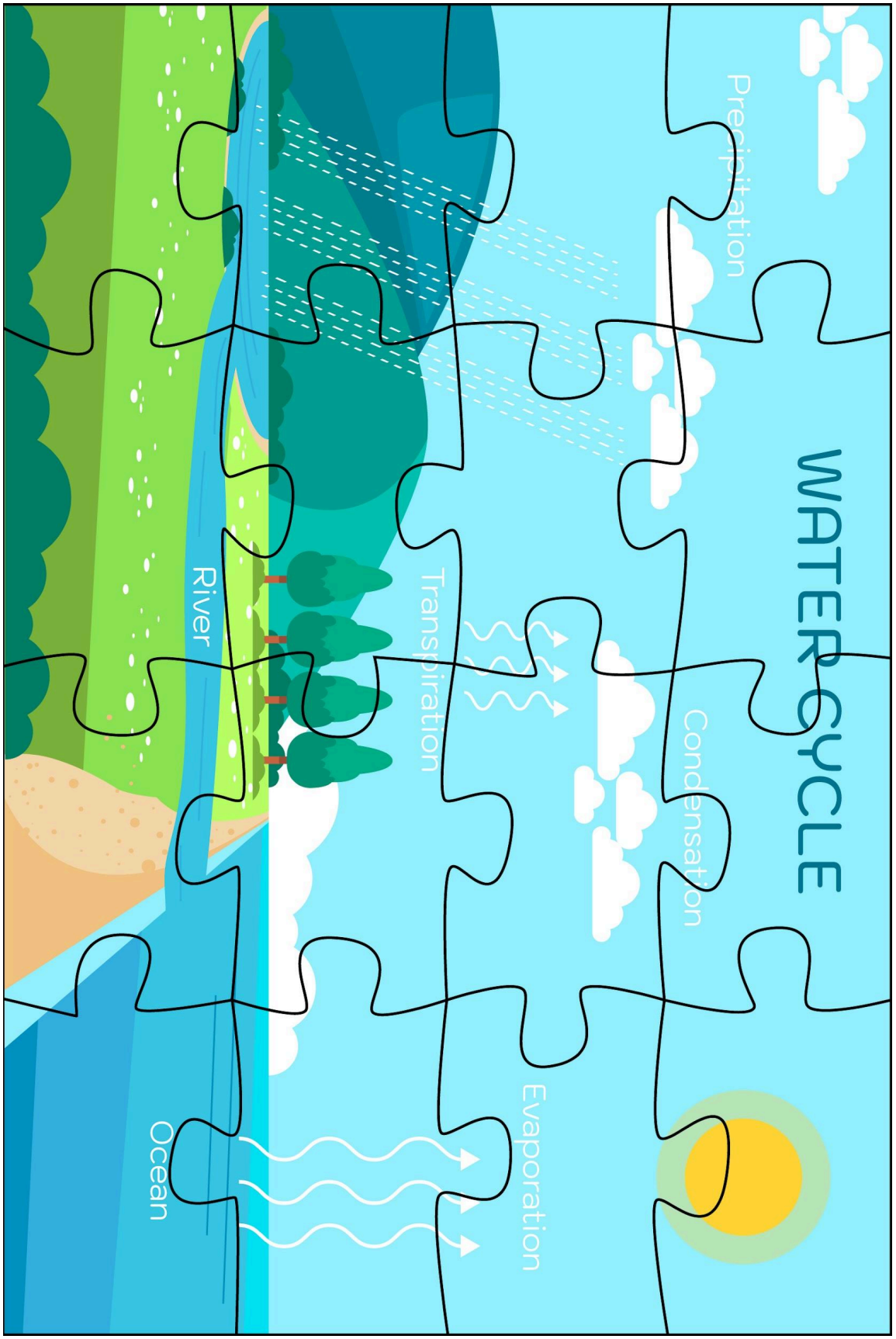

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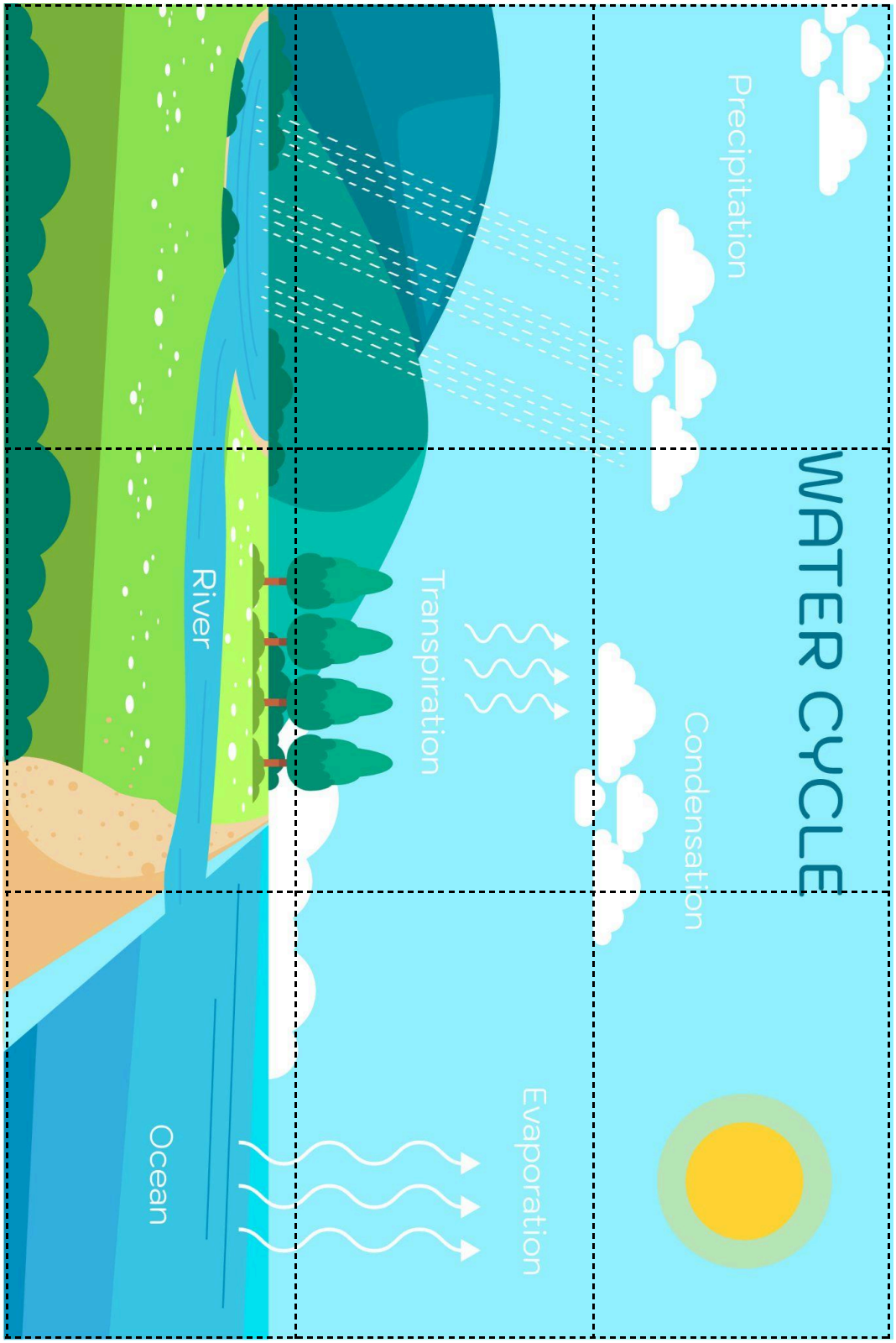

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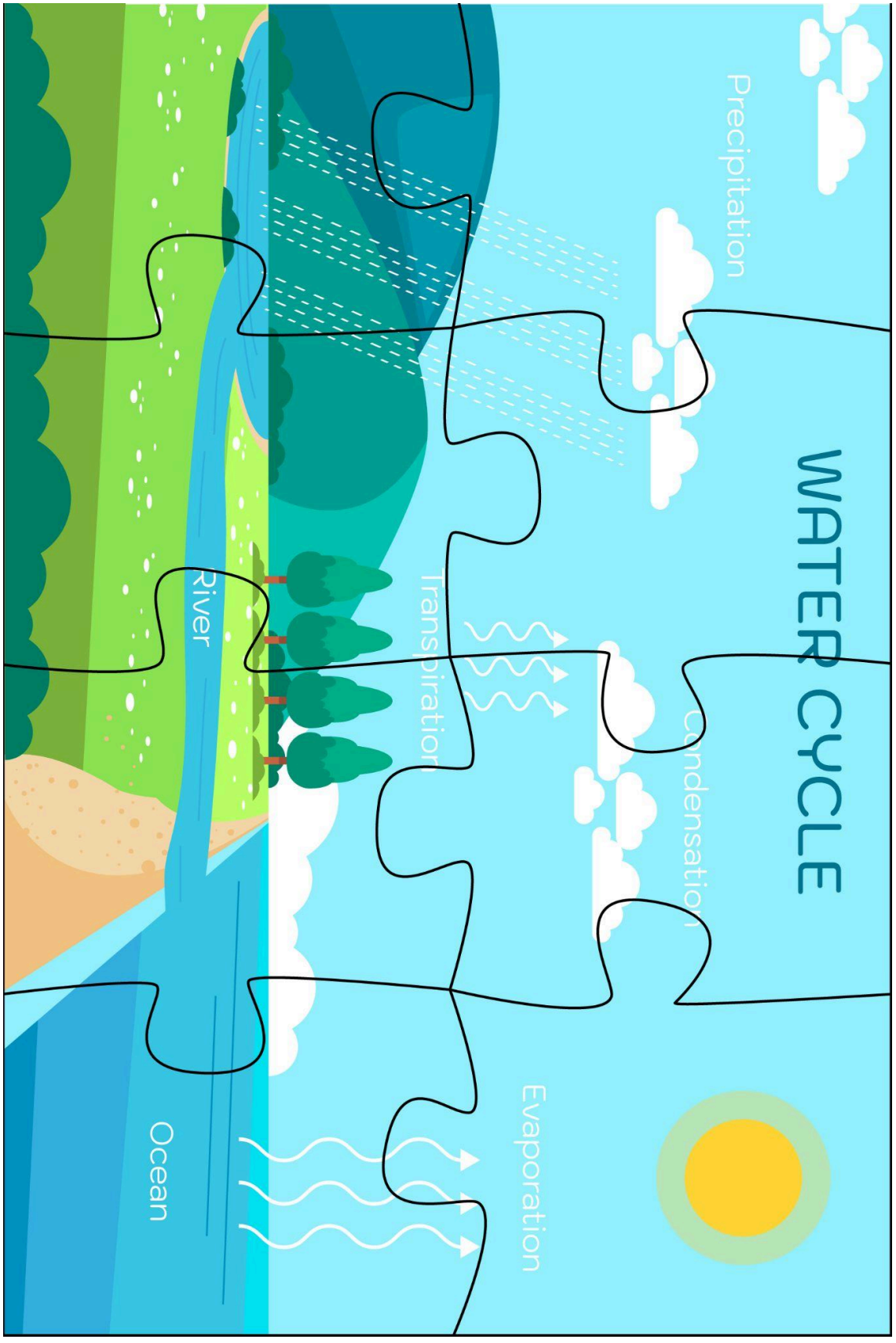

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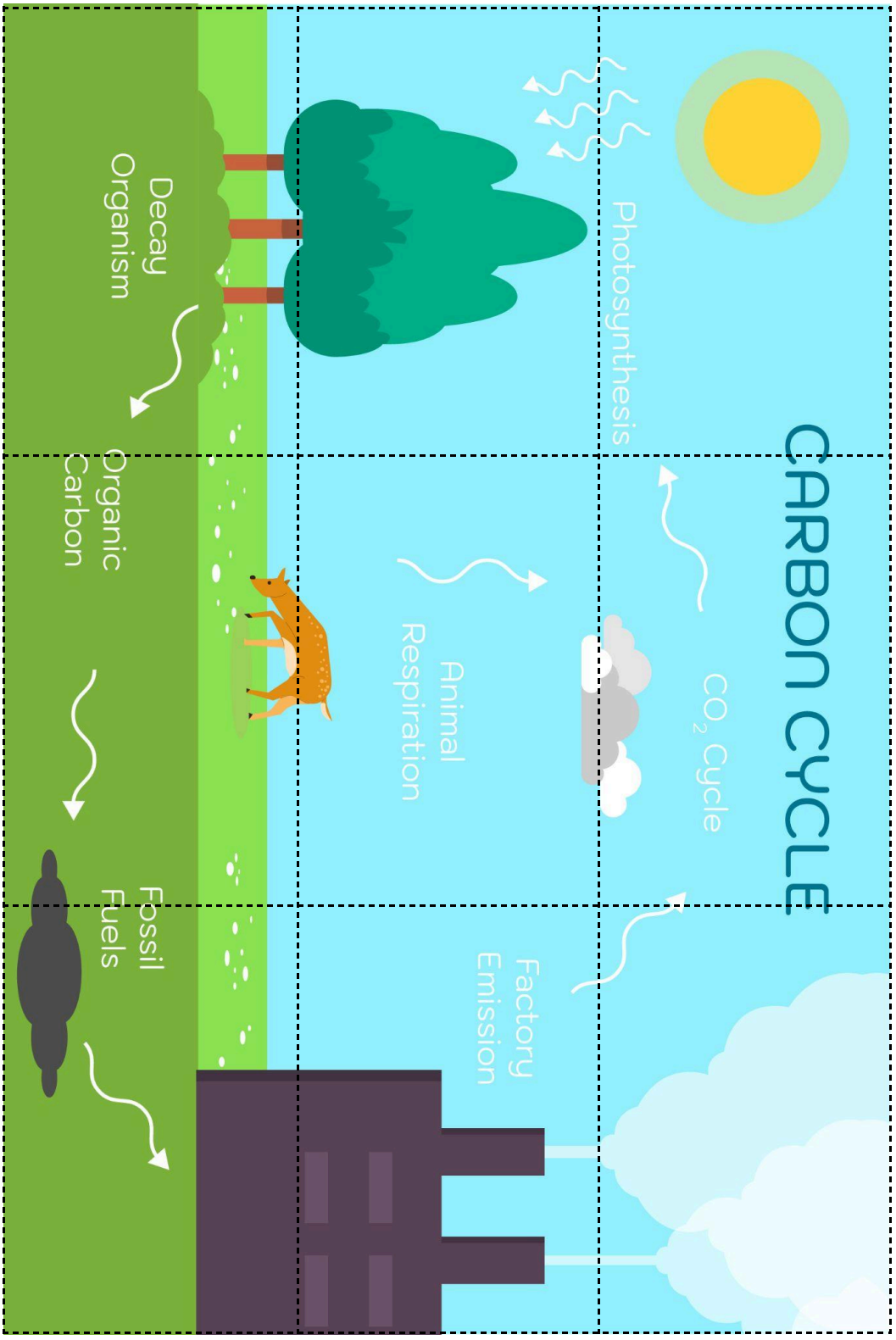

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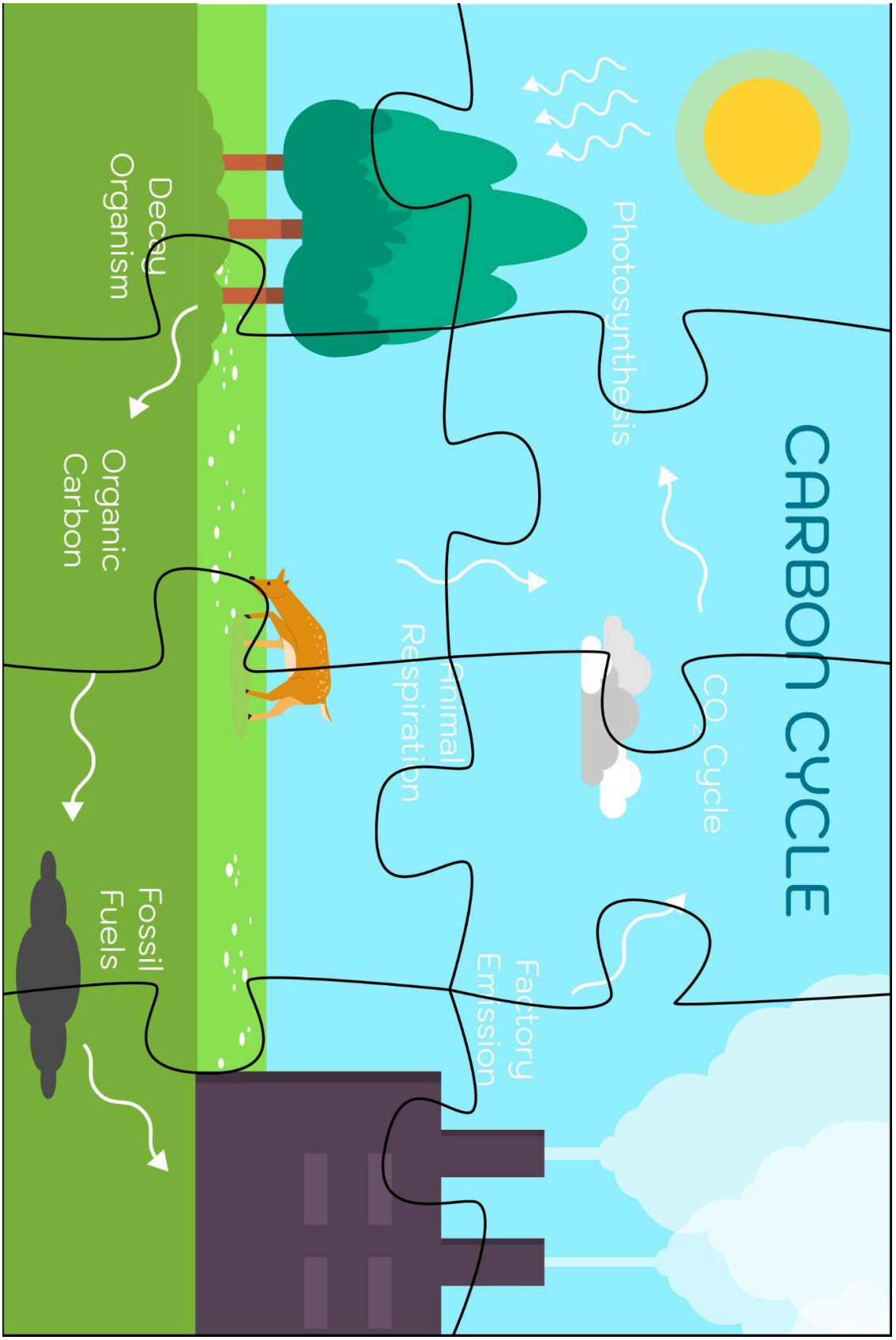

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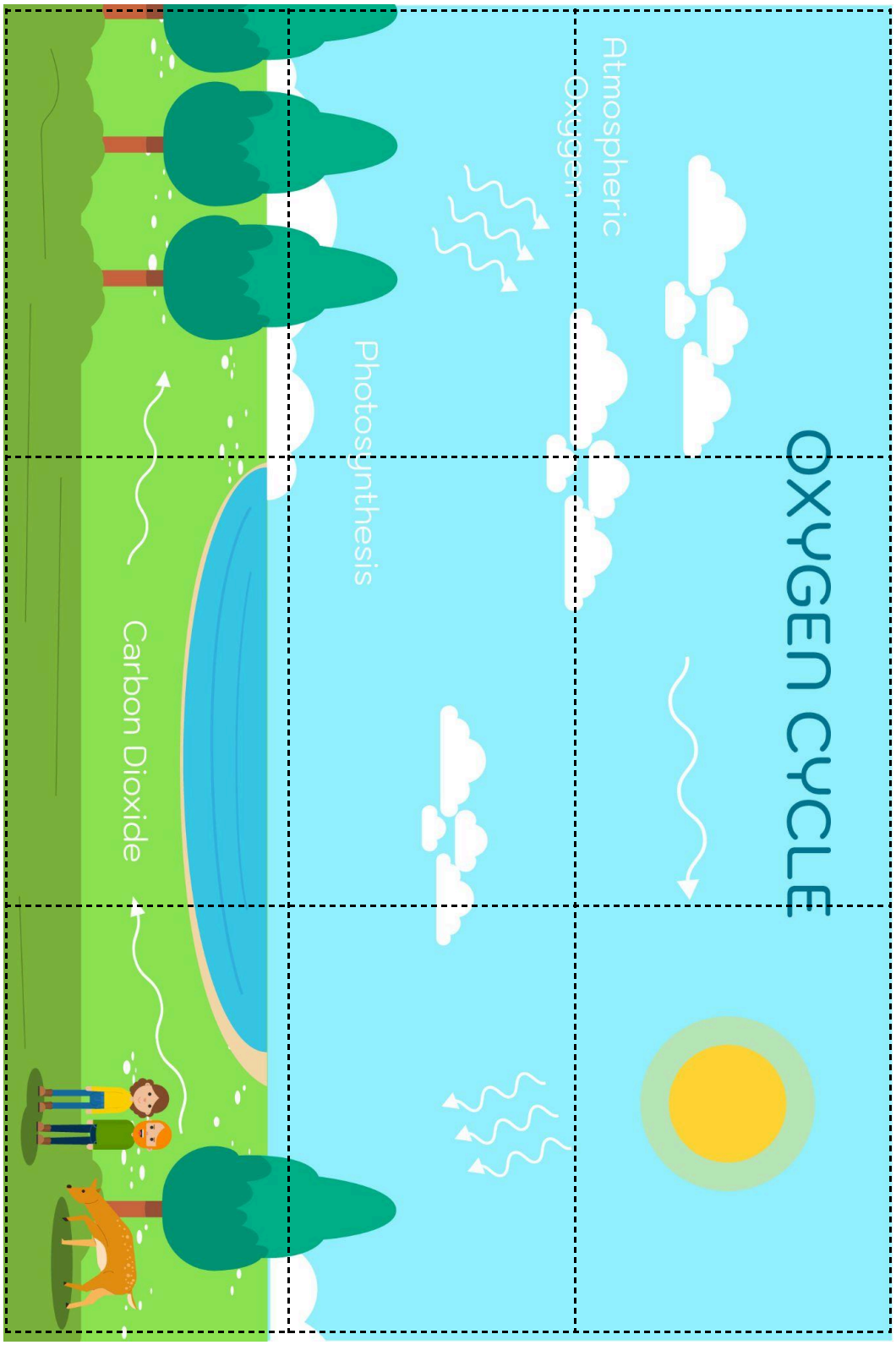

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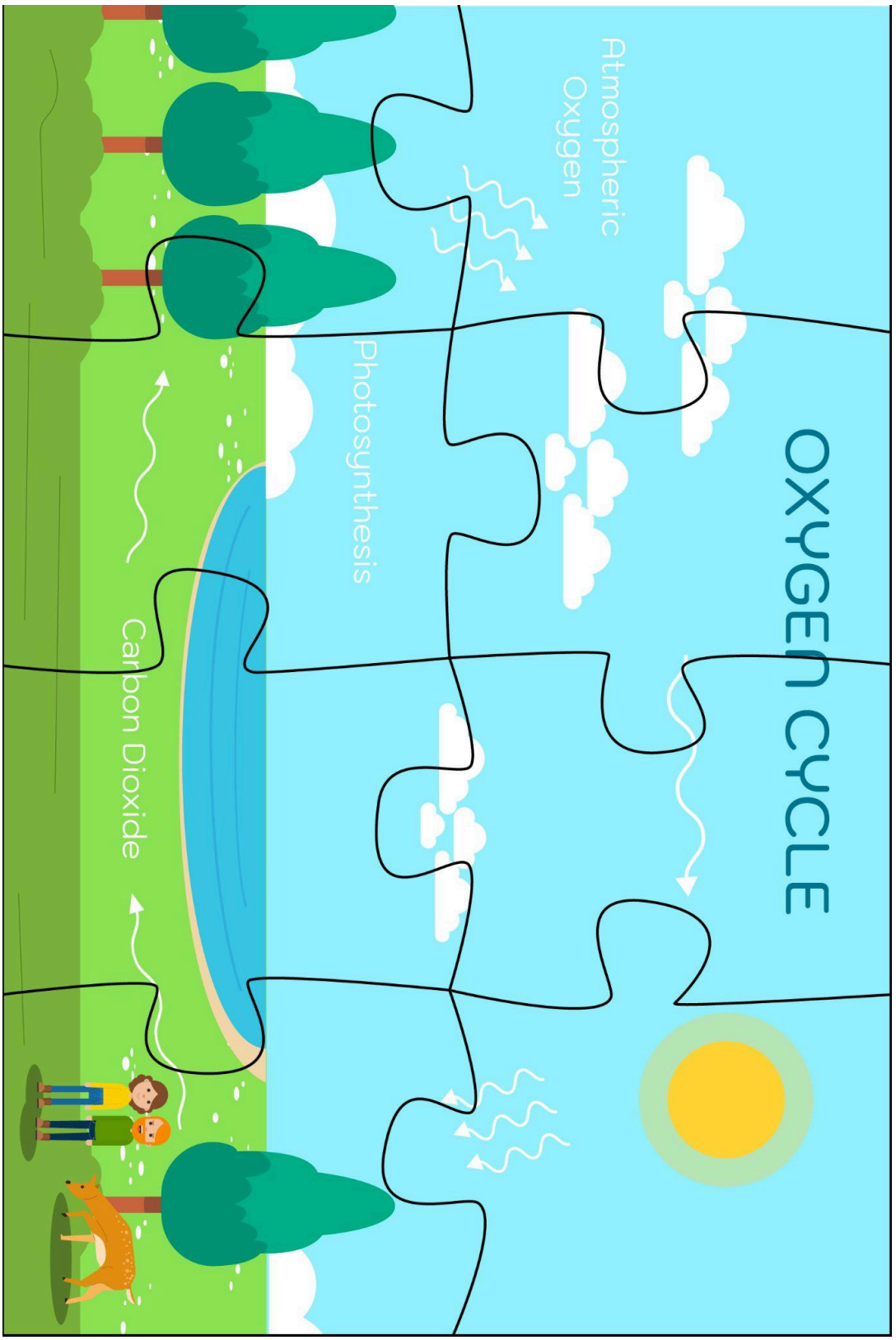

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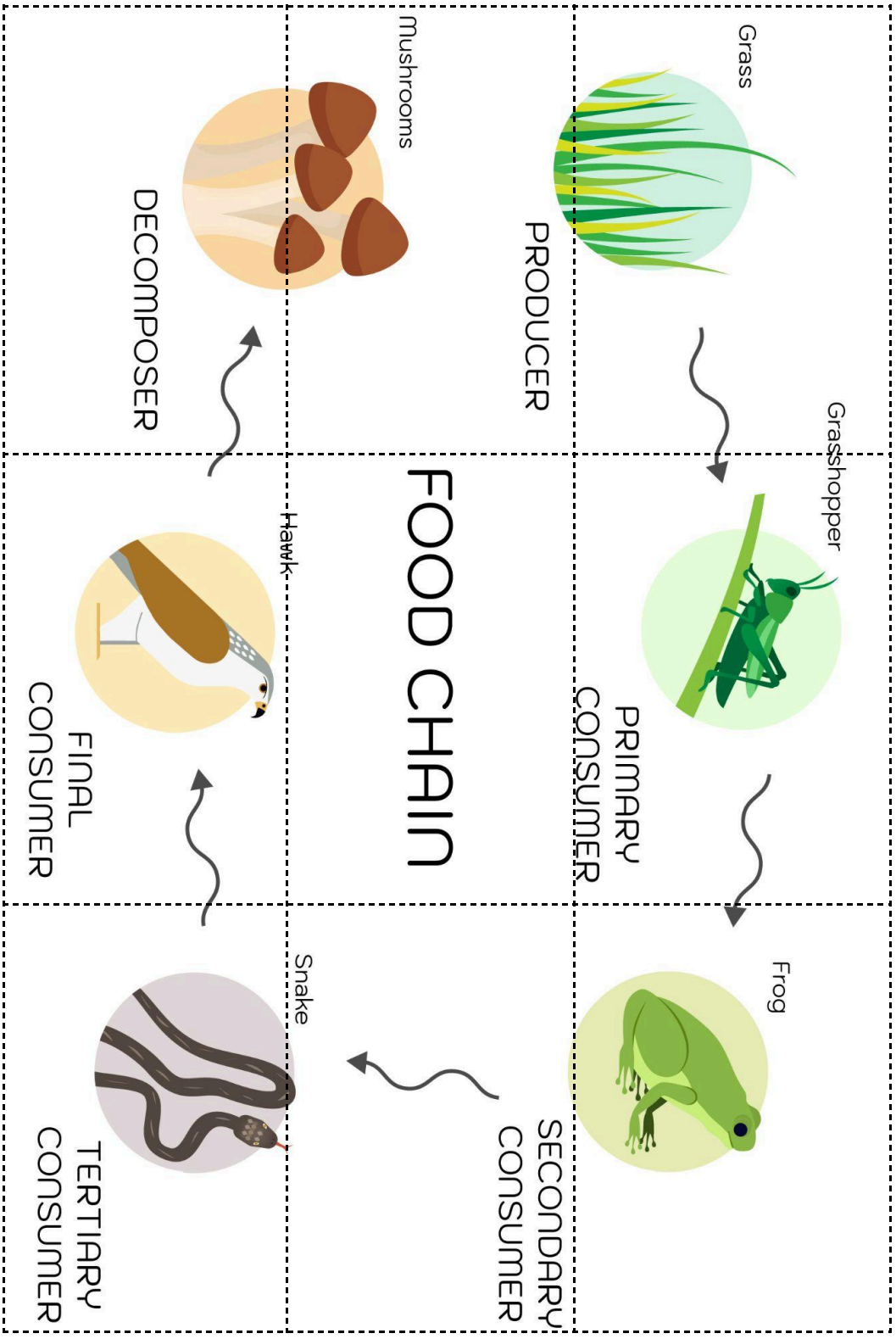

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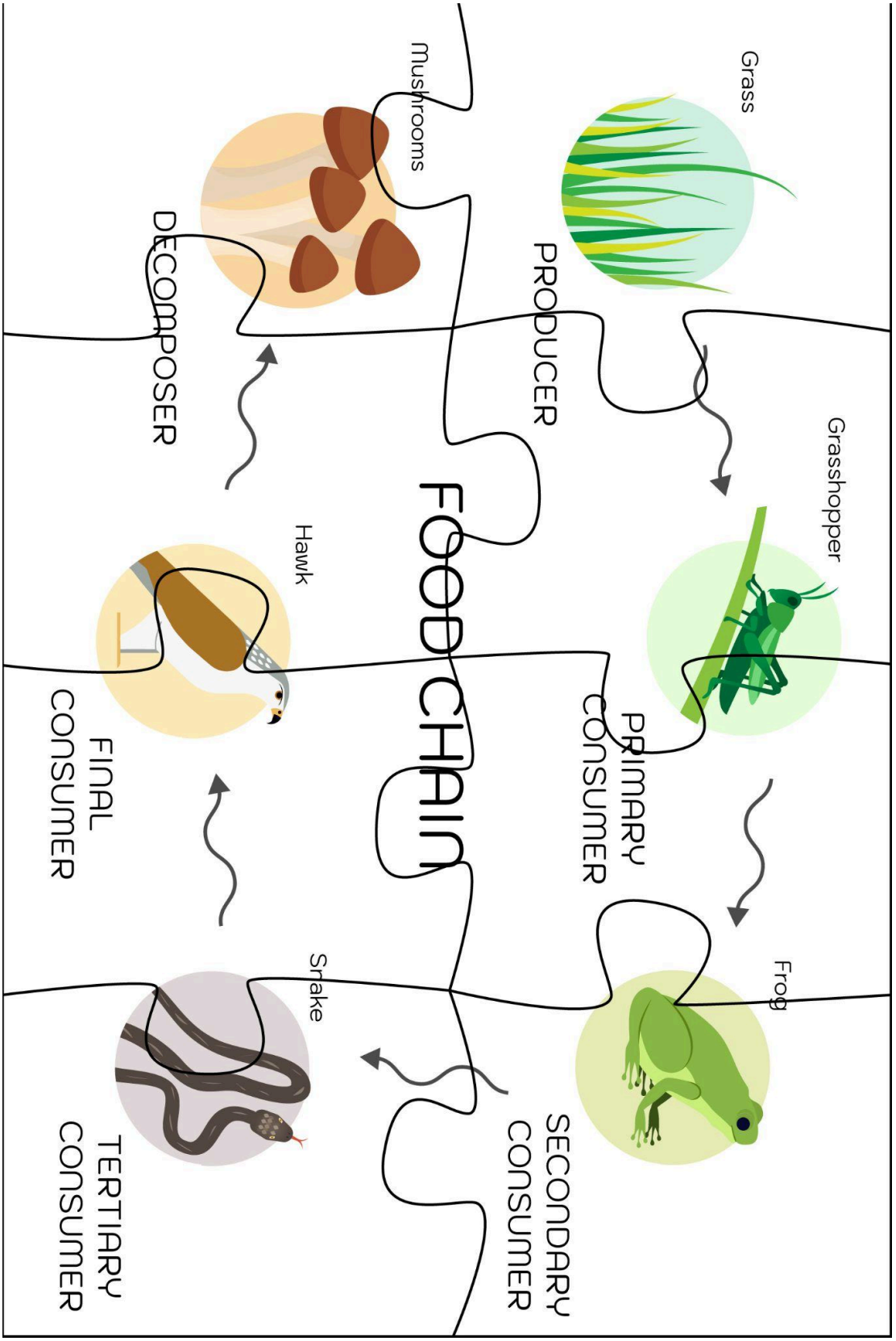

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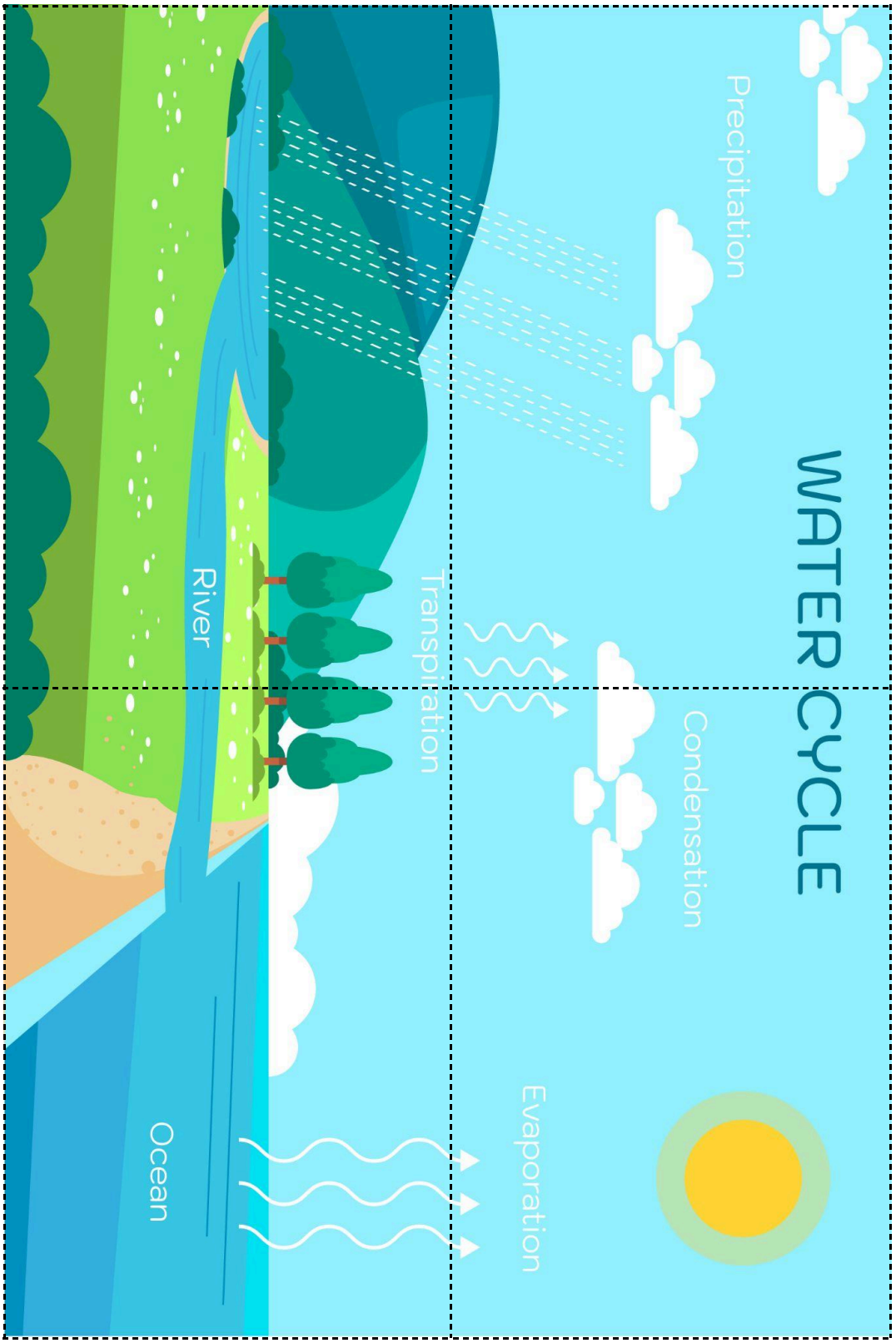

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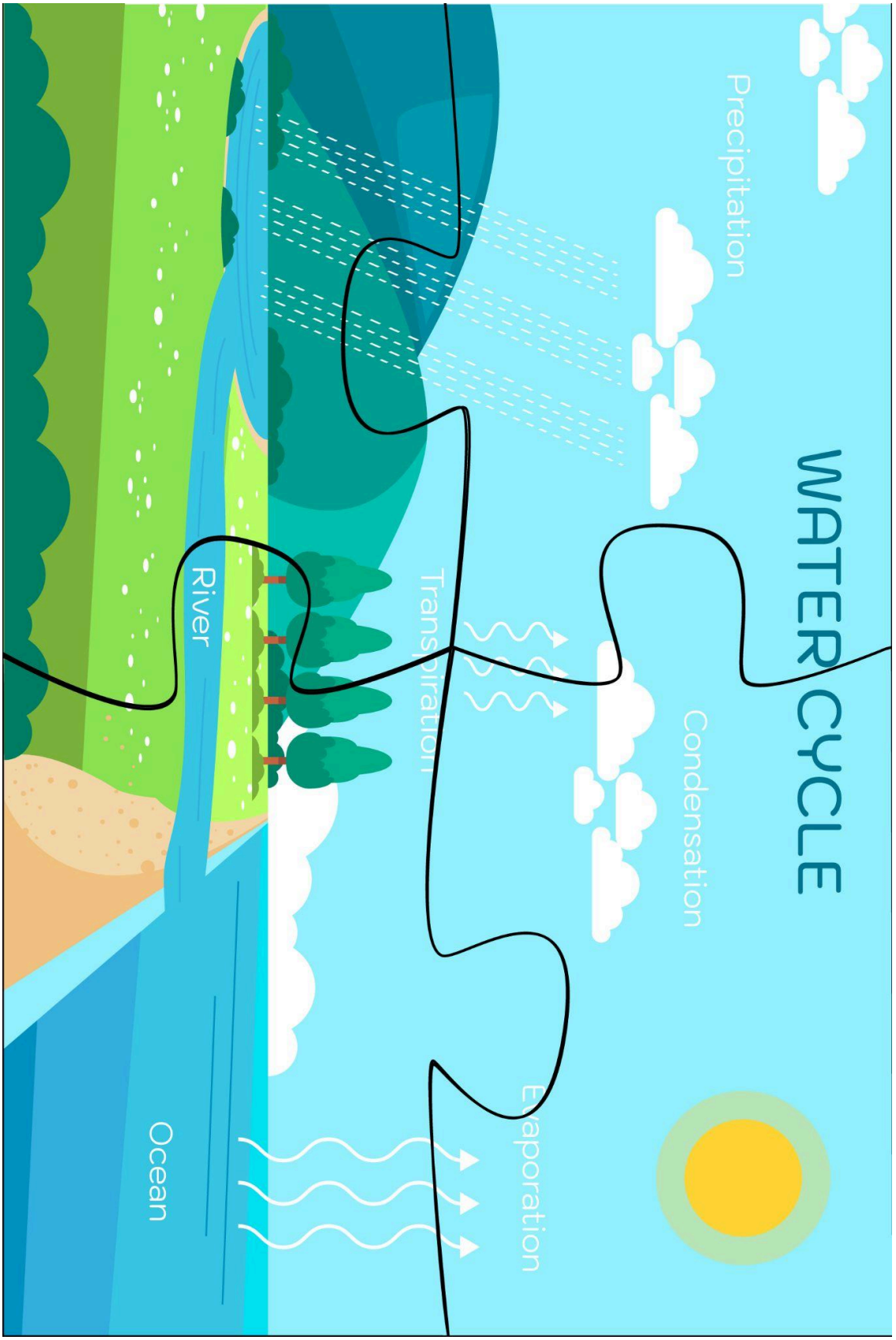

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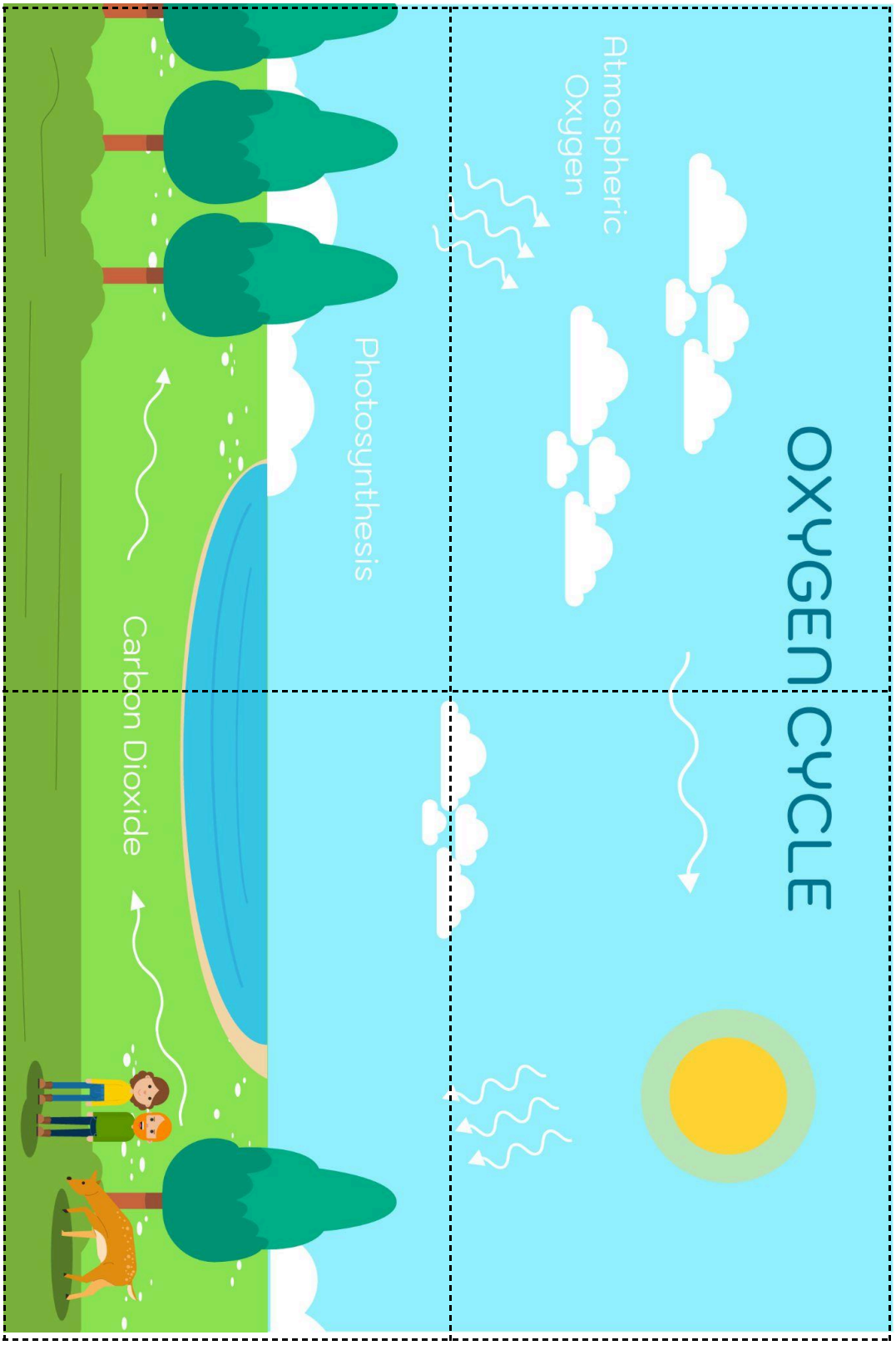

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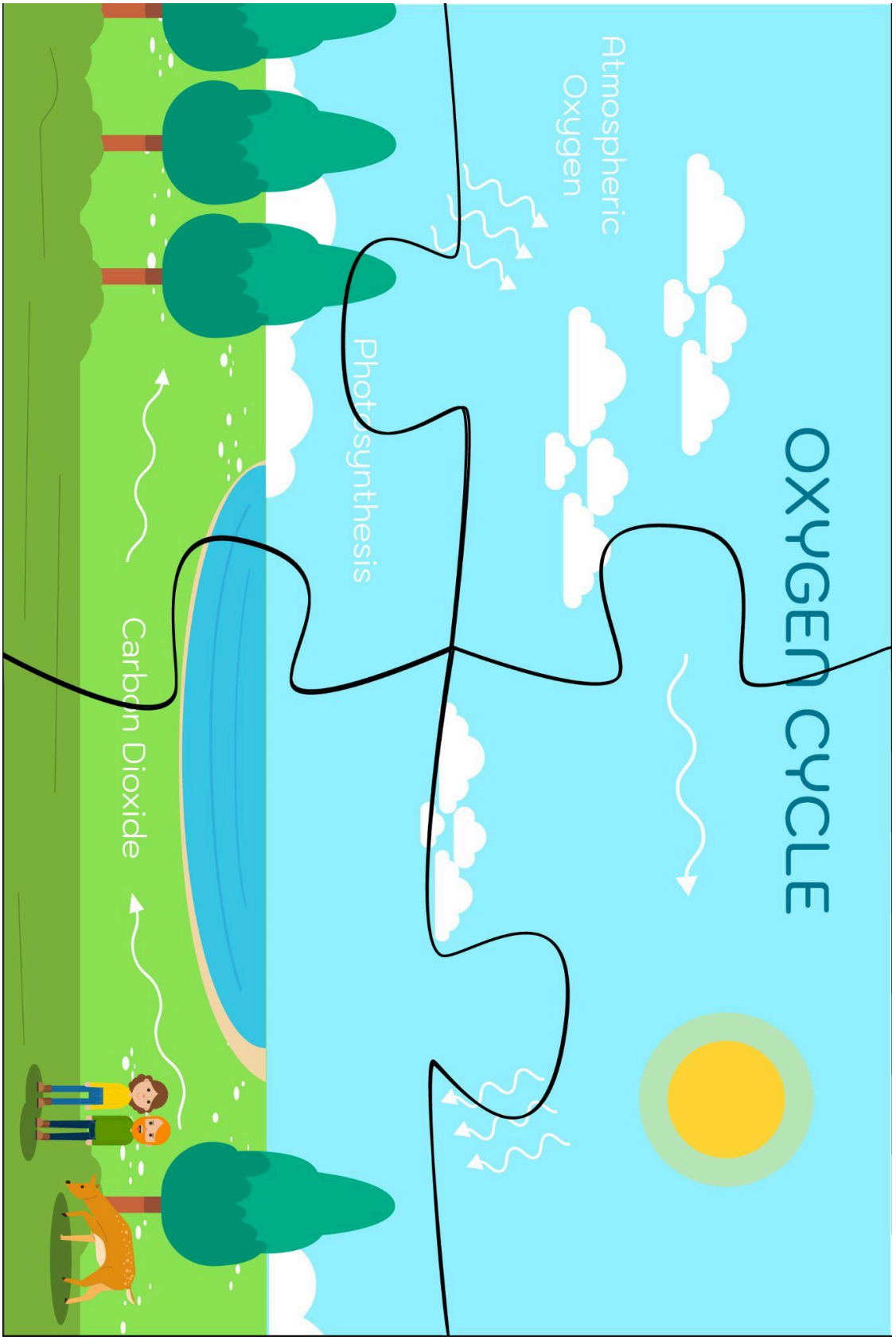

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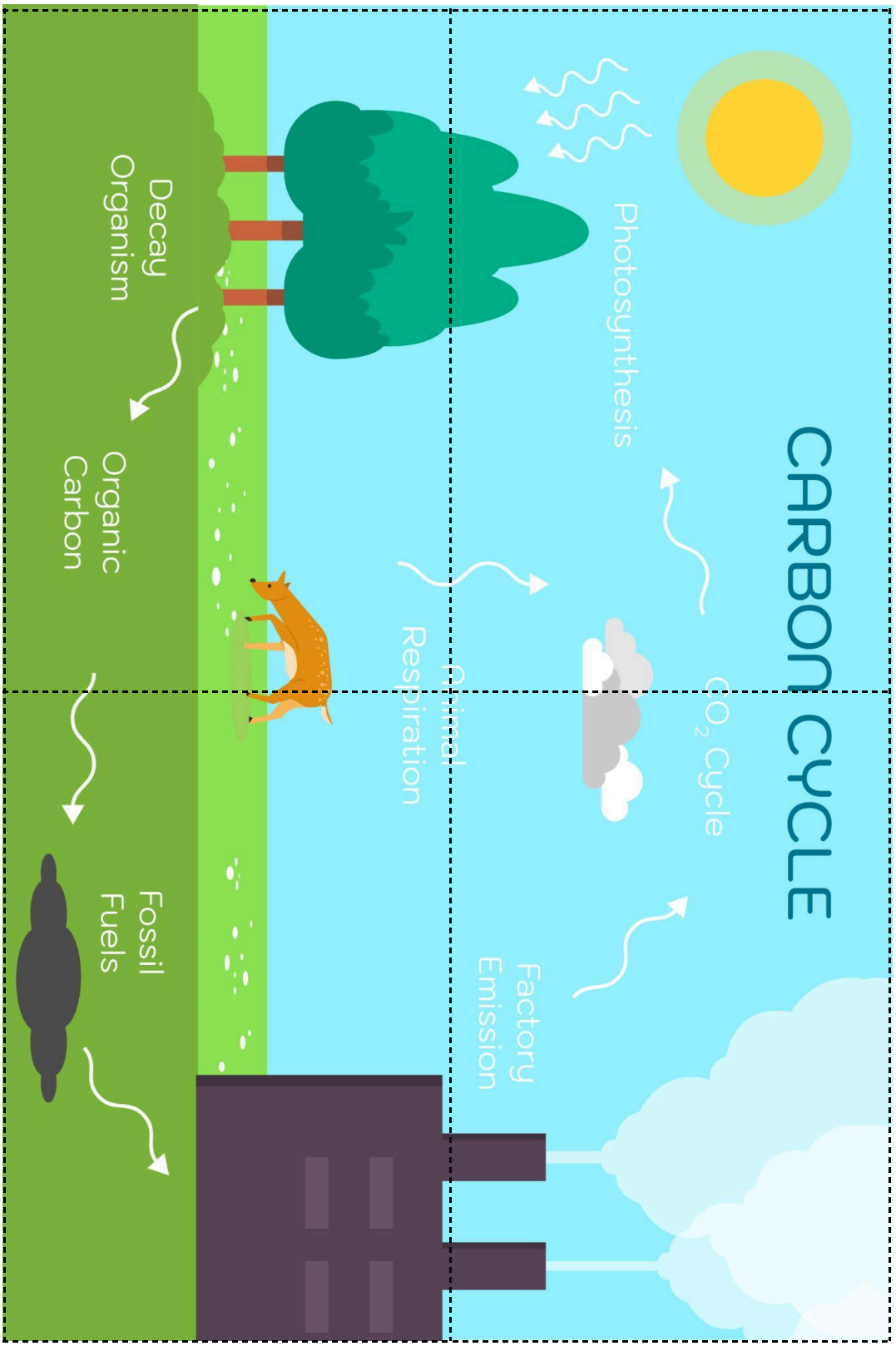

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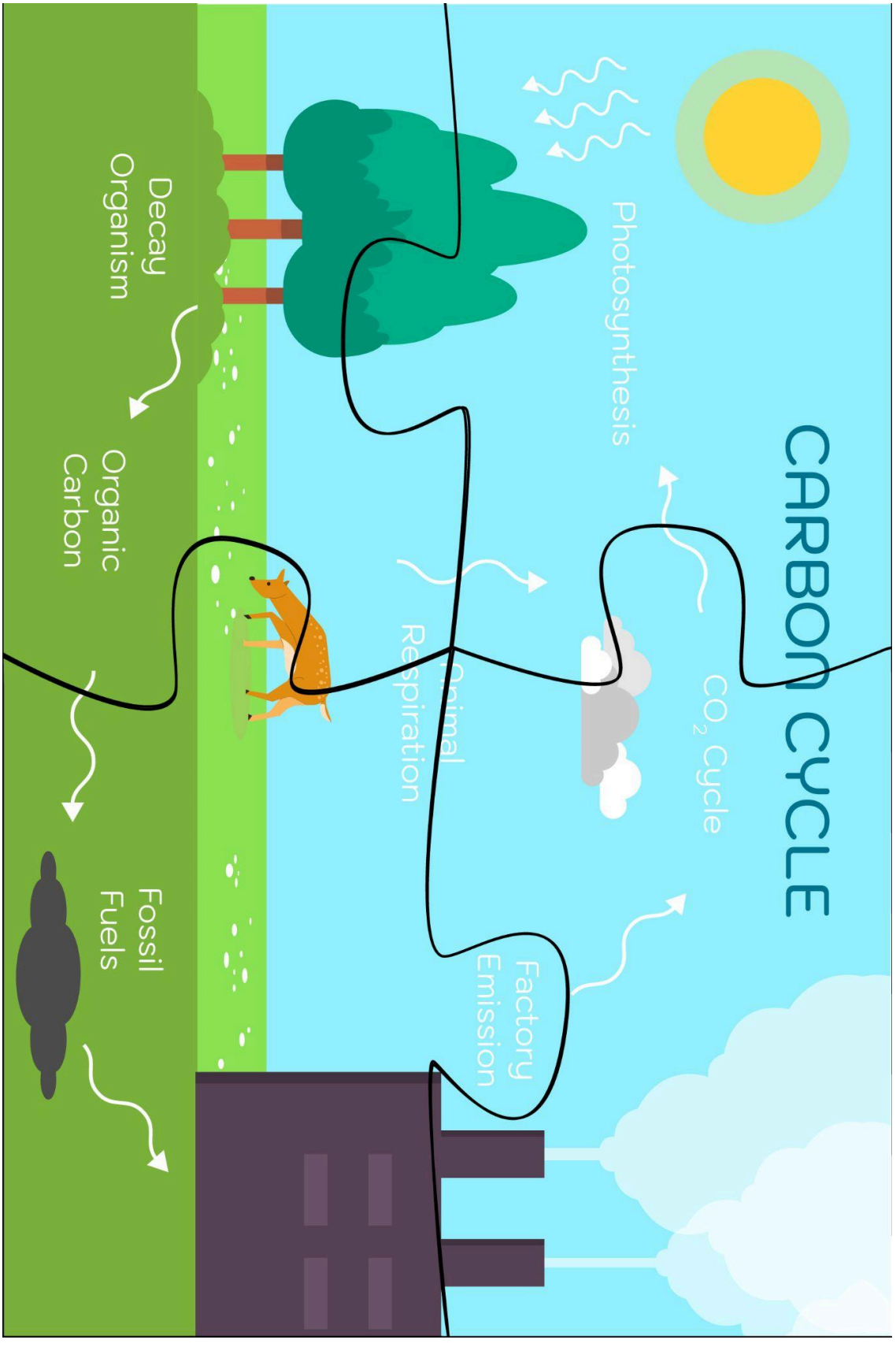

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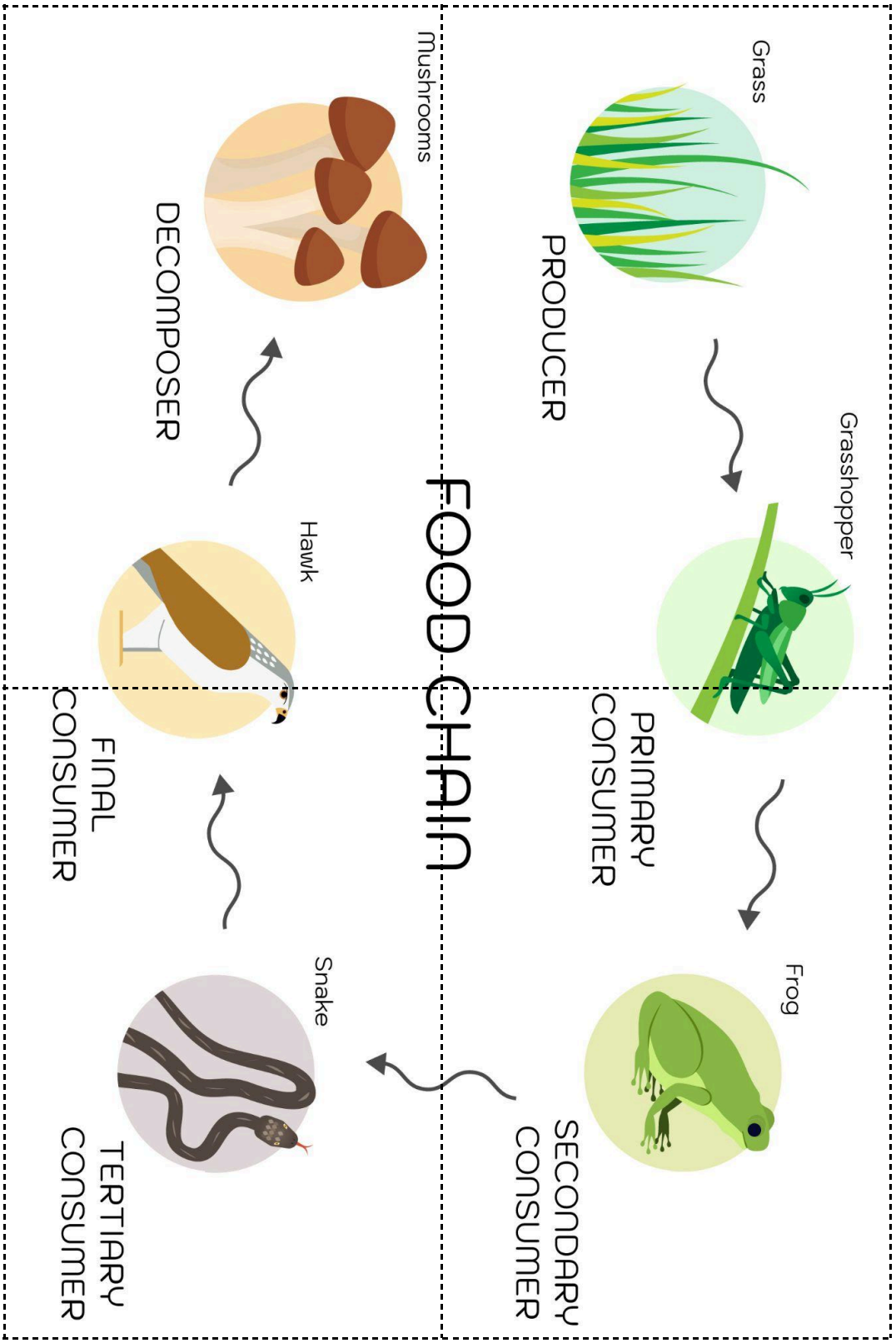

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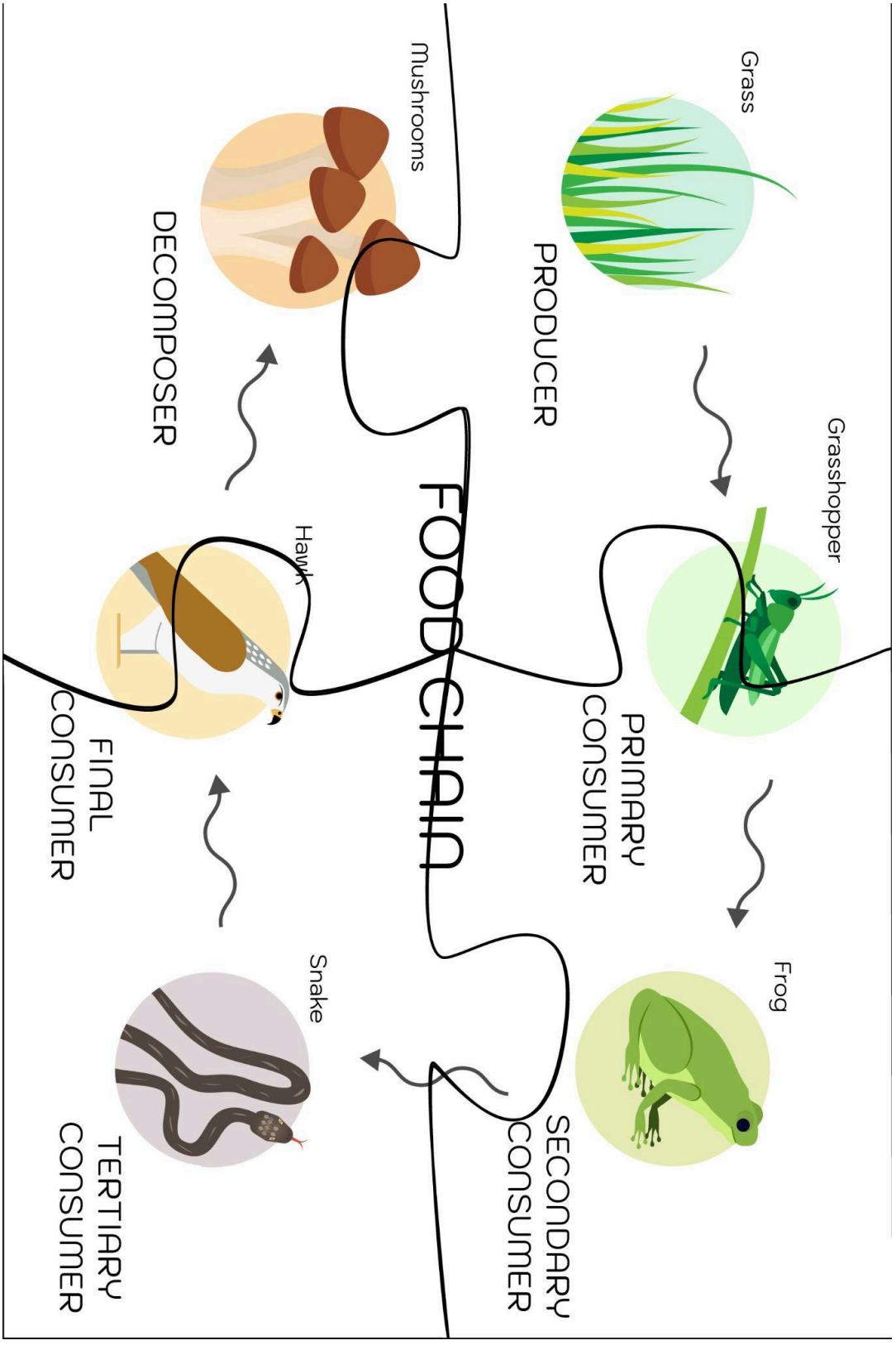

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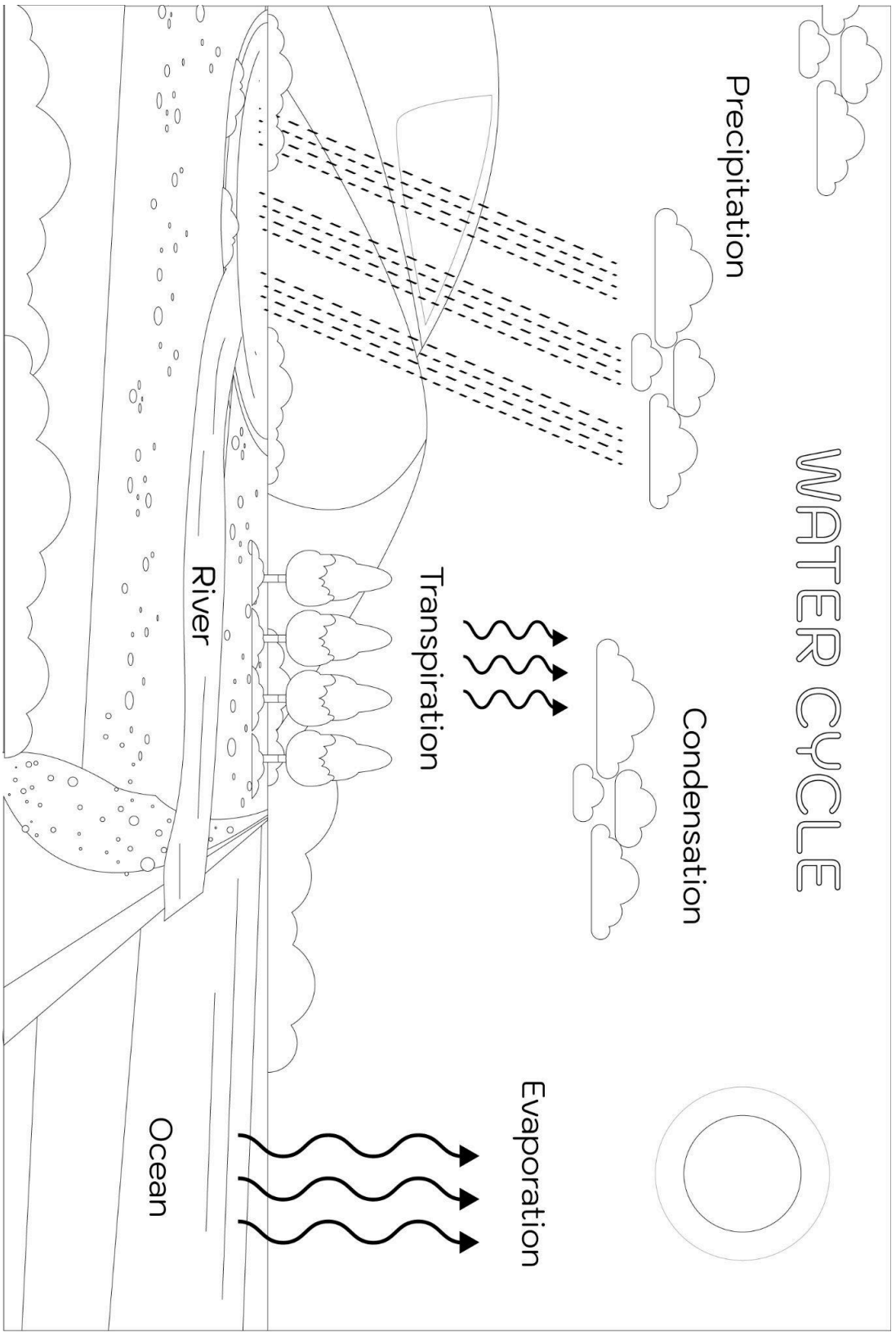
Colouring



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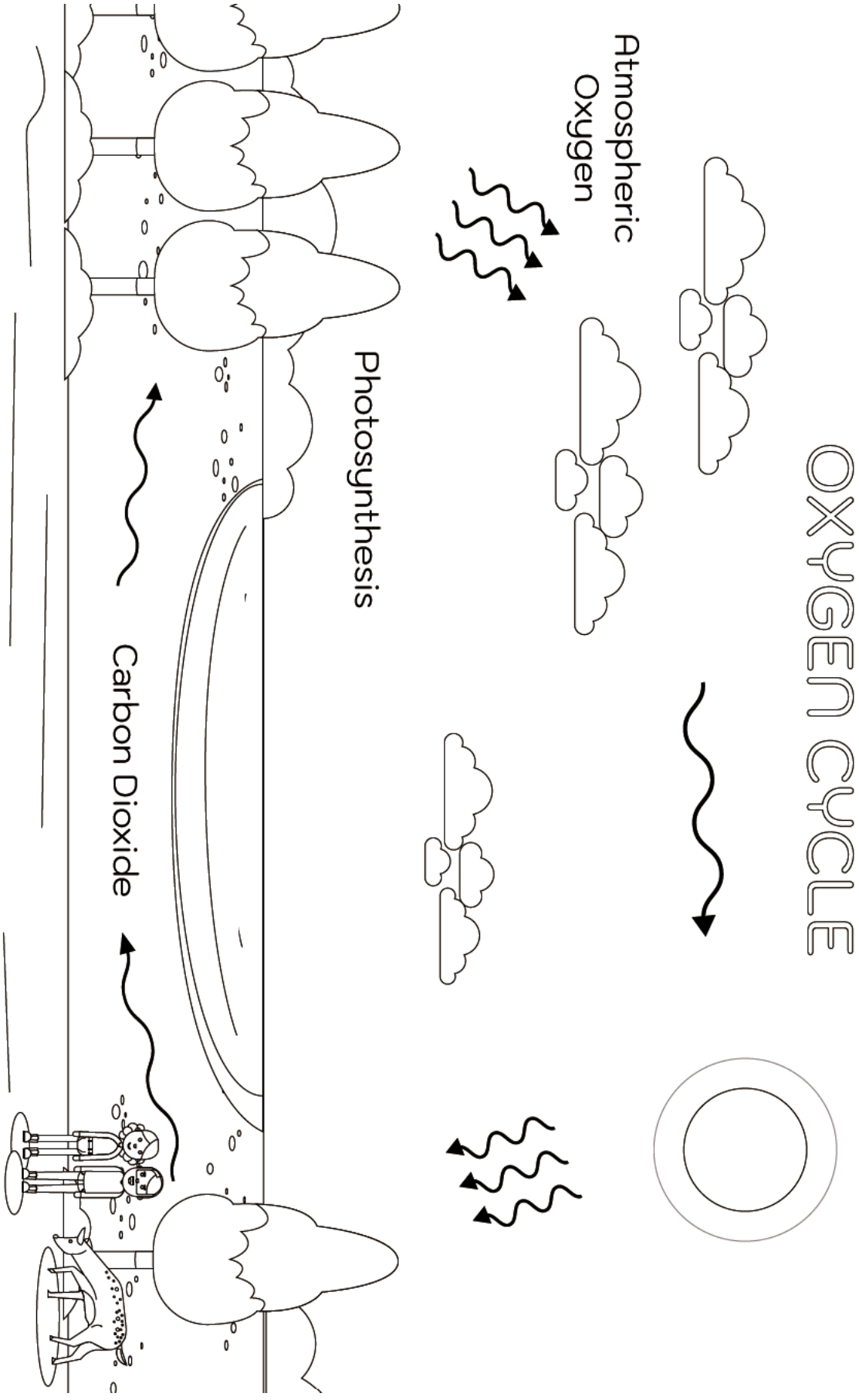

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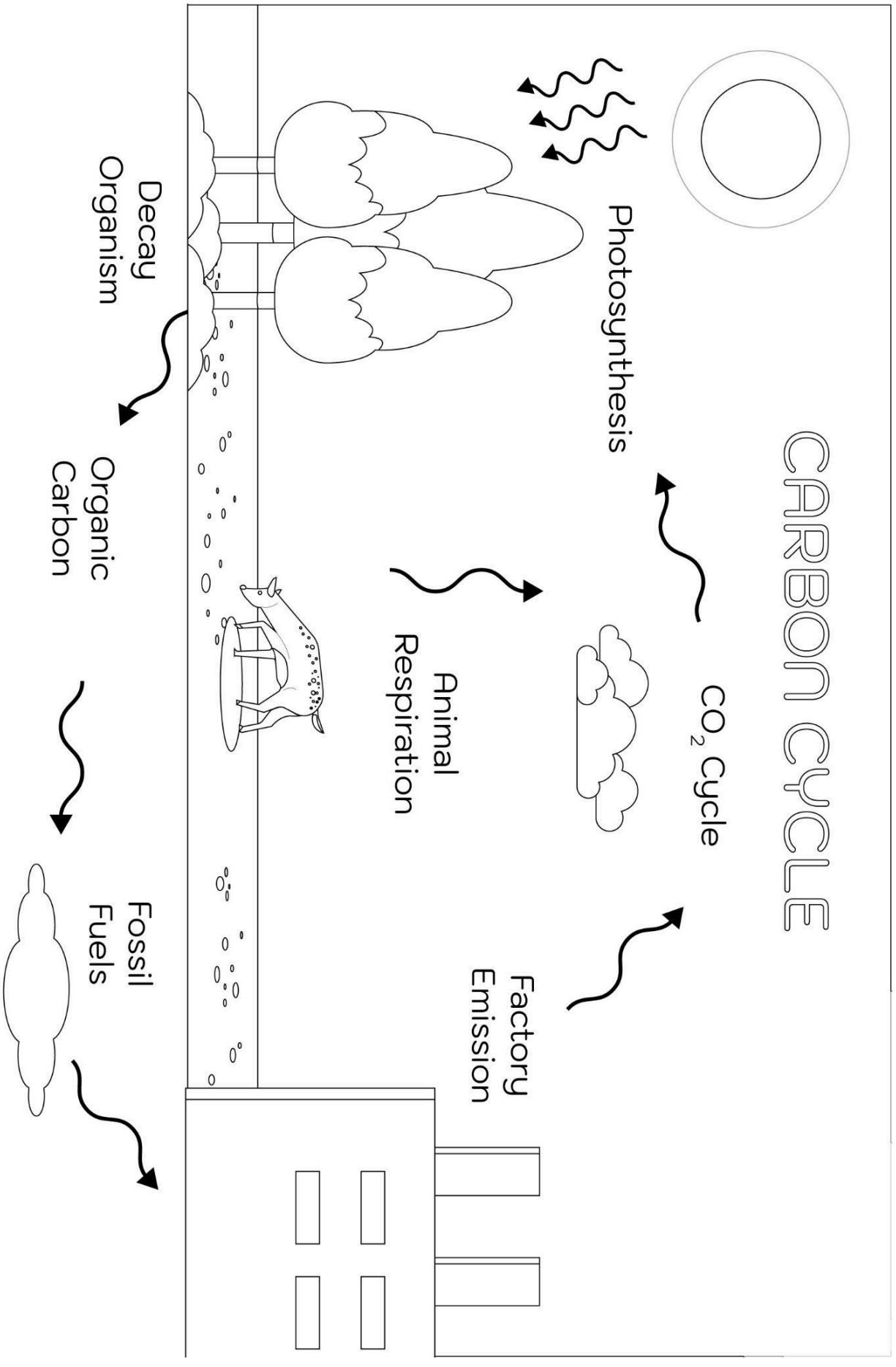

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Planning an experiment

1. Choose what to explore	
2. Plan simple steps	
3. Make predictions	
4. Observe	
5. Connect findings to questions	

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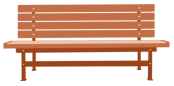
Our City Story

RECO,  THE ROBOT, ARRIVED IN OUR CITY BY .  WHEN HE GOT OFF AT THE BUS STOP, HE BEGAN TO  HEAVILY BECAUSE THE  FROM THE BUS WAS BOTHERING HIM. HE LOOKED AROUND TO SEE IF PEOPLE WERE LOOKING AT HIM BECAUSE HE WAS COUGHING SO MUCH, BUT NO ONE HEARD HIM BECAUSE OF THE LOUD NOISE OF THE CARS. HE COULD HARDLY FIND A PLACE WHERE HE COULD CROSS THE ROAD CAREFULLY BECAUSE SO MANY CARS ONLY STOPPED AT . 

AS HE APPROACHED THE ,  HE SAW A  ON THE ROAD. HE PICKED IT UP TO THROW IT IN THE ,  BUT THE TRASH CAN WAS FULL, SO THE BOTTLE WAS STICKING OUT. HE WAS SAD: "WHY DO PEOPLE MAKE THEIR CITY SO DIRTY?" AS HE CROSSED THE STREET, HE SAW A . HE  QUICKLY WALKED INTO THE PARK AND SAT DOWN ON A TO GET  SOME FRESH AIR BEFORE EXPLORING THE CITY FURTHER. HE THOUGHT: "I COULD STAY HERE A LITTLE LONGER, WHO KNOWS IF THERE ARE ANY MORE PARKS IN THIS CITY."

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The board game

Teacher can print the board game on a bigger paper. The teacher or children can cut the heart, flower and tree images.

The children choose any small object they want as a token (it can come from another board game). The yellow fields show images that do not pollute the environment, while the white fields show images of pollution and carelessness towards the environment. At the beginning of the game, a die is rolled. The child with the highest number starts and moves forward as many spaces as the number on the die.
If the player lands on a yellow field, they receive 1 heart and roll the dice again.
If the player lands on a white field he has polluted the environment, in return he must plant a flower or a tree on an empty field (the green one) of his choice and move back two spaces. A green field on which a flower or a tree image is placed during the game becomes a "yellow" field, for which the same rules apply as for yellow field. If all green fields are covered before the end of the game, flower or tree images can be placed on any white field and cover the "pollutant".
The first player to reach the goal (a field with the image of the applause) is the winner. It is also possible to count who has collected the most hearts.

If the squares on the game board measure 15cm x 15cm, Bee Bot can move on it.

The game can also be played outside in the kindergarten yard by drawing a grid for the children to move around on. It is necessary to prepare pictures that match the board game or simply take the pictures or drawings from the boards that the children or the teacher have made before. The children can also draw symbols on the grid to represent the yellow and white fields.

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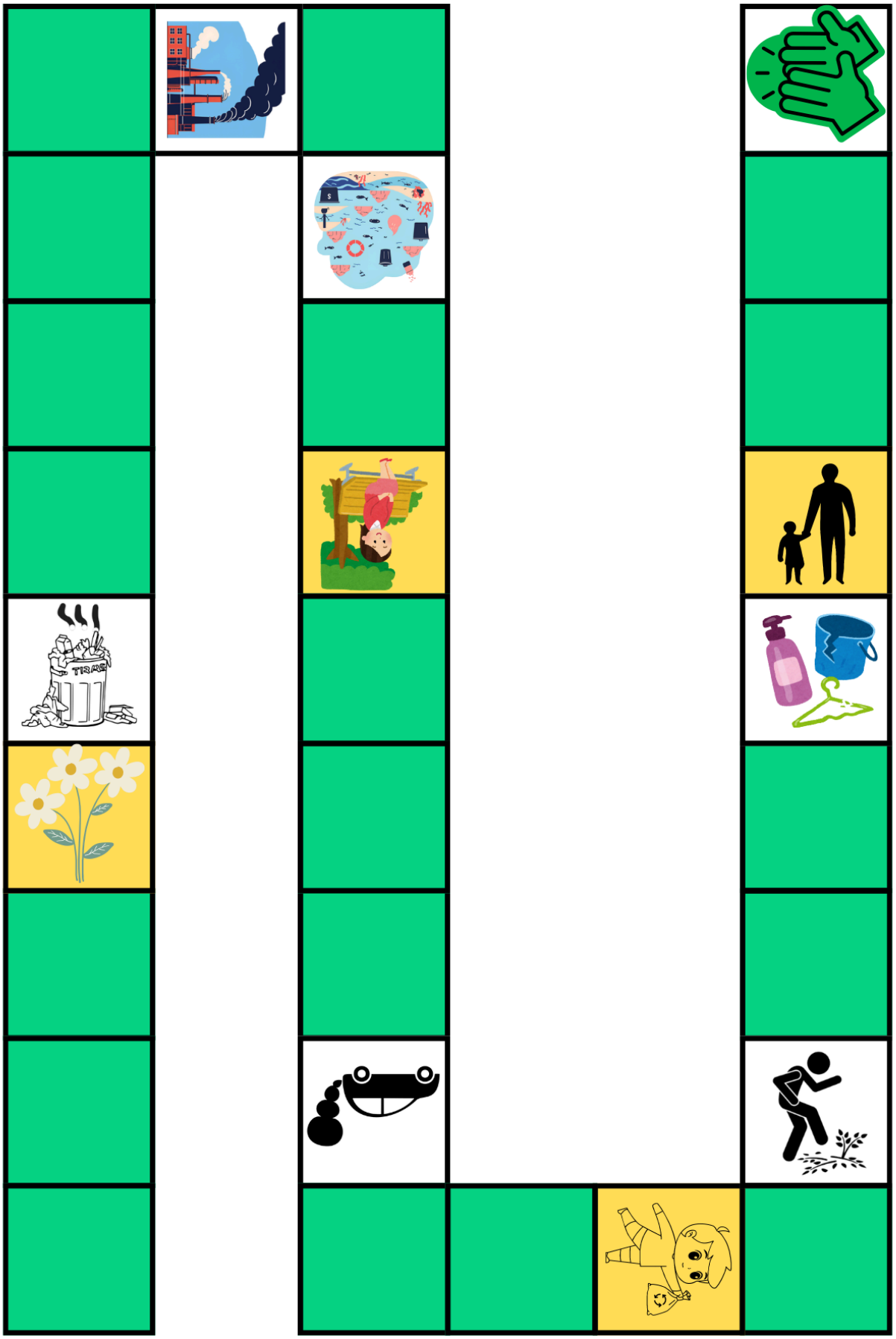

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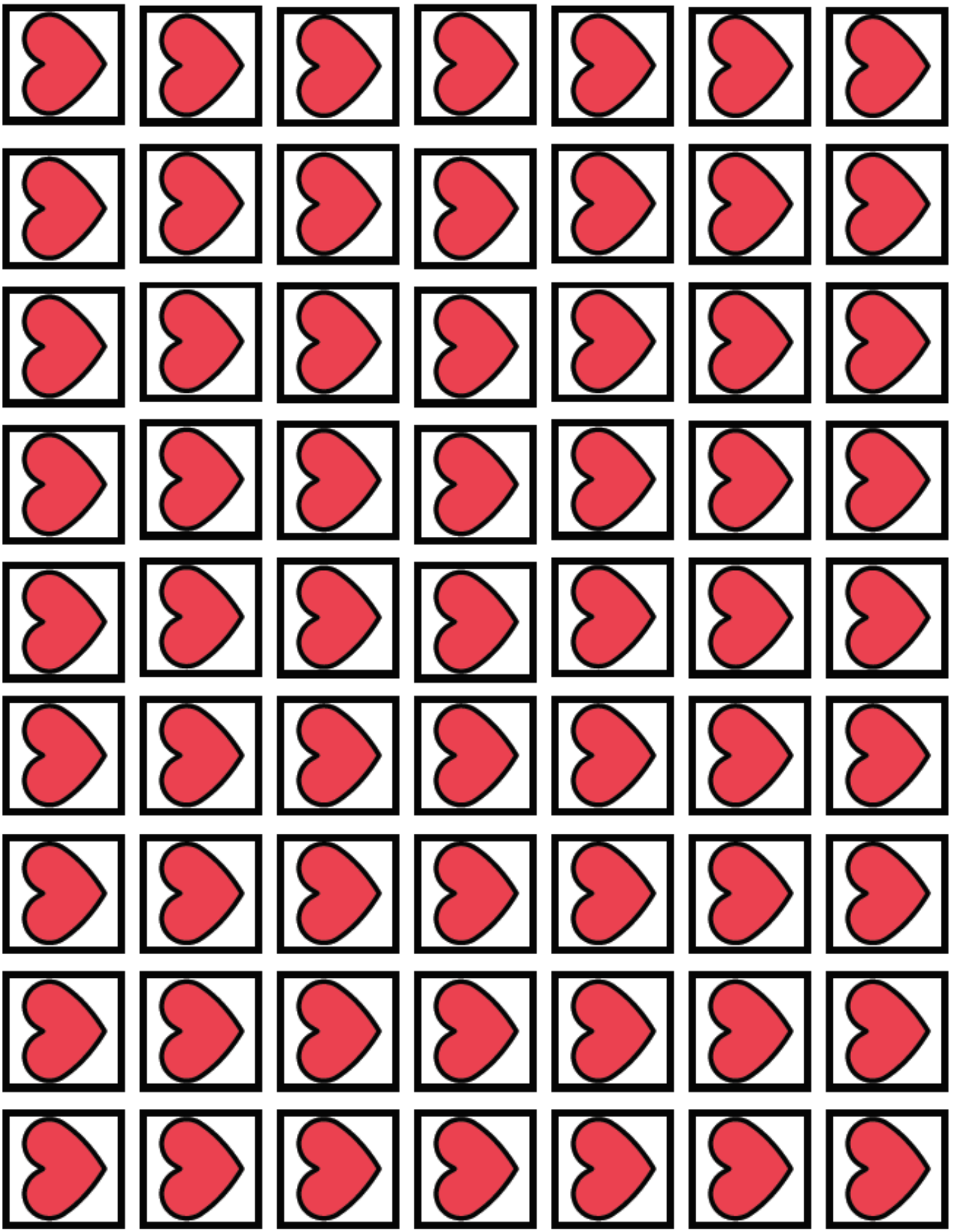

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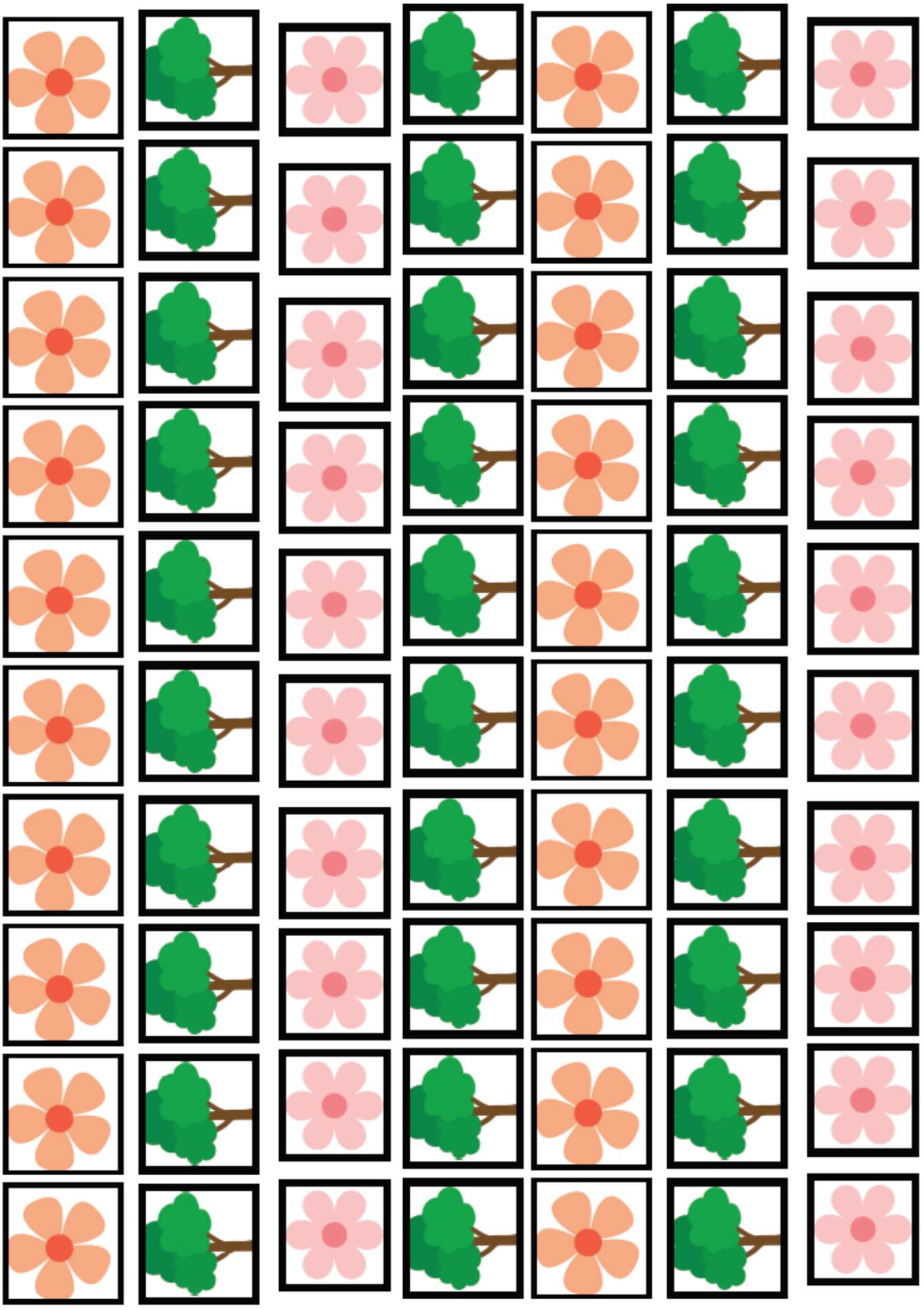

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Appearance

What do birds look like? How different can birds be?

What are the biggest and the smallest birds?

What colors can birds be?

Researchers: _____ _____ _____

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Beaks

What are the different shapes of beaks birds can have?

Is there a connection between the beak and what the bird eats?

Other facts

Researchers: _____ _____ _____

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Flying

Do all birds fly?

How can birds fly?

How do birds learn to fly?

Researchers: _____ _____ _____

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Nesting

Do all birds make nests?

What materials do birds use for nesting?

Other facts

Researchers: _____ _____ _____

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Sounds and songs

What sounds can birds make?

Why do birds sing?

Other facts

Researchers: _____ _____ _____

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Sounds and songs

What sounds can birds make?

Why do birds sing?

Other facts

Researchers: _____ _____ _____

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Bird ID

Picture of the bird

Name

Shape and size

Colors

Habitat

Facts about the bird

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Invitation

Dear families,

We have been learning about birds and birdwatching. Did you know that there are 100,000 different species of birds?! Or that the largest living bird in the world is the ostrich which can reach a height of up to 2.7 metres?! (insert fun facts that children have discovered)

We have learned that there are places where we can observe several birds and would love to go there. Can we plan a visit to a good spot for birdwatching?

We will need:

- Binoculars
- Birdwatcher printables
- Pencil or pen
- Camera and sound recorder
- Field guide (book or app)
- Hat and sunscreen
- Water and snacks

Here are some tips we discovered for watching birds:

- Never touch or get too close to birds
- Be patient, slow, and quiet to not scare the birds away

Thank you for helping us with our inquiries about birds!

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Birdwatcher

Picture of the child during birdwatching

Name

Birds sighted

Favorite moment of the experience

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Checklist

Bird	Date of sighting	Local of sighting
Sparrow 		
Robin 		
Blackbird 		
Starling 		

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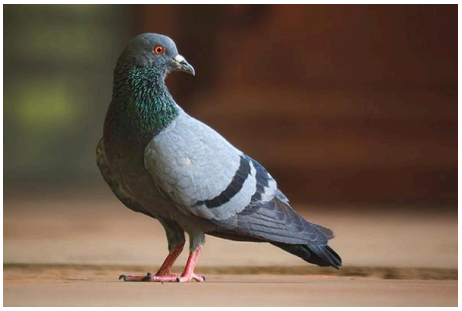
Common redstart 		
Blue tit 		
Swallow 		
Pidgeon 		

Fill in with the birds most likely to be sighted in your region/country. Pictures available on pexels.com

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Birds we've seen

Bird name	Tally	Total
	O O O O O O O O O O O O O O O O O O O O O O O O O O O O O O	
	O O O O O O O O O O O O O O O O O O O O O O O O O O O O O O	
	O O O O O O O O O O O O O O O O O O O O O O O O O O O O O O	
	O O O O O O O O O O O O O O O O O O O O O O O O O O O O O O	
	O O O O O O O O O O O O O O O O O O O O O O O O O O O O O O	

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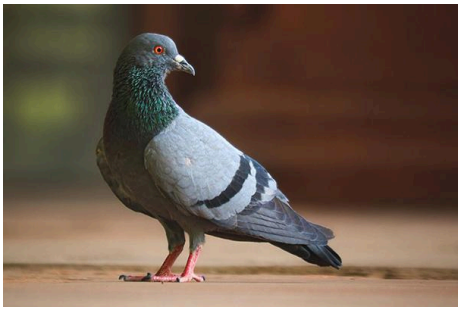
Pidgeon 		

Fill in with the birds most likely to be sighted in your region/country. Pictures available on pexels.com

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Birds we know

Draw or write the features of the birds we have researched.

Name	Size	Colors	Wings	Flight	Beak	Food

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New bird!

Draw your bird

Name	Habitat	Nest
Size	**Colors**	**Wings**
Beak	**Flight**	**Sounds and singing**
Eggs & babies	**Favorite foods**	**Favorite activities**

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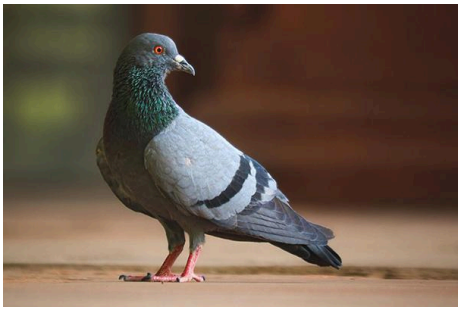
Activities

Suggestions of games to be played with families or other visitors

What bird am I?

Using a clothespin, attach the figure of a bird to the back of one of the participants. Without seeing it, he/she will try to guess which animal it is by asking its characteristics (e.g. is it black?/ does it make a sound like cuckoo c u c k o cuckoo?). The group can only answer "yes" – "no" or "maybe", in cases of doubt or variable characteristics. Prepare the figures in advance. You can add information about each animal on the back of the figure.

Sparrow 	Pidgeon 
Robin 	Common redstart 
Blackbird 	Blue tit 

Fill in with the birds most likely to be sighted in your region/country or that children are most familiar with.

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Pictures available on pexels.com

Owls and Crows

Divide the participants into two teams and place them in a line, facing each other and at the same distance from a rope that you have laid out on the floor, in the middle.

Define which team will be the owls and the crows (or two other species of birds).

Explain that when you say a correct statement about birds, the owls should run to catch the crows; and when false, the crows should catch the owls. Those caught go to the other team.

When you say the statement you can show a picture about the bird you are talking about.

Owl eyes

An owl's eyes are fixed in their sockets, so to see, they have to move their whole head. This is uncommon for humans! If you want to experience what this is like, you'll need to limit your vision. Try making binoculars by encircling your eyes with your hands. Look around you. What difference does it make?

Did you like birds when you were young?

As families visit and experience the exhibit, make sure to have prompts about parents', cousins', and grandparents' experiences with birds - particularly when they were young. Here are some prompts:

Did you have a favorite bird when you were growing up?

Were there any birds you saw often in your backyard or neighborhood?

What's the first bird you remember noticing as a child?

Did you ever try to feed birds? What happened?

Were there any birds that scared you or seemed mysterious?

Did you hear birds singing in the morning or at night? Any favorite bird sounds?

Did your parents or grandparents tell you any stories about birds?

Did you ever find a bird's nest or an egg? What did you do?

If you could be any bird from your childhood memories, which one would you be and why?

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Coding Scheme 1

Hint: The children can colour the fields on the right side of the table to indicate on which field the BeeBot can be located after doing the movement on the right side.

Start	
	
	
	
	
	
	

 Forward

 Turn right

 Turn left

 Backwards

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Coding Scheme 2

Hint: Use this table as an empty coding scheme. Children can draw arrows or use the arrows on printable Page No.4

Start	

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Printable Arrows for the Coding Scheme

			
			
			
			
			
			
			
			
			

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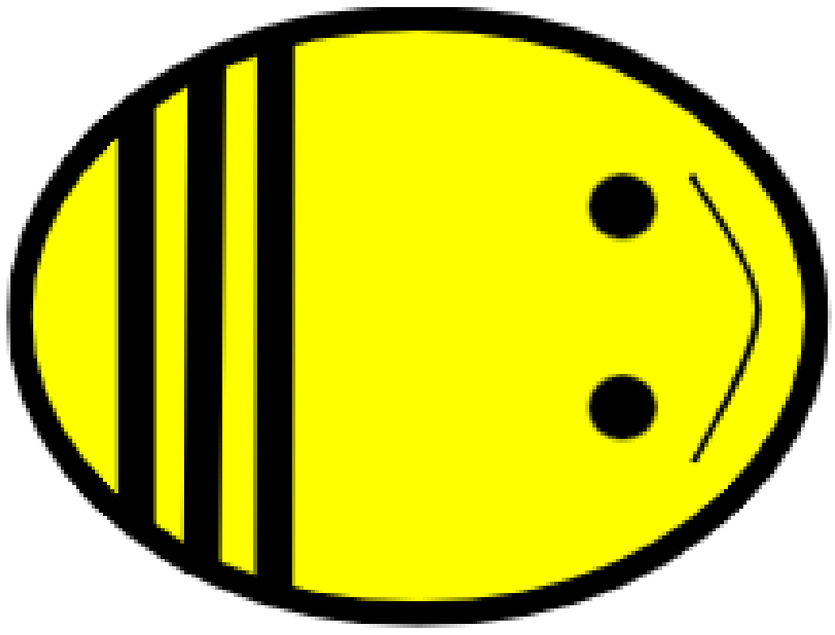
Simple BeeBot Map

Hint: This page should be printed onto a DIN A2 size sheet. The squares should be 15cmx15cm big.

START



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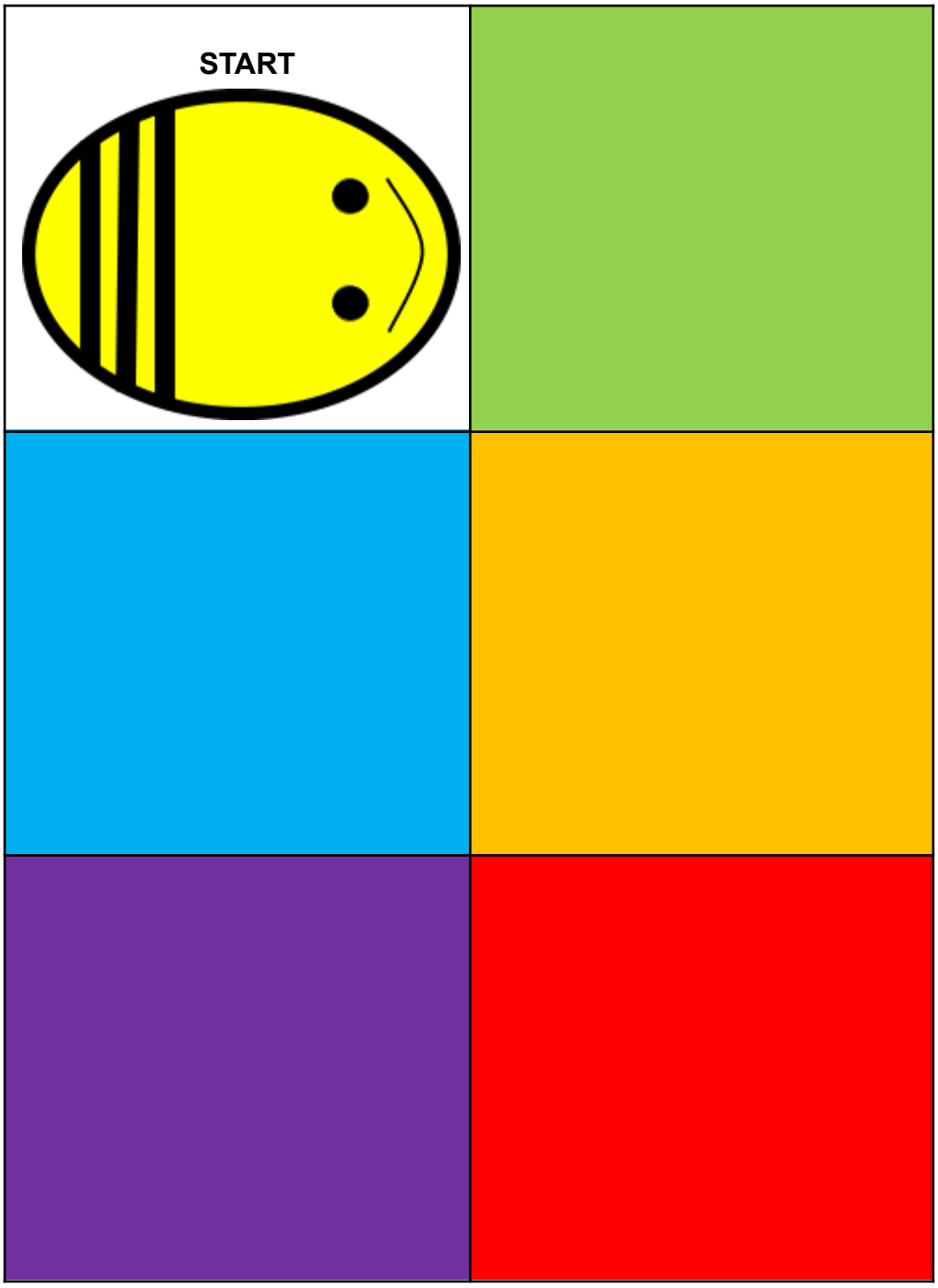
Simple BeeBot Map

Hint: This page should be printed onto a DIN A2 size sheet. The squares should be 15cmx15cm big.



Source: Arbeitsbereich Didaktik der Informatik (2021): Programmieren lernen mit dem Bee-Bot® –Wir steuern die Roboter-Biene. Unterrichtsbaustein, Westfälische Wilhelms-Universität Münster

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Example Pictures for local Flora & Fauna

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"Ladybug Fly Away Home" by peasap is licensed under CC BY 2.0.

"Stag Beetle (male), Watermael-Boitsfort, Brussels" by Frank.Vassen is licensed under CC BY 2.0.

"Ivy plant hedera" by Serafin Volkmann is licensed under CC BY-SA 4.0.

"Grey-winged Blackbird" by Koshyk is licensed under CC BY 2.0.

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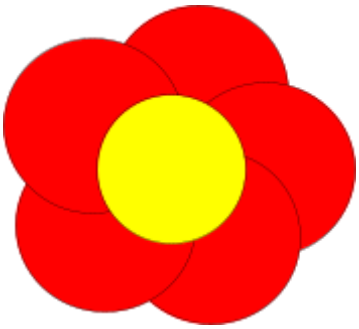
Table

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WHAT STUFF TO COMPOST

BROWN MATERIAL

- YARD WASTE
- WOOD CHIPS
- UNCOATED PAPER PRODUCTS
- CRUSHED EGGSHELLS
- DRY CEREAL AND BREADS NUT SHELLS
- OATMEAL

- 100% COTTON BALLS
- DRYER LINT

- INSECTS SUCH AS WORMS
- 100% LATEX PRODUCTS
- UNCOATED CARDBOARD
- WINE CORKS

GREEN MATERIAL

- FRUIT & VEGETABLE PEELS
- COFFEE GROUNDS

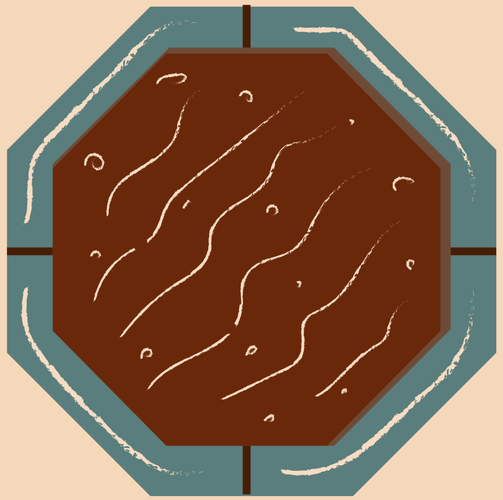
- TEA BAGS
- LOOSE LEAF TEA
- SOY / RICE / ALMOND
- COCONUT MILK

- COOKED RICE OR PASTA
- FLOWERS
- GRASS CLIPPINGS
- WEEDS

- LEAVES TRIMMED
- PITS FROM FRUIT

MY HABITS

CARDS

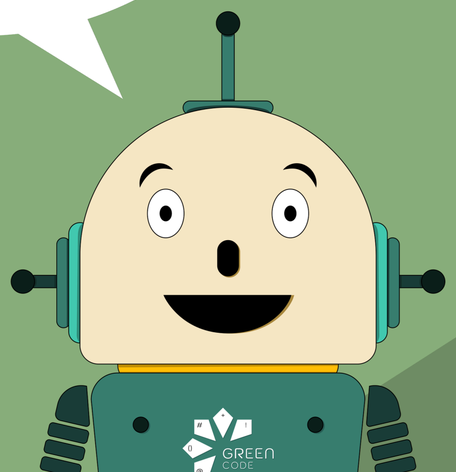


WHAT **TO PUT**
IN YOUR COMPOST BIN

CARDS

WHAT **NOT TO PUT**
IN YOUR COMPOST BIN

PUT YOUR WASTE
IN THE **RIGHT SECTION**
AND BECOME THE BEST
GARBAGE COLLECTOR



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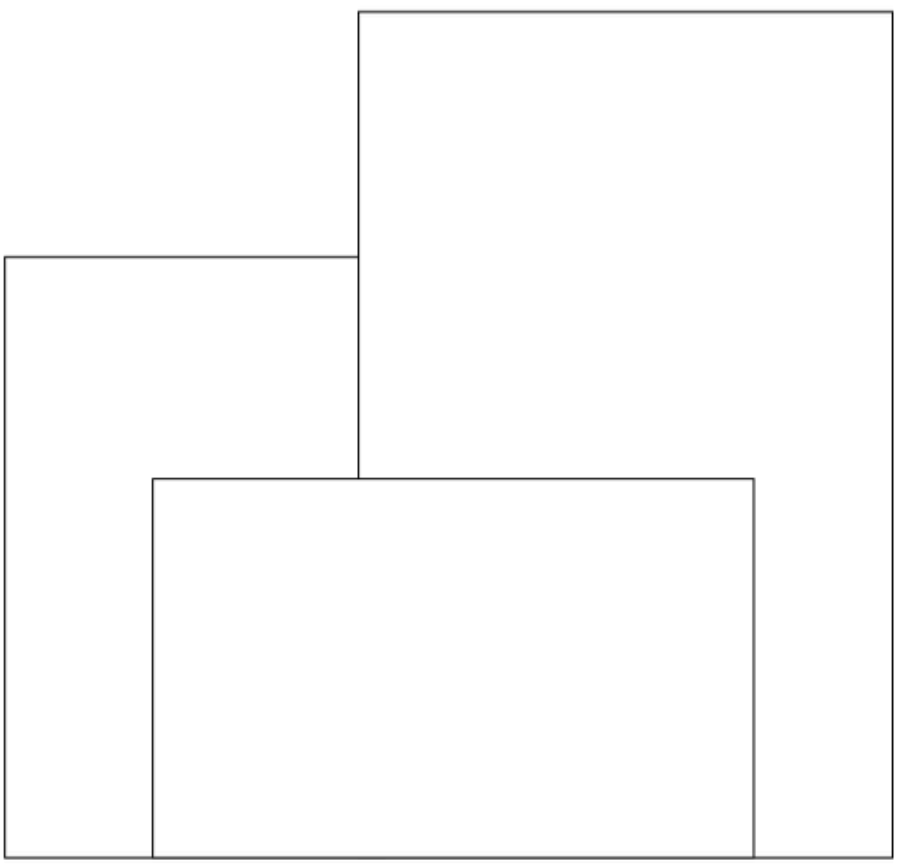
GRASS CLIPPINGS

GREEN CODE

GRASS CLIPPINGS

GREEN CODE



CARDBOARD

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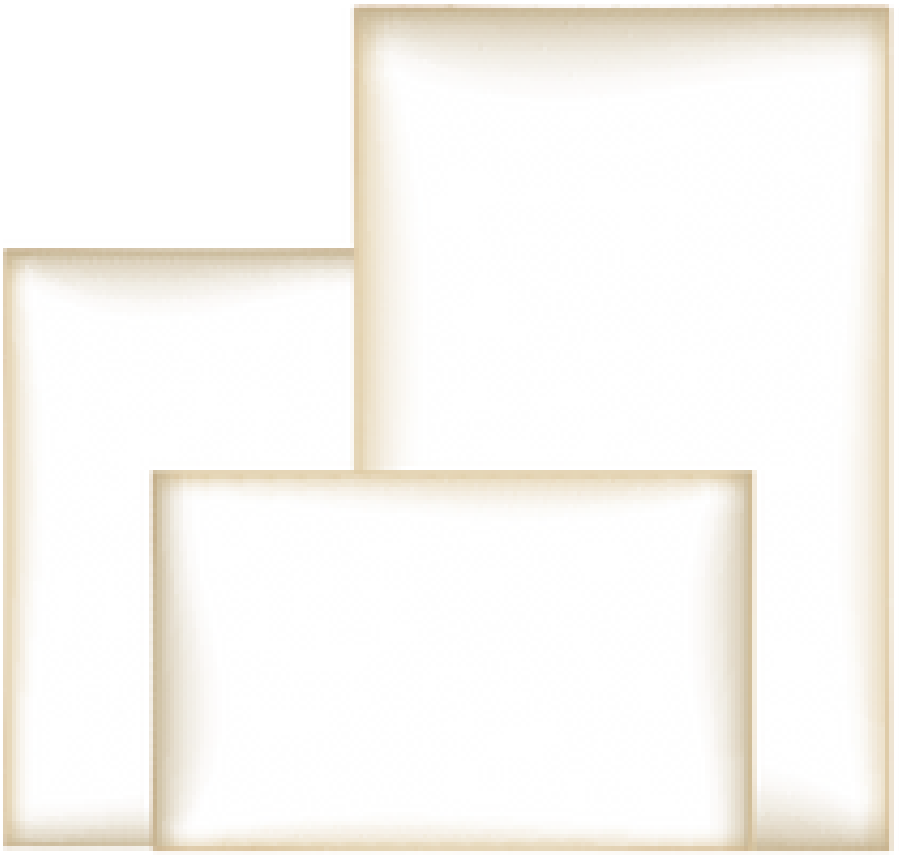

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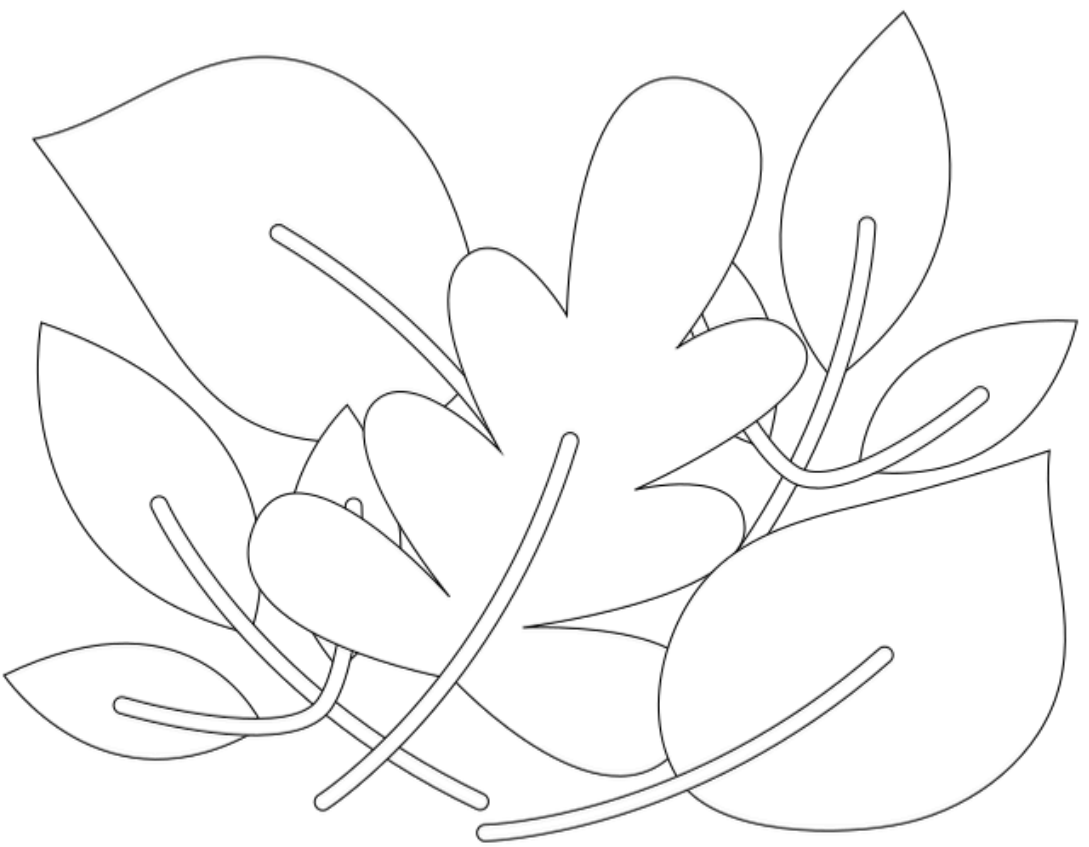

LEAVES

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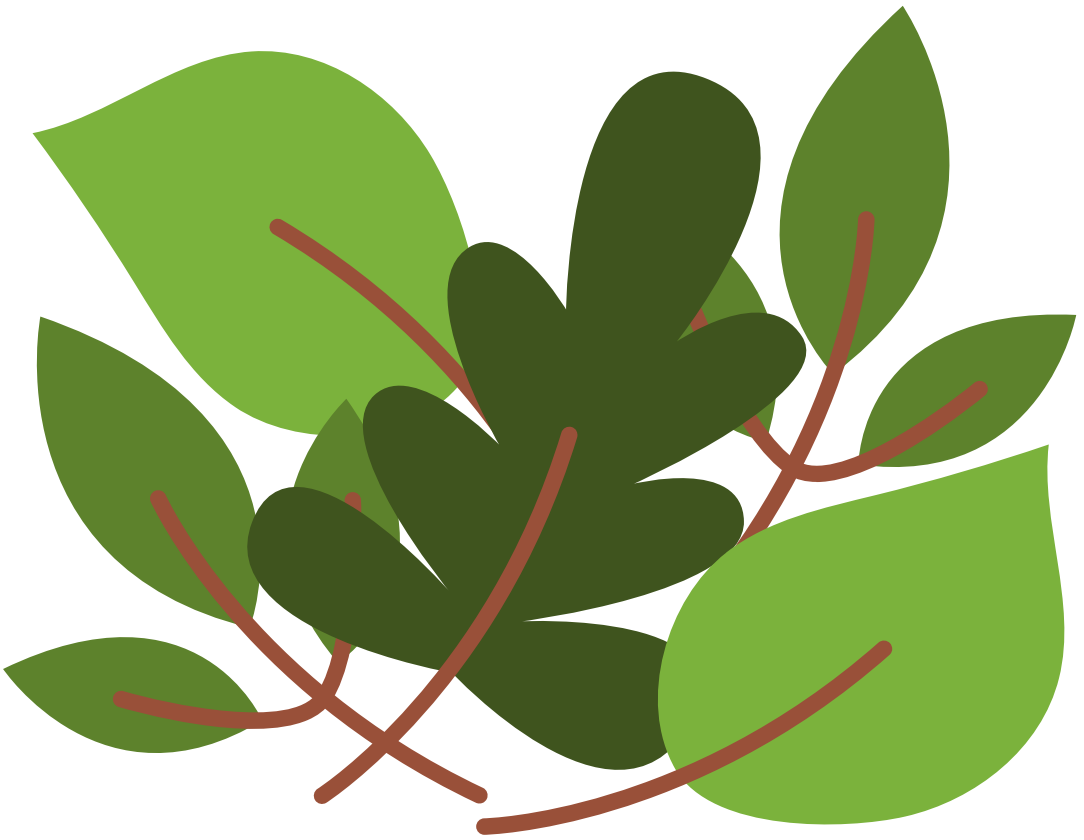

LEAVES

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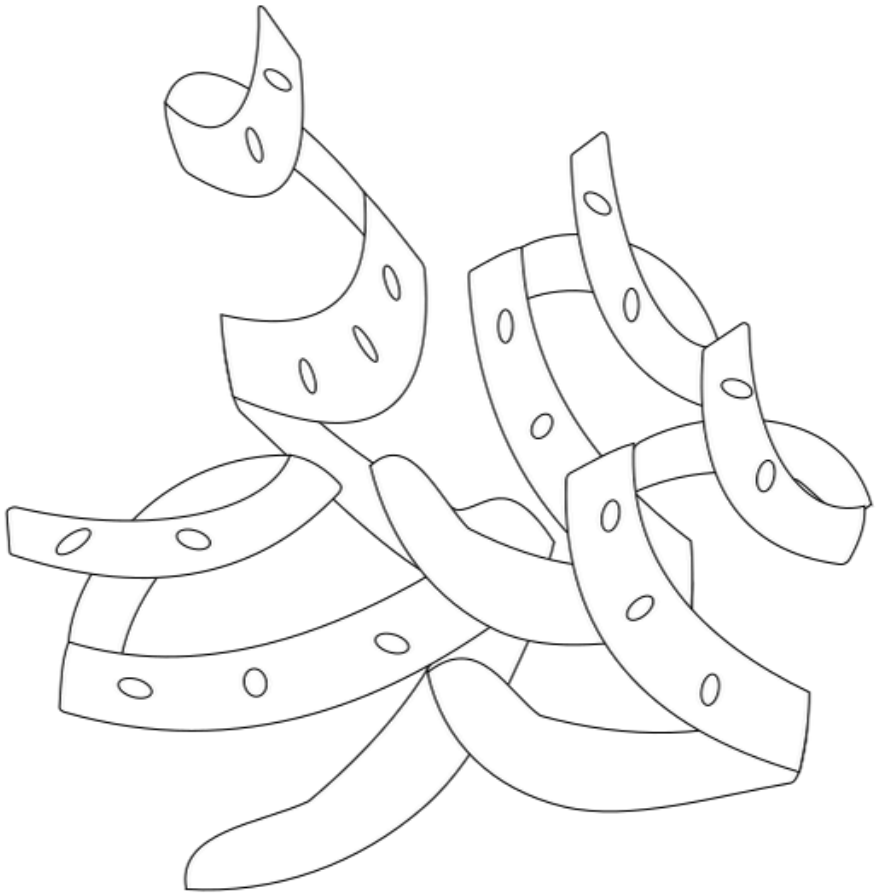

VEGETABLE PEELINGS

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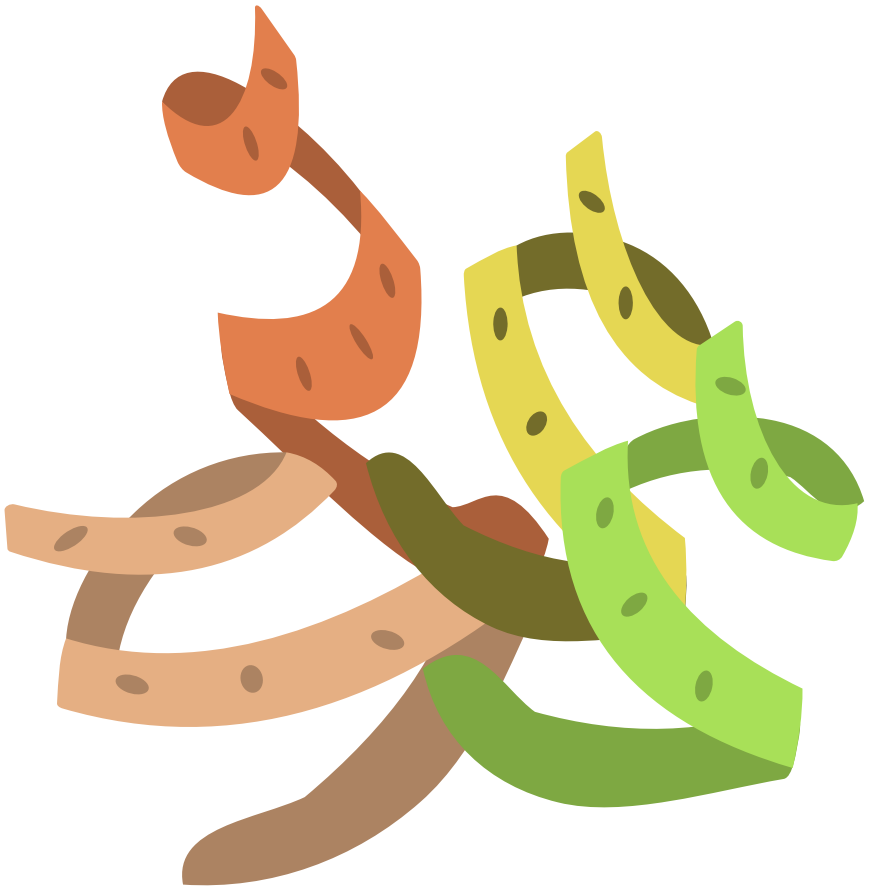

VEGETABLE PEELINGS

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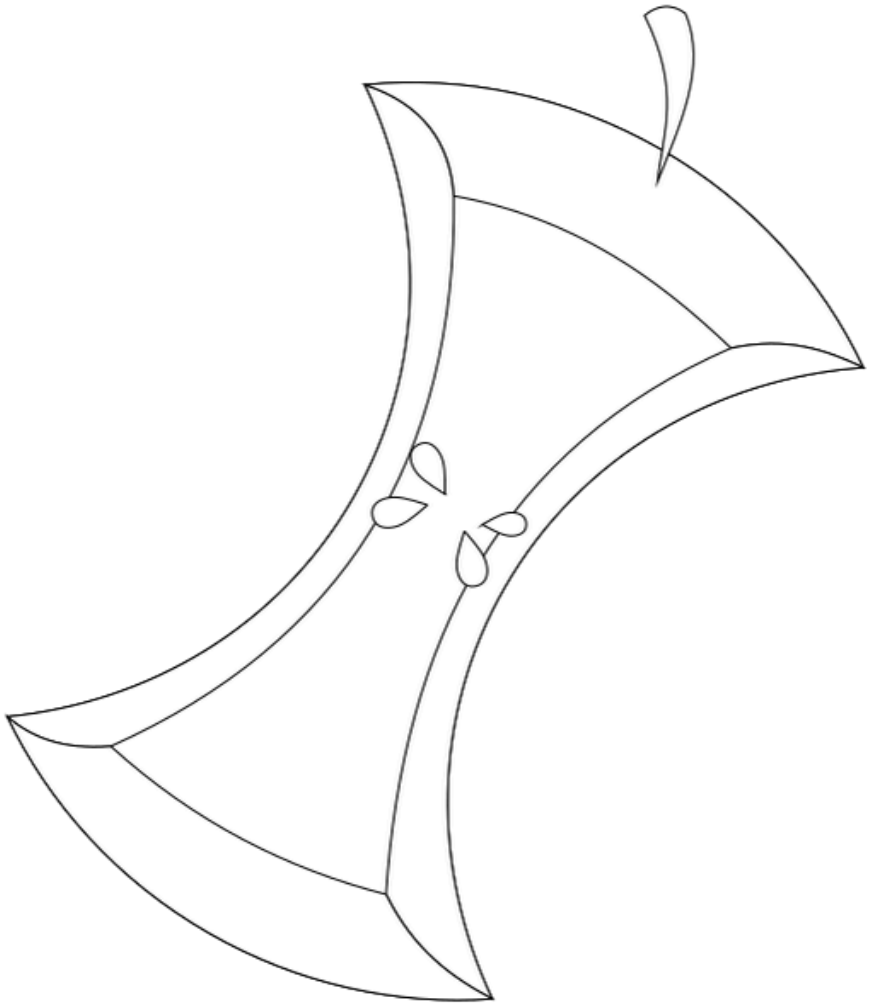
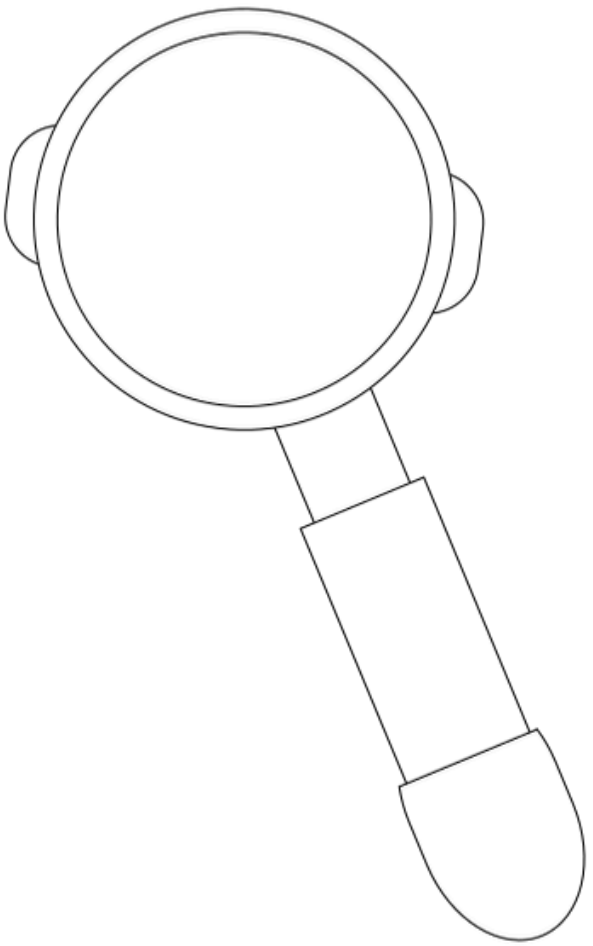


APPLE CORES

GREEN CODE

APPLE CORES

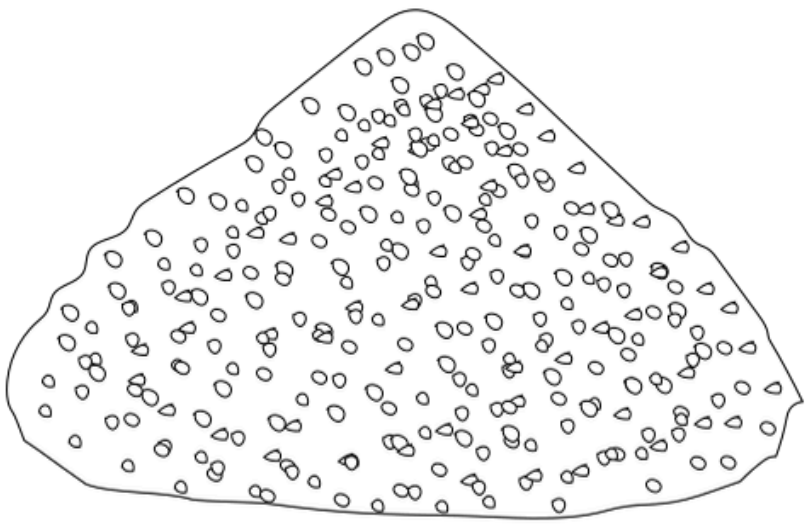


COFFEE GROUNDS

GREEN CODE

COFFEE GROUNDS

GREEN CODE



SAWDUST

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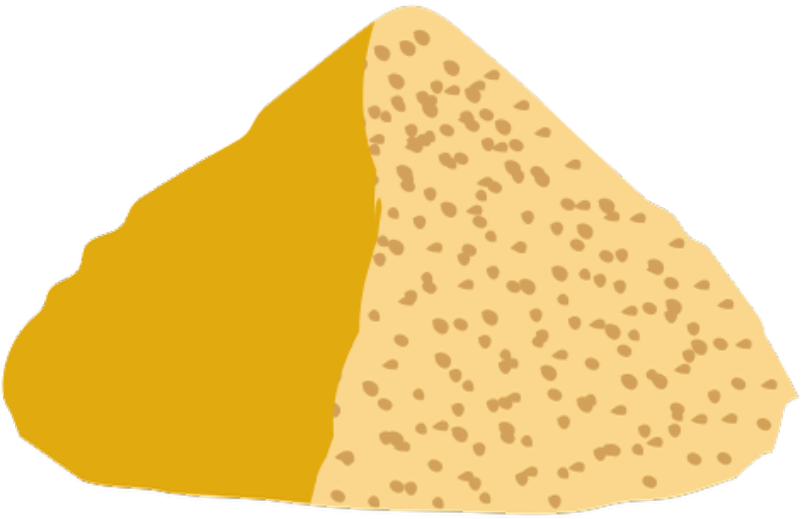
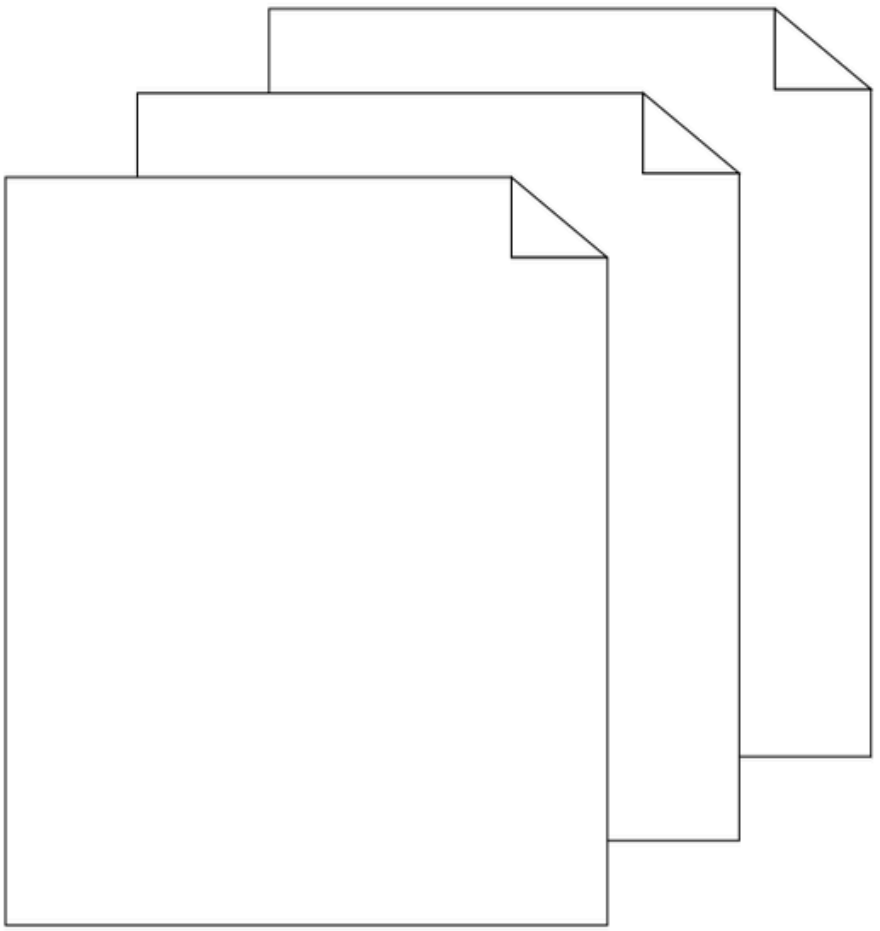


SAWDUST



PRINTER PAPER

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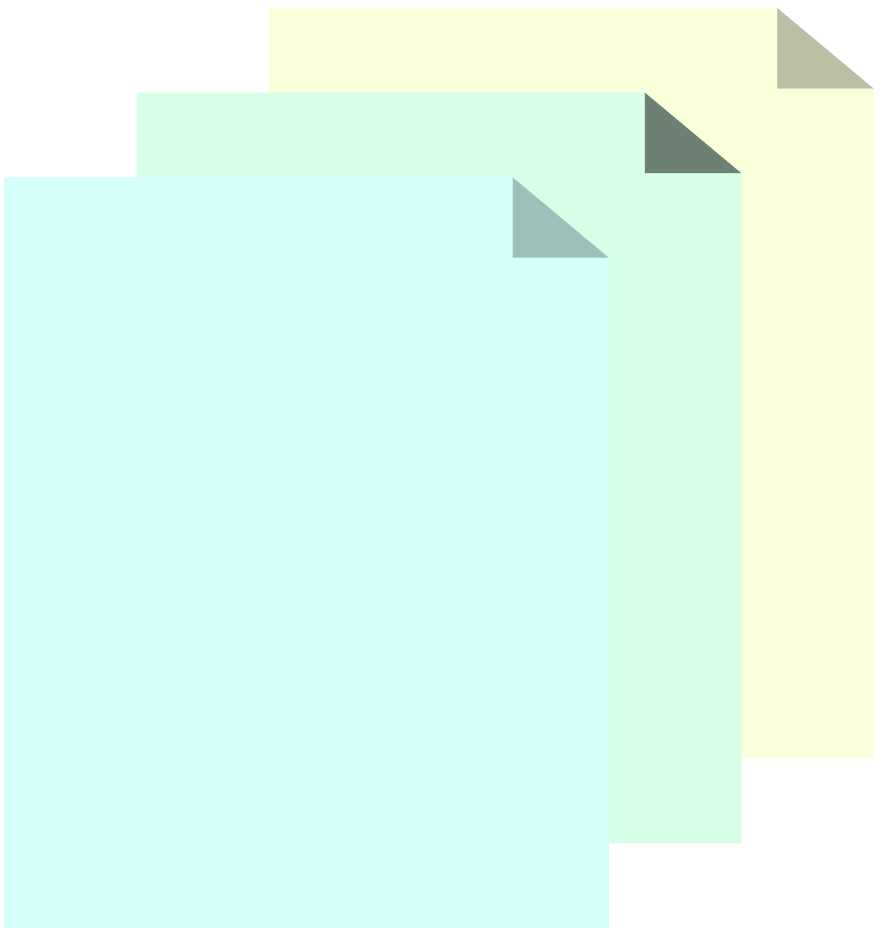

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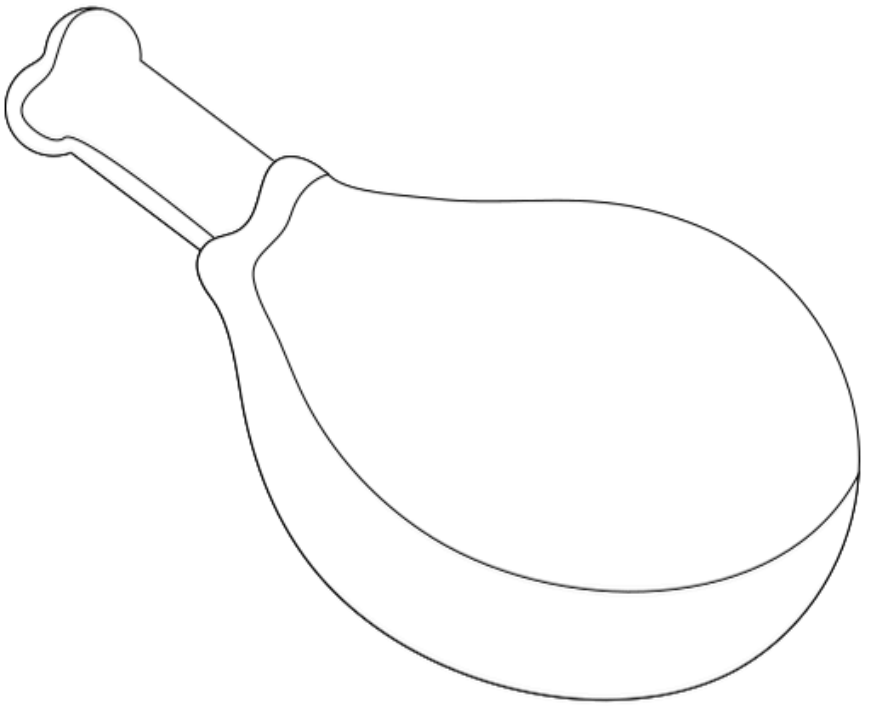

MEAT PRODUCTS

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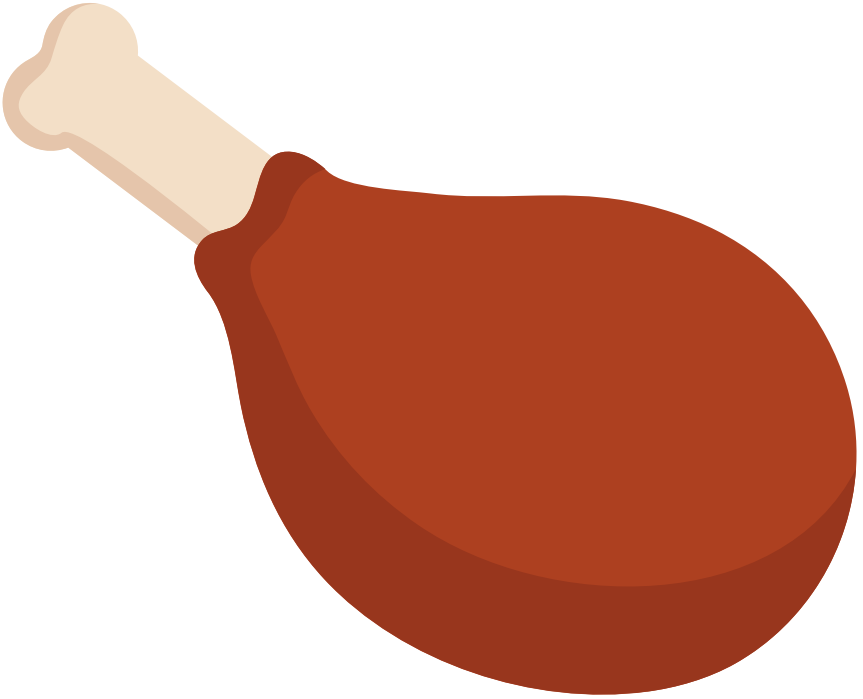

MEAT PRODUCTS

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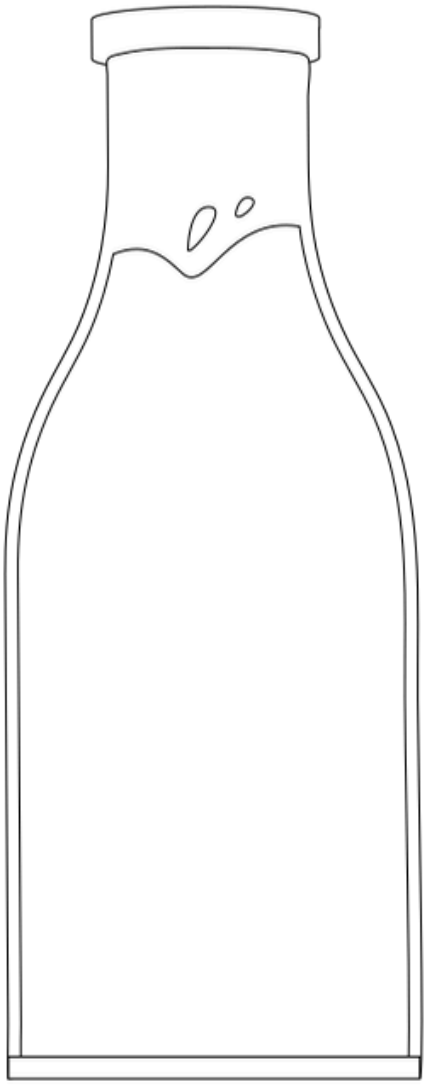

DAIRY PRODUCTS

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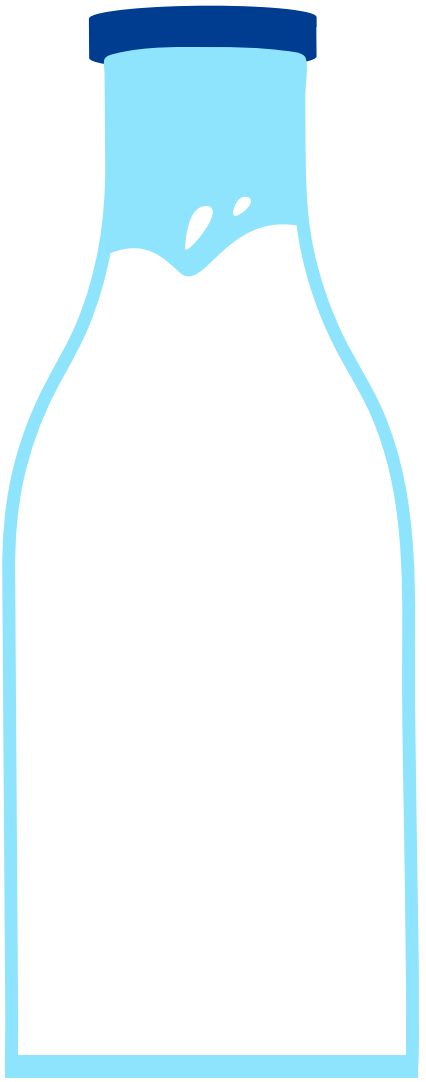

DAIRY PRODUCTS

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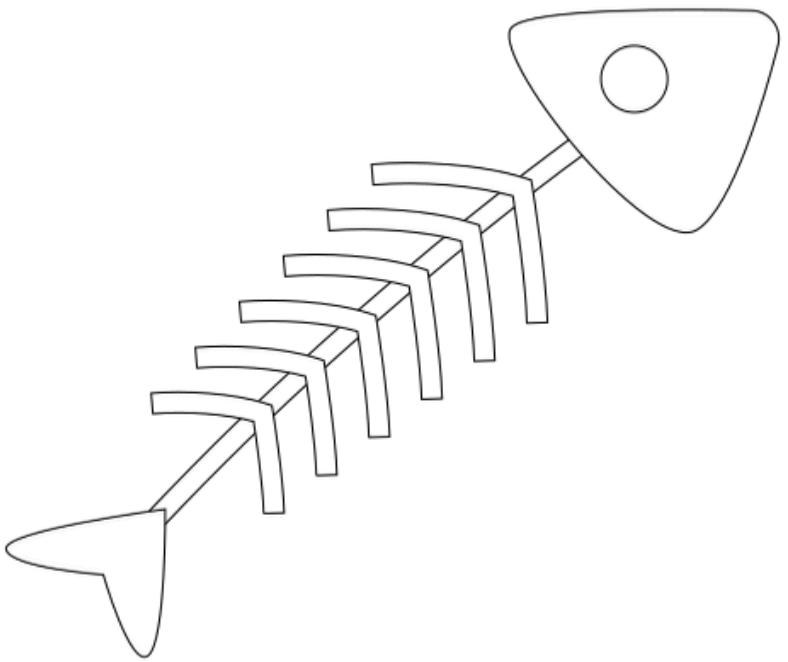
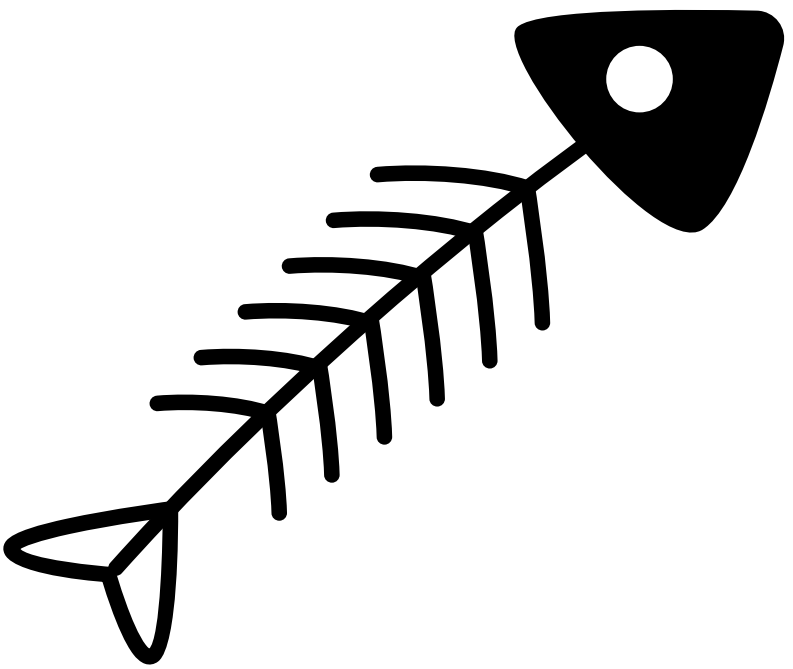


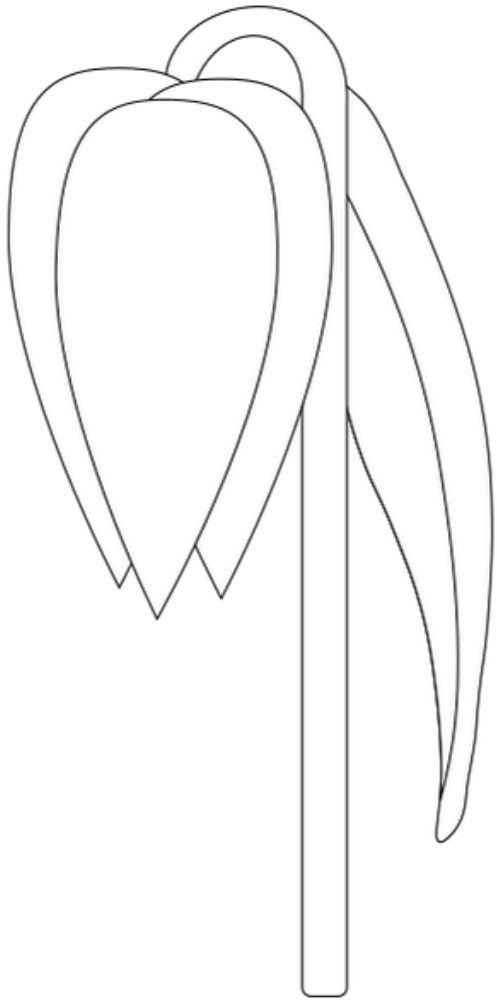
ANIMAL WASTE

GREEN CODE



ANIMAL WASTE

GREEN CODE



DISEASE PLANTS

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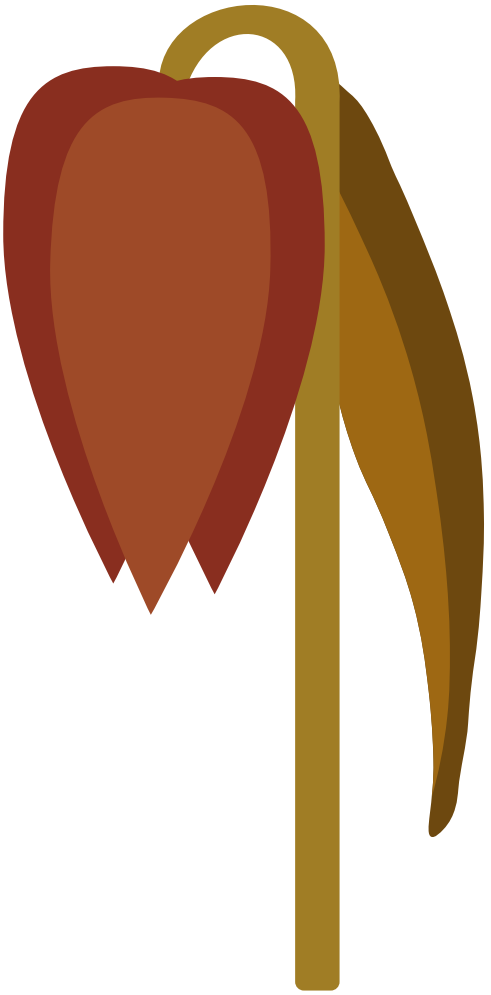
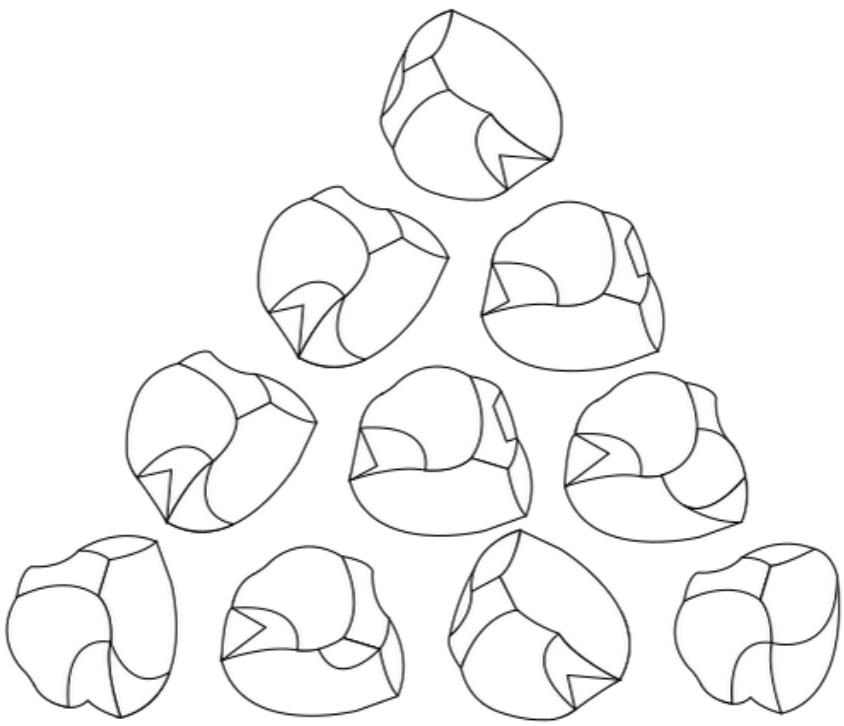


DISEASE PLANTS

GREEN CODE

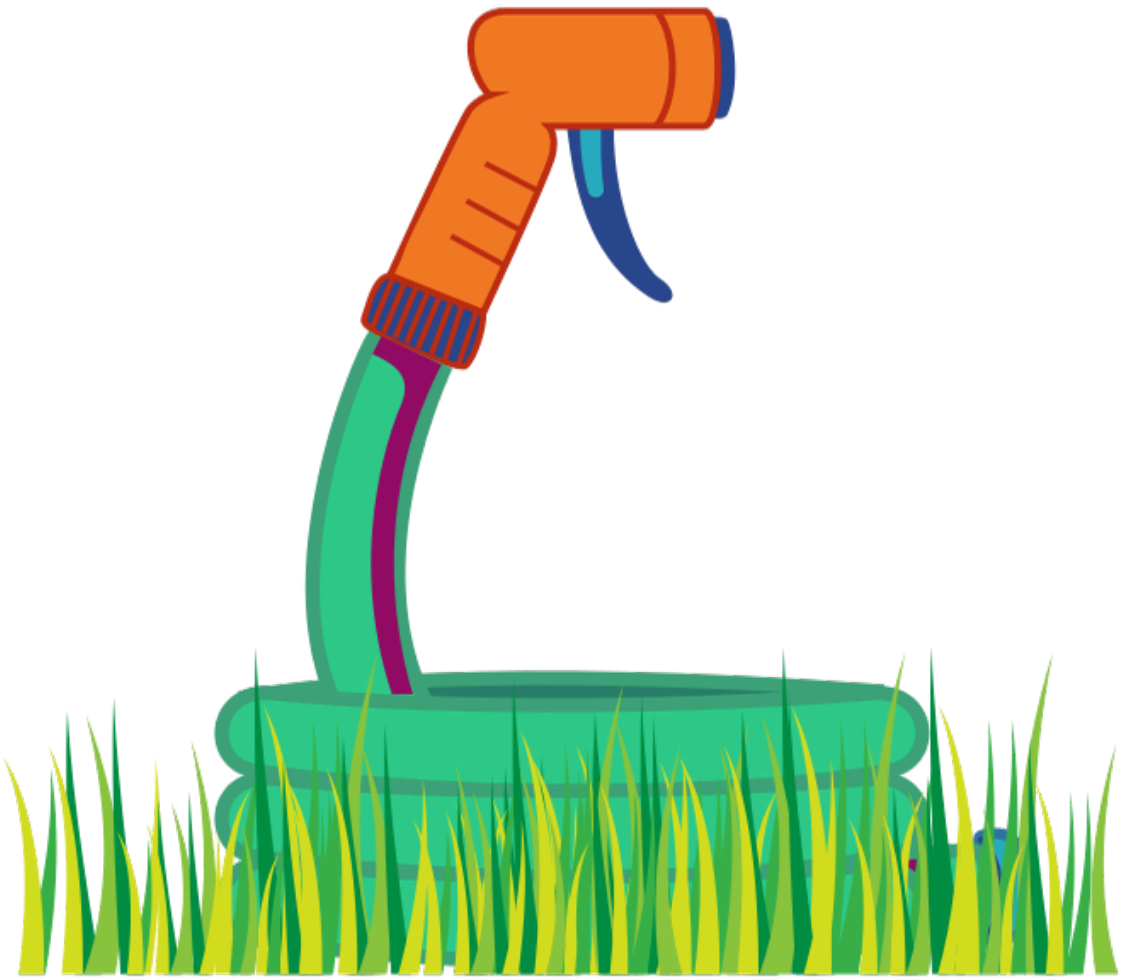


CHARCOAL OR COAL

GREEN CODE

CHARCOAL OR COAL

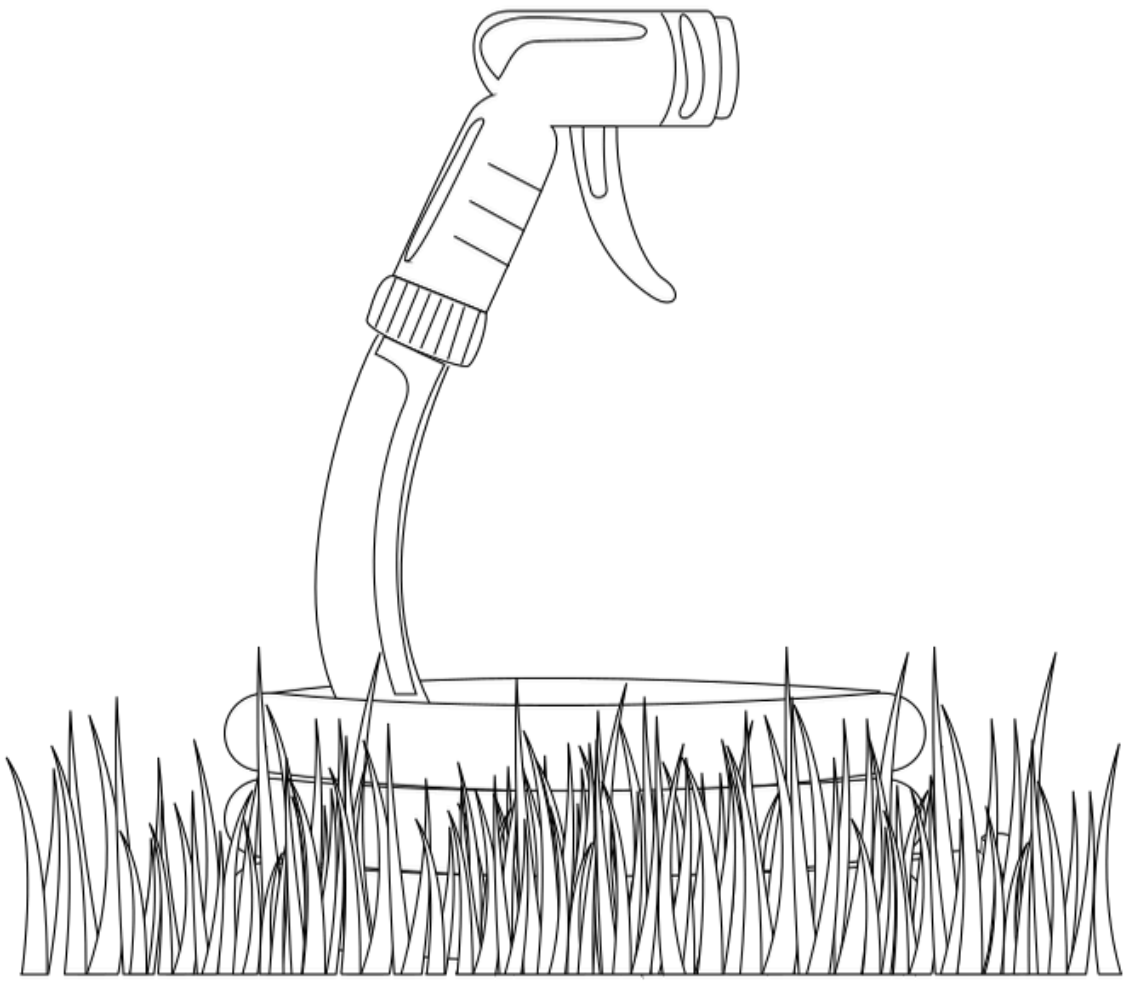
PICK A LOCATION



CHOOSE A SPOT THAT'S DRY AND SHADY,
BUT CLOSE ENOUGH TO YOUR GARDEN HOSE

GREEN CODE

PICK A LOCATION



CHOOSE A SPOT THAT'S DRY AND SHADY,
BUT CLOSE ENOUGH TO YOUR GARDEN HOSE

GREEN CODE

GATHER MATERIALS

COLLECT ORGANIC MATERIALS LIKE FOOD SCRAPS, LEAVES, GRASS CLIPPINGS, AND YARD TRIMMINGS

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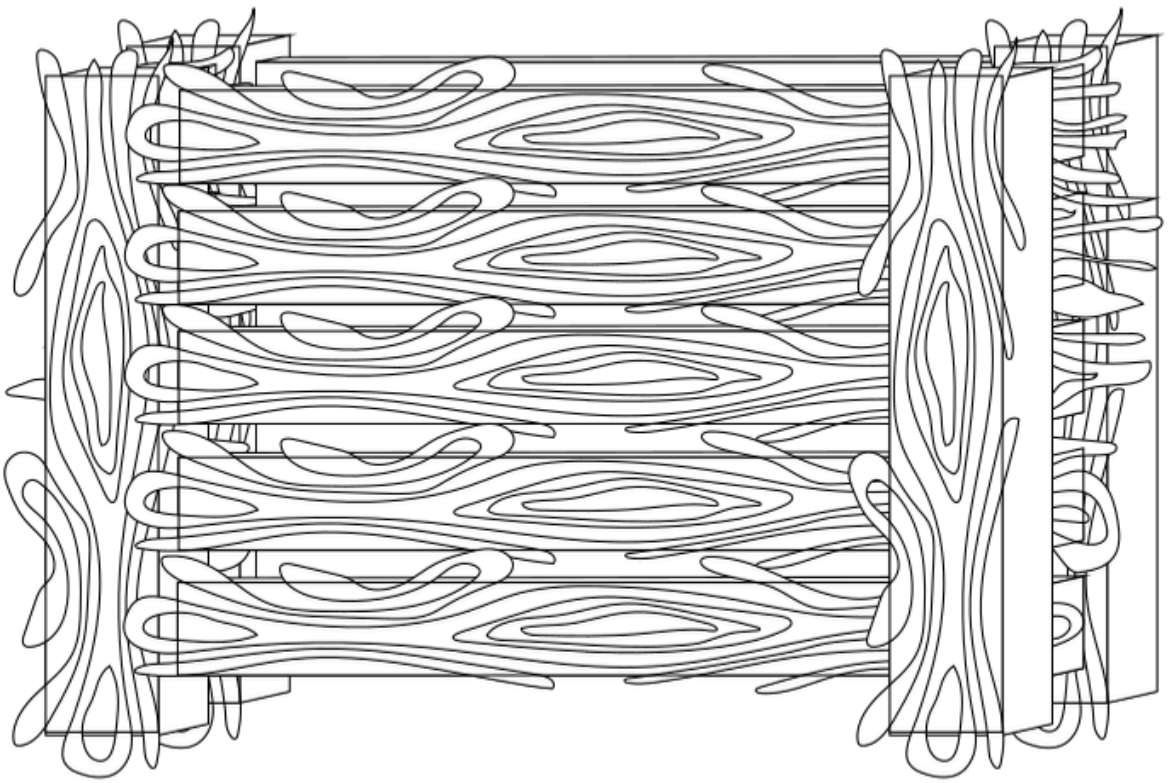
GREEN CODE

SELECT A CONTAINER

YOU CAN USE A COMPOST BIN OR PILE

SELECT A CONTAINER



YOU CAN USE A COMPOST BIN OR PILE

GREEN CODE

LAYER MATERIALS

START BY ADDING A LAYER OF TWIGS OR STRAW,
THEN ADD YOUR ORGANIC MATERIALS

GREEN CODE

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THEN ADD YOUR ORGANIC MATERIALS

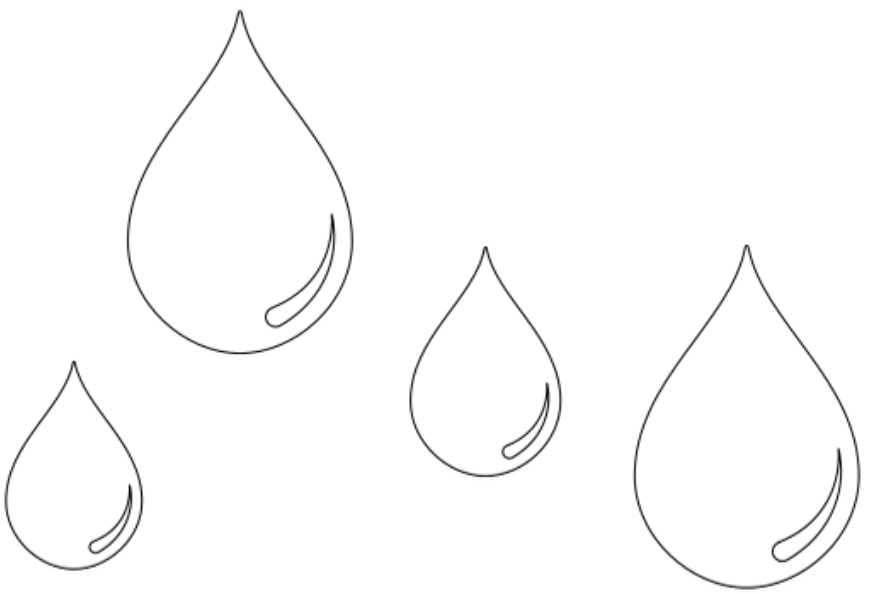
GREEN CODE

ADD WATER

KEEP THE COMPOST MOIST

GREEN CODE

ADD WATER



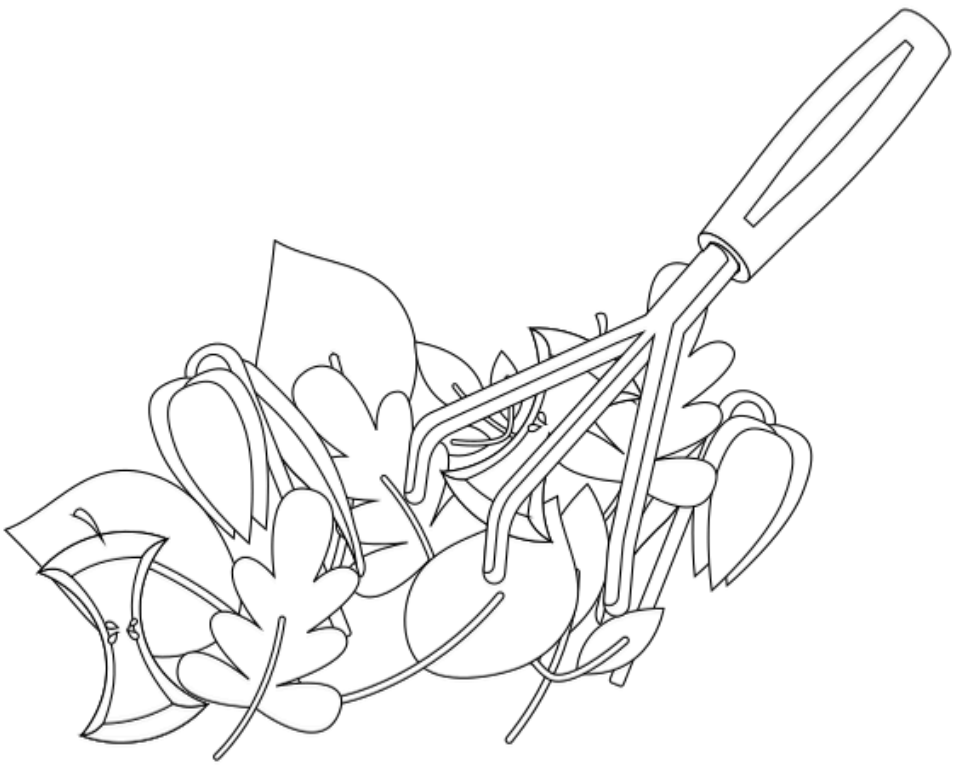
KEEP THE COMPOST MOIST

TURN COMPOST

MIX THE MATERIALS REGULARLY
TO AERATE THE COMPOST

GREEN CODE

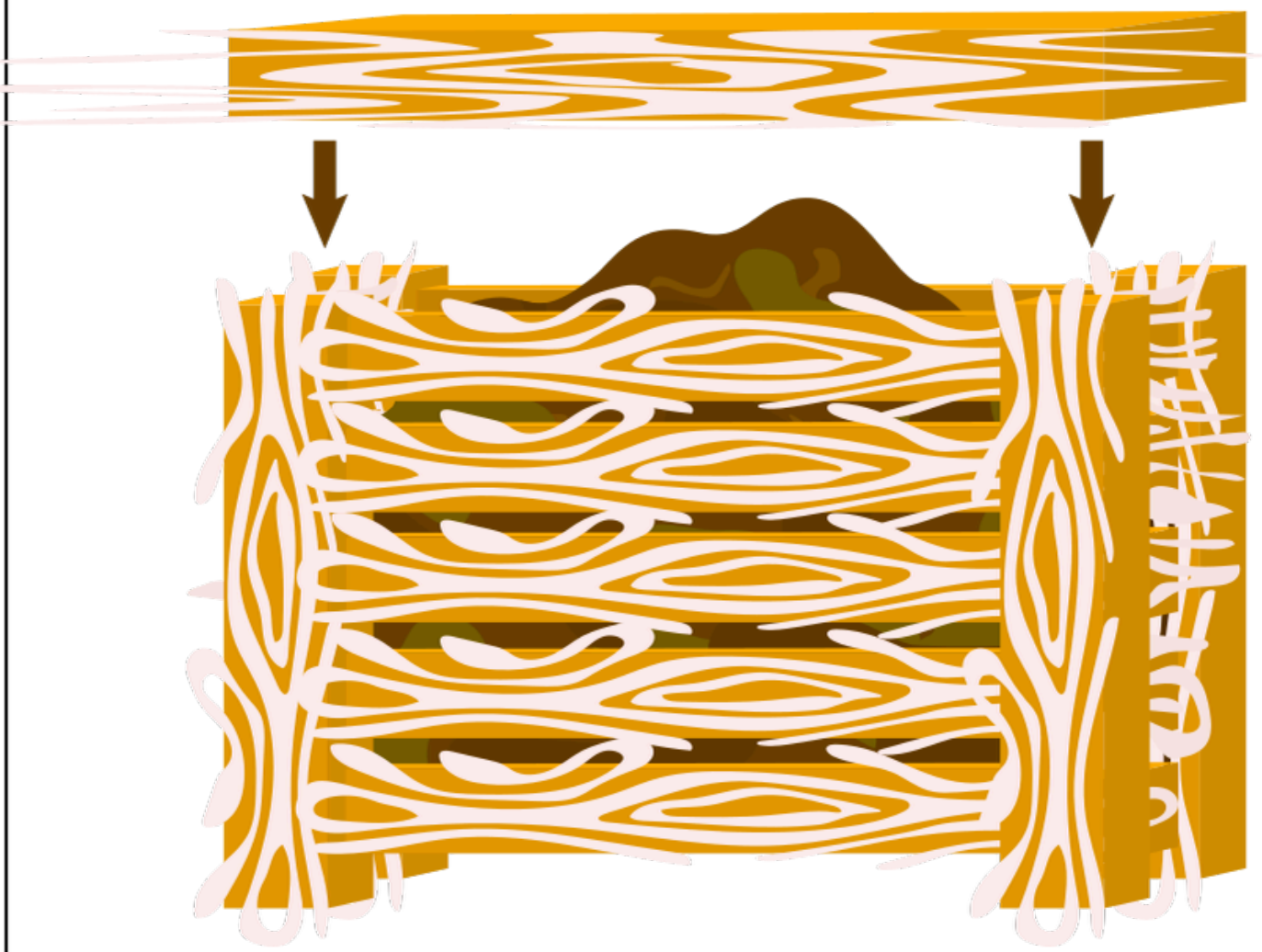
TURN COMPOST



MIX THE MATERIALS REGULARLY
TO AERATE THE COMPOST

GREEN CODE

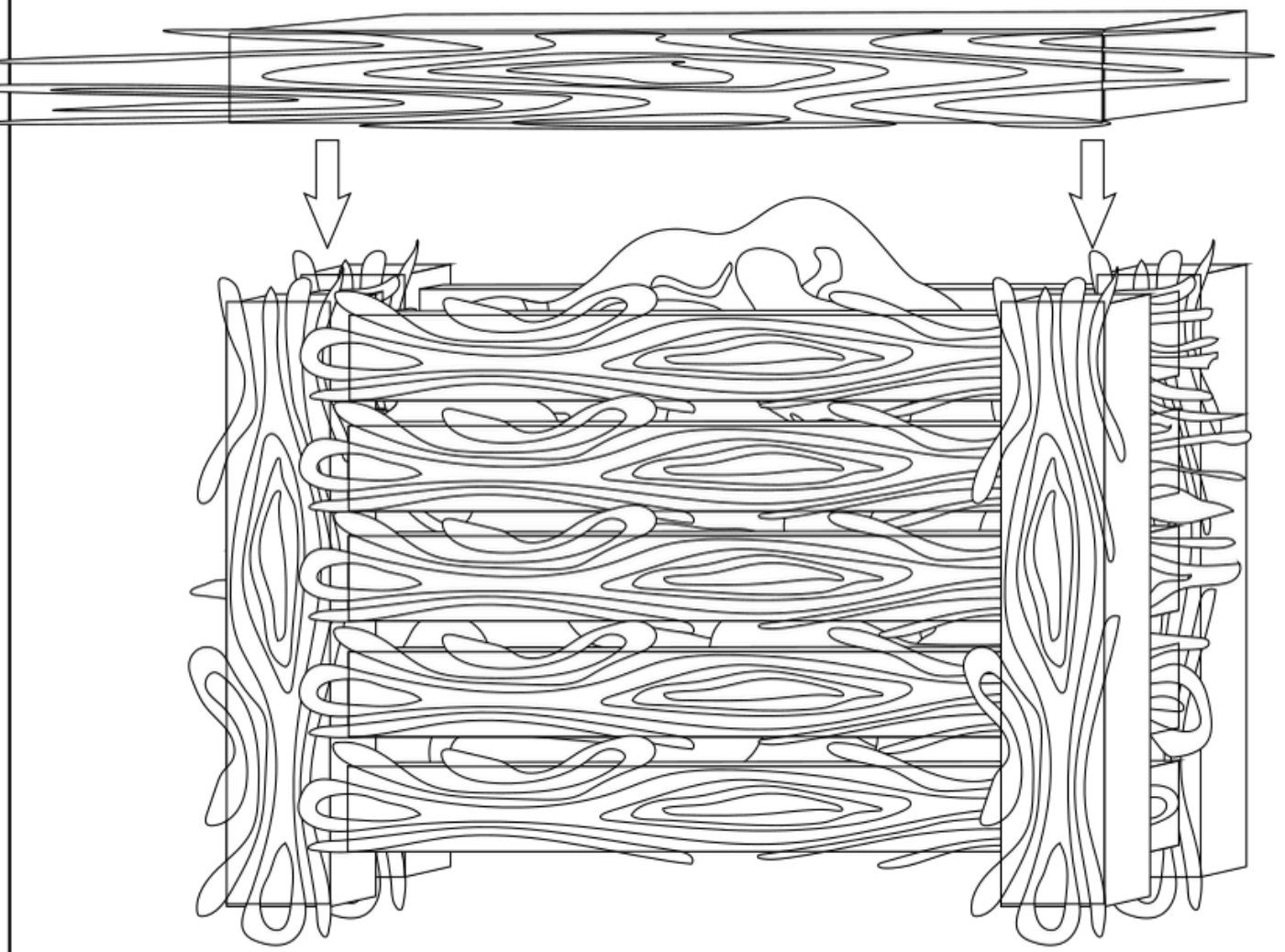
COVER COMPOST



COVER THE COMPOST
TO RETAIN HEAT AND MOISTURE

GREEN CODE

COVER COMPOST



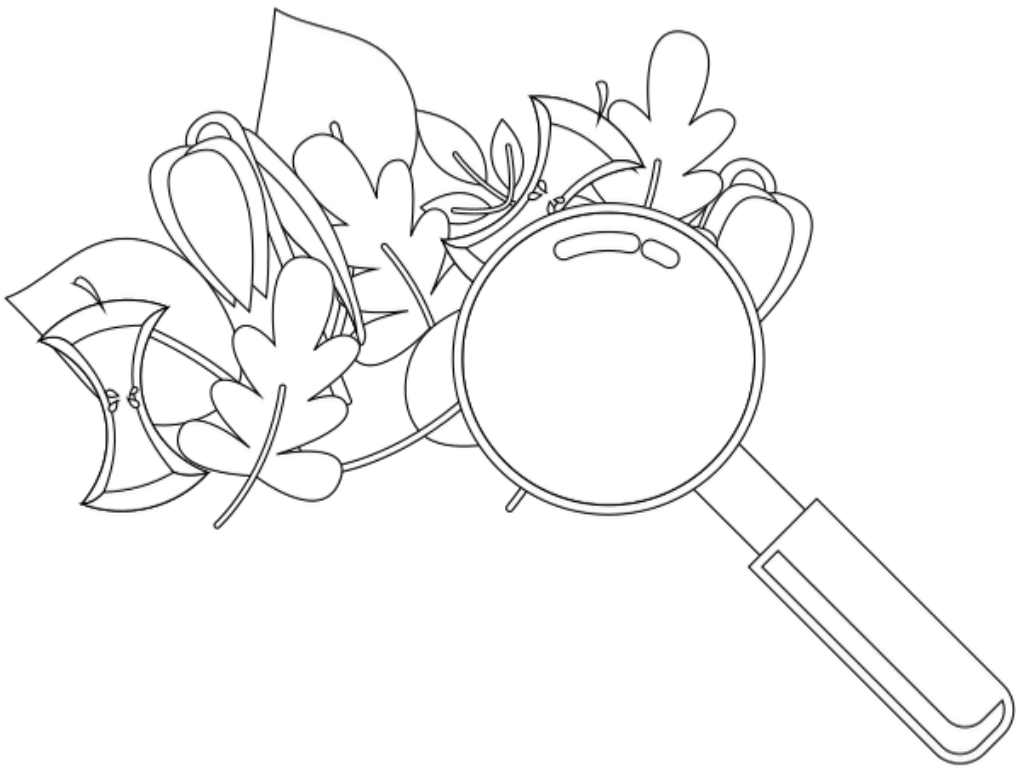
COVER THE COMPOST
TO RETAIN HEAT AND MOISTURE

GREEN CODE

MONITOR COMPOST

CHECK ON THE COMPOST REGULARLY

MONITOR COMPOST



CHECK ON THE COMPOST REGULARLY

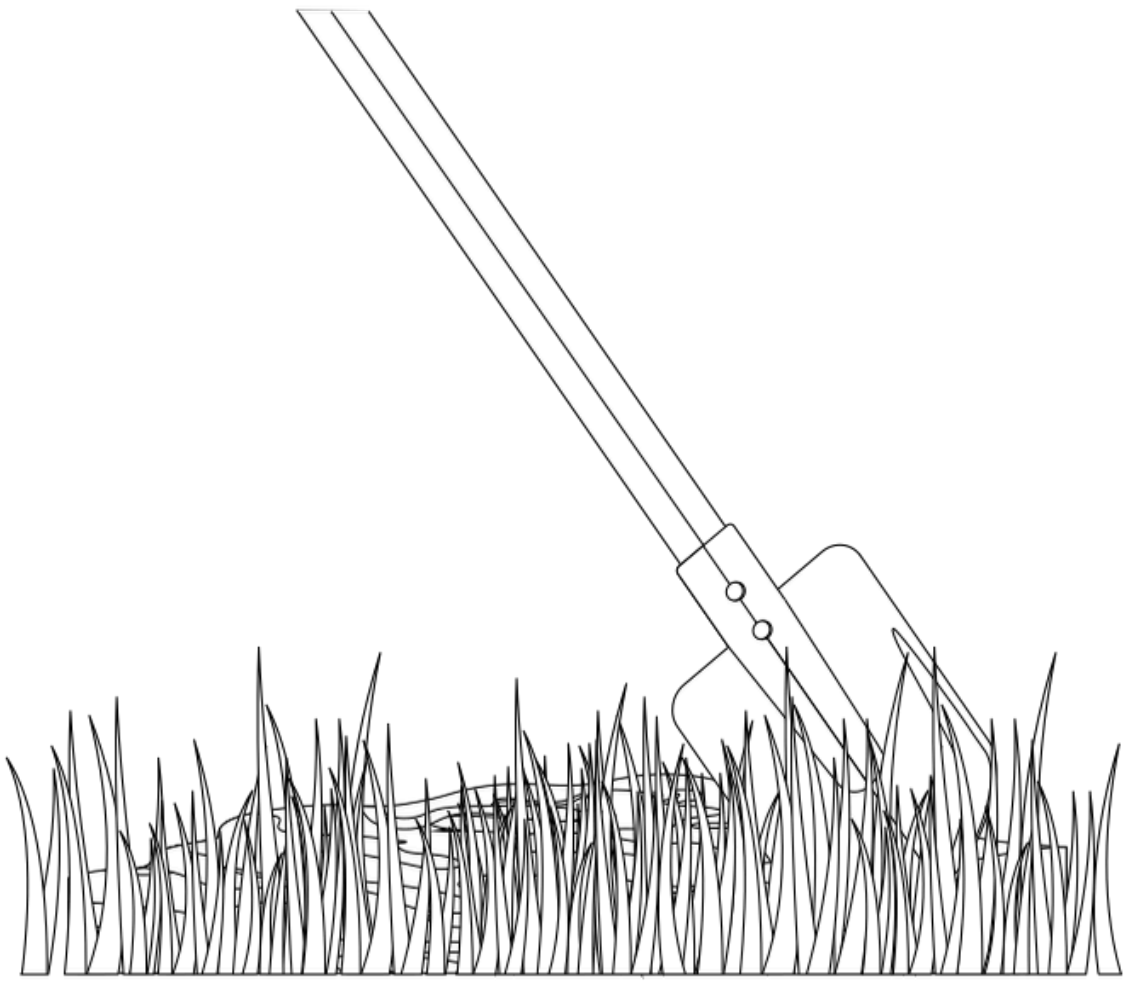
GREEN CODE

COLLECT COMPOST

ONCE THE COMPOST IS READY,
YOU CAN USE IT IN YOUR GARDEN

GREEN CODE

COLLECT COMPOST



ONCE THE COMPOST IS READY,
YOU CAN USE IT IN YOUR GARDEN

GREEN CODE

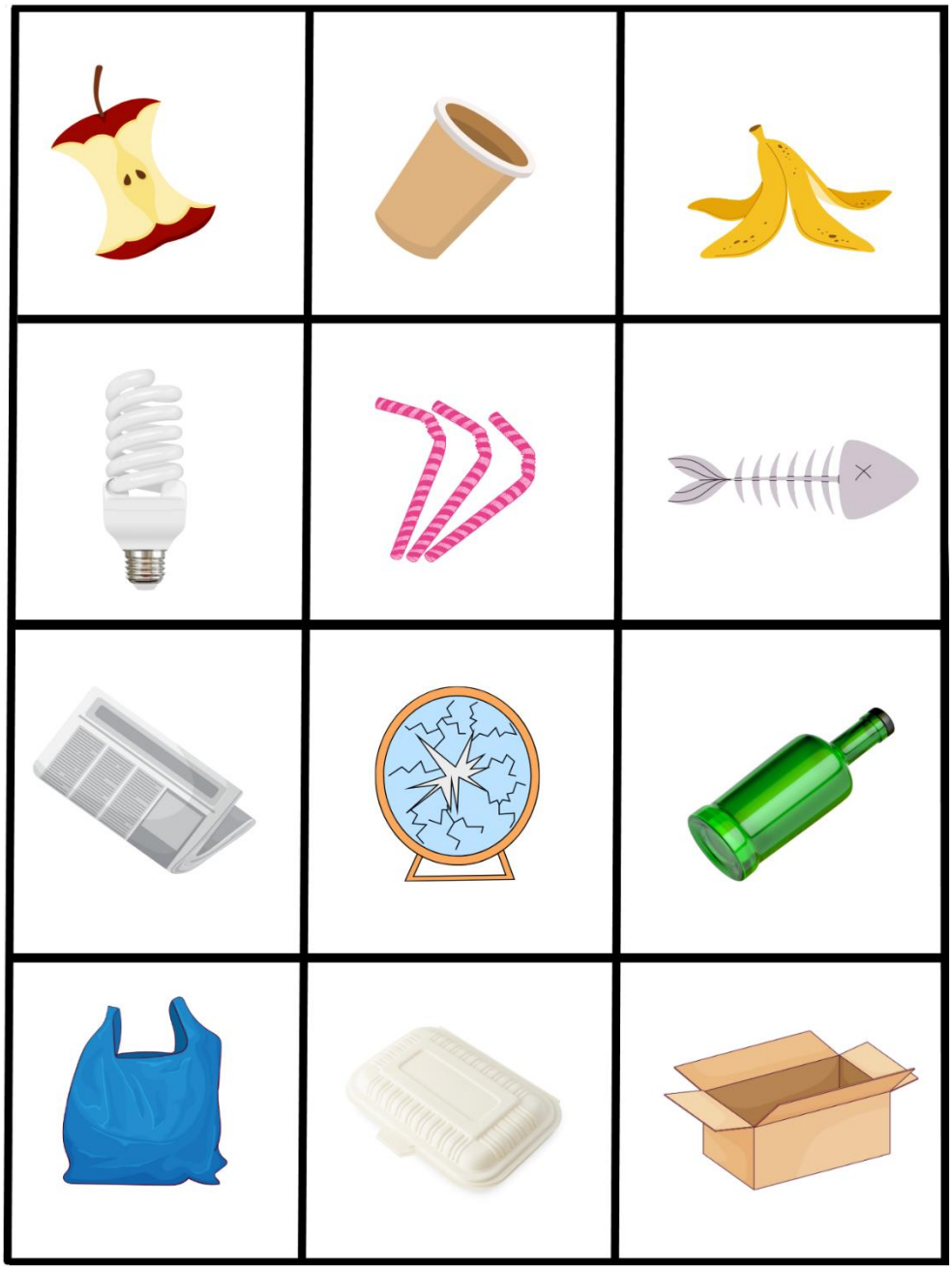
Recycling Symbols

Reco, the robot, needs help to learn the recycling symbols and wants to match the symbols to the right materials. Can you work with Reco the robot to figure it out?

Co-funded by the European Union

Non-recyclable Materials

Find the pieces of trash that belong in the toy garbage truck. Carefully cut out these pieces of trash and place them into the truck.



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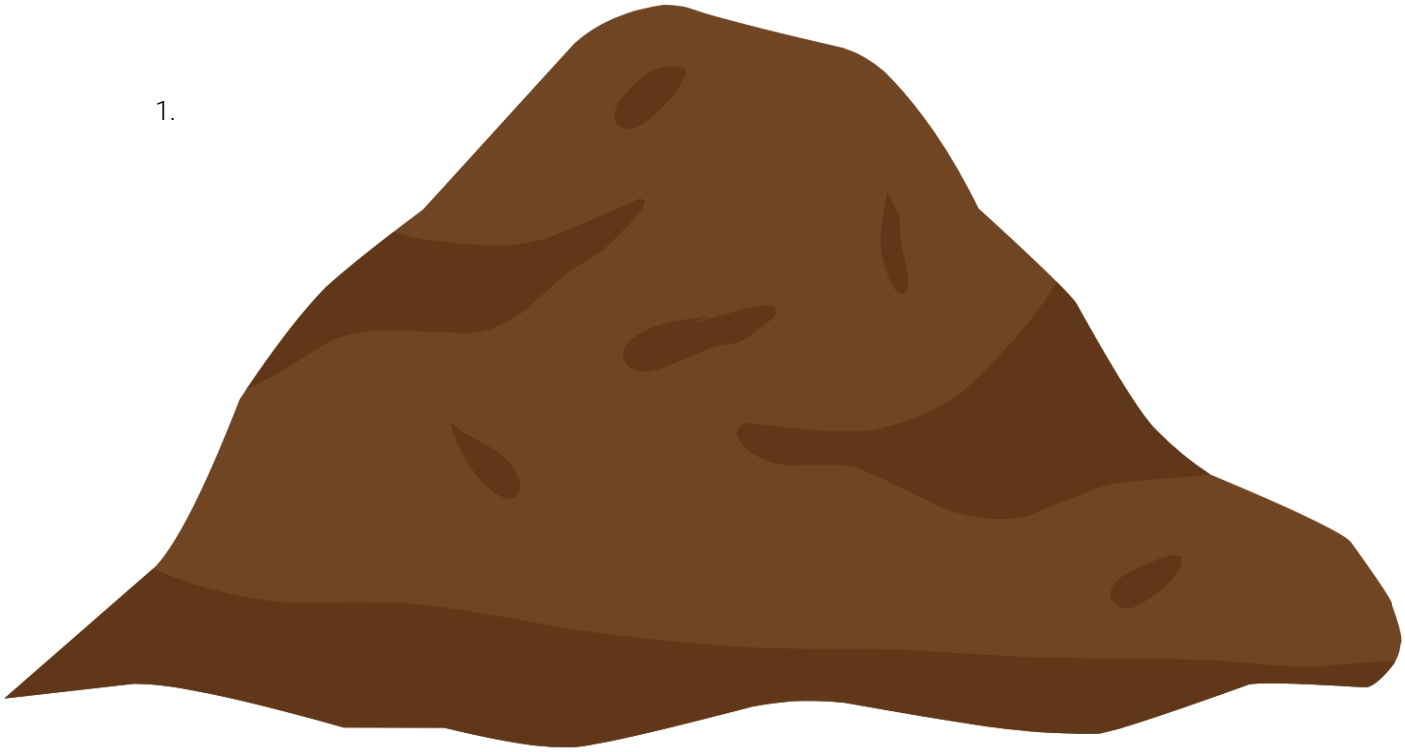
Drive your toy truck to the landfill. Unload the trash by placing the cut-out pieces onto the landfill.

1.



Co-funded by
the European Union