Kiwi Camp Day 1

Grownup Guide

Real-Life Robots

Activity	Do and learn	Time needed
Robots and Coding crate	**MAKE** a robot buddy. **PLAY** a coding game. **LEARN** about robots and coding.	90 minutes or more
Meet a Roboticist video	**WATCH** the video. **LEARN** about making robots.	10 minutes
Brush Bots video	**WATCH** the video. **MAKE** a silly wiggly bot. **LEARN** about electric circuits.	40 minutes or more
Robot Grabber Challenge printable	**MAKE** a cardboard grabber. **EXPERIMENT** with picking things up.	40 minutes or more
Robot Drawing Cards printable	**DRAW** your own robots. **LEARN** about real-life robots.	20 minutes

Today, your camper will explore a hands-on coding game and engineer their own creative bots! You can do these activities in any order you like, extend something if your kiddo is really into it, or cut things short if they're ready to move on. *(And don't forget to schedule time to visit the canteen for snacks — camp is hungry work!)* When you're ready to get started, it's easy as 1-2-3.

1. Just bookmark **kiwico.com/camp/kiwi/day1**,
2. print this guide,
3. and gather your gear.

Done? High five! We hope you and your camper have an awesome time making and learning together at Kiwi Camp, and we'd love to see what you create. Tag us with #kiwico to show off, or just to say hi!

See you at camp!
The Camp KiwiCo team

Gather your gear for Real-Life Robots

Robots and Coding crate
scissors
cardboard (you can use your Kiwi Crate box)
glue
tape
3 plastic straws
string or yarn
ruler
rubber bands (optional)
small balls (or other objects to pick up)
pencil

Brush Bots project *(look for the motor and battery case at an electronics store or online)*

2 AA batteries
battery case that fits AA batteries with a wire and switch
3-volt hobby motor
electrical tape or duct tape
cork
scissors
double-sided sticky foam or duct tape
scrub brush
wiggle eyes and other decorations

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Meet a Roboticist

Watch 10-year-old aspiring roboticist Taylor interview Dr. Siddhartha Srinivasa, a professor of computer science and engineering at the University of Washington.

What is a roboticist?

A roboticist is someone who designs, builds, and tests new and exciting robots. Some roboticists are computer scientists who help program the robot to do certain things, while others are engineers who build the robot's body and make it move.

Who is Dr. Siddhartha Srinivasa?

Siddhartha Srinivasa is a professor and roboticist interested in building robots that can do complicated tasks in tricky, real-world situations. His team designed HERB (short for "Home Exploring Robot Butler"), a robot that can open a refrigerator, unload a dishwasher, serve a meal, and even split an Oreo cookie from the cream! Siddhartha's team is also working on a new robot, called ADA, that can help feed people with disabilities who can't feed themselves.

If you were a roboticist, what robots would you make? What jobs would they do?

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Brush Bots

You'll need

- 2 AA batteries
- battery case that fits 2 AA batteries with a wire and a switch
- 3-volt hobby motor
- electrical tape or duct tape
- scissors
- cork
- double-sided sticky foam or duct tape
- scrub brush
- wiggle eyes and other decorations

Step 1

Watch the Brush Bots video at **kiwico.com/camp/kiwi/day1**.

Step 2

Make sure the switch on the battery case is in the off position, then put the batteries inside.

Step 3

Connect the wires from the battery case to the wires on the motor by plugging the ends together (red to red and black to black). Then wrap some electrical tape or duct tape around the connections.

Step 4

Push the middle of the cork onto the shaft (pointy part) of the motor.

Step 5

Attach the battery pack and motor to your brush using sticky foam or duct tape. The motor should be on the very edge of the brush, so the cork can still spin.

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Step 6

Decorate your brush bot! Add wiggle eyes, yarn, felt, or whatever strikes your fancy. Make sure you can still get into the battery pack.

Step 7

Turn on the battery pack and watch your brush bot move and groove!

All a-bot bots

Fill in the words for the sentences below. If you need a refresher on how your brush bot works, watch the Brush Bots video again at **kiwico.com/camp/kiwi/day1**.

Why did the robot fail its test?

1. A _____ is a loop of wires that goes from your battery pack to your motor back to your battery pack. ___ ___ ☐ ___ ☐ ___ ___

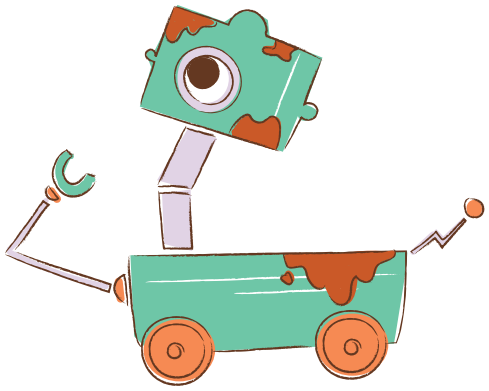
2. Robots are _____ that can do a task all by themselves. ___ ___ ___ ___ ___ ___ ___ ☐

3. A motor turns electricity into _____. ___ ___ ☐ ___ ___ ___

4. You need to put your batteries in the right way, so that _____ can flow and your motor can turn on. ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ☐

Why did the robot fail its test?

It was a little ☐ ☐ ☐ ☐ ☐ !

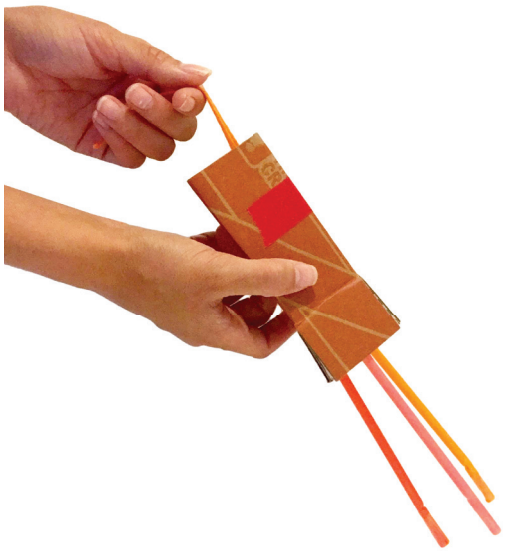


Kiwi Camp Day 1

Robot Grabber Challenge

You'll need

- printable robot grabber template
- cardboard (you can use your Kiwi Crate box)
- glue
- scissors
- tape
- 3 plastic straws
- string or yarn
- ruler
- rubber bands (optional)
- small balls (or other objects to pick up)



Step 1

Cut three pieces of string, each about 15 inches long.

Step 2

Cut a notch 1 inch below the top of each straw.

Step 3

Thread a piece of string through each straw. Tape the end of the string to the top of the straw.

Step 4

Cut out the robot hand template and glue it onto the cardboard. Make sure the blue rectangles on the template run in the same direction as the ridges of the cardboard.

Step 5

Cut the template out of the cardboard along the dashed line border. Then cut along the remaining dashed lines.

Step 6

Crease the cardboard along the green lines.

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Step 7

Tape a straw onto each blue rectangle so that the bottom of each straw touches the green line. Make sure the notches are facing up.

Step 8

Fold the cardboard inwards along the long green lines to make a triangle. Tape the flap closed.

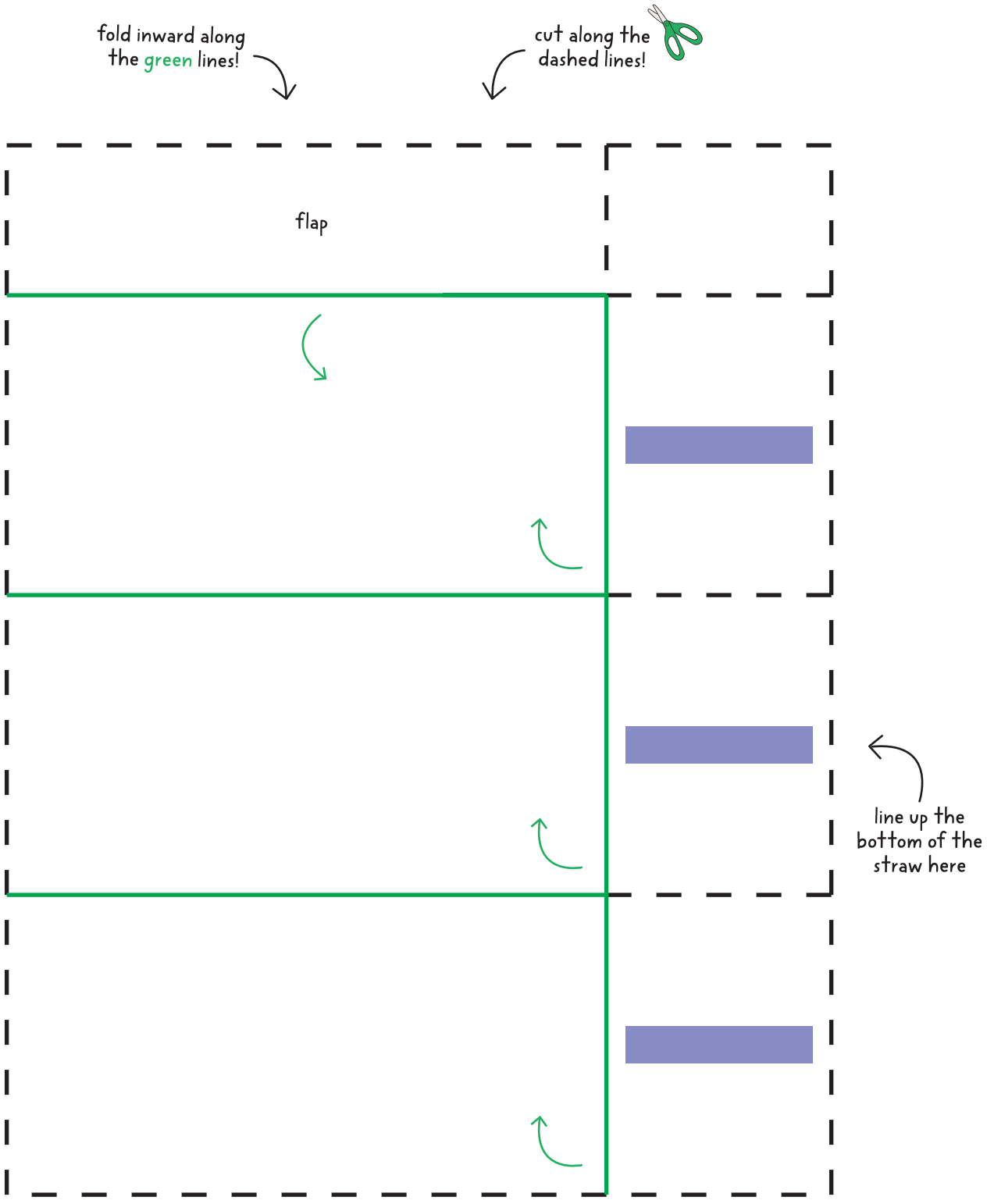
Step 9

Fold the three top flaps outward to separate the straws.

Try this!

To use your robot hand, hold onto the cardboard section and pull on the strings. Try to grab some small objects with the straw fingers!

- **Try pulling all the strings at once or one at a time. What makes it easier to pick things up?**
- **Try looping rubber bands onto each straw finger. Can you grab more things that way?**



Try, try again!

A design challenge like this grabber seldom works perfectly on the first attempt. So get ready to

- ☐ **try it**
- ☐ **test it**
- ☐ **tweak it**
- ☐ **repeat it**

until you get it right.

Engineers have a name for this process: iterative design. They use it to try out solutions, learn, and improve — just like you're doing.

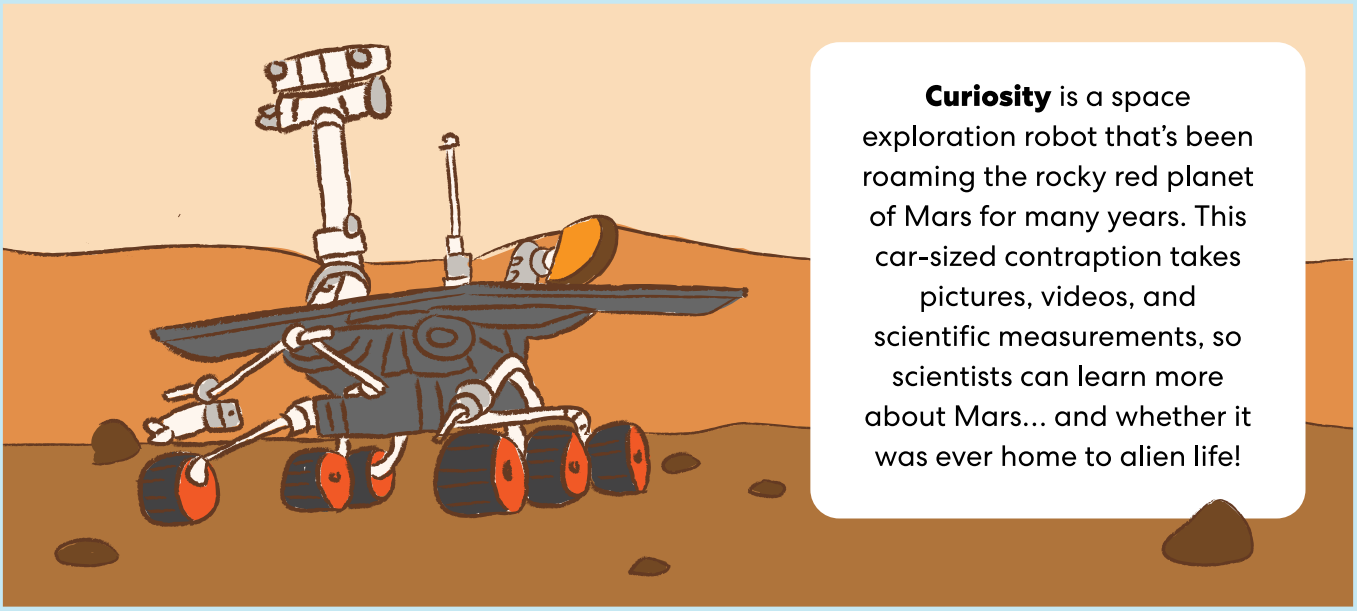
To improve your grabber, you might want to make it more precise, so it can pick up something teeny-tiny. You could test out smaller straws, or make the straw "fingers" shorter, or make the cuts in a different place.

Or you might want to make your grabber super strong, so it can pick up heavier objects. You could try getting rid of the straws entirely and make the "fingers" out of cardboard.

And the best part of iterative design? **There's no such thing as a mistake!** Every test — whether it works or not — is a chance to learn something new. Try it and see!

Kiwi Camp Day 1

Robot Drawing Cards



Curiosity is a space exploration robot that's been roaming the rocky red planet of Mars for many years. This car-sized contraption takes pictures, videos, and scientific measurements, so scientists can learn more about Mars... and whether it was ever home to alien life!

Think of a faraway place you'd like to study and explore. Draw a robot that could help you.

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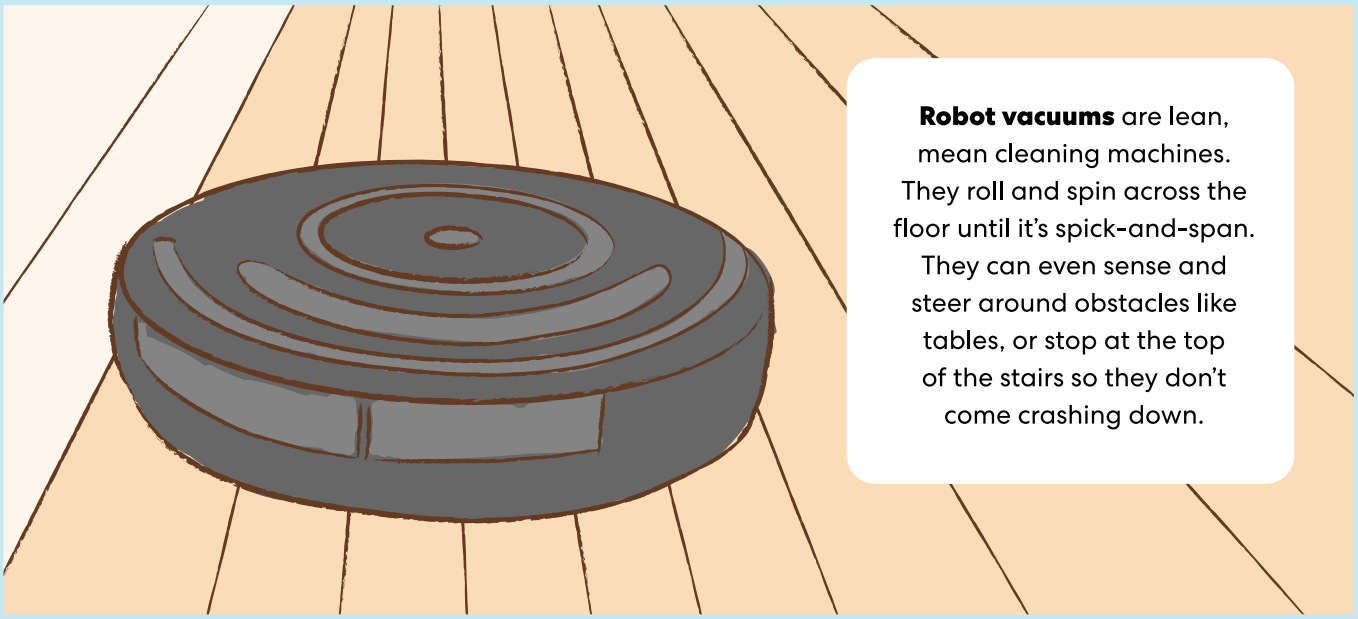
In car factories across the world, robots help weld metal parts together and make sure the finished vehicles are strong and safe. These **welding robots** can work a lot faster than human workers. And bonus — they don't need to wear safety goggles!

If you could start a factory, what would you build there? Draw a building robot.



Robot vacuums are lean, mean cleaning machines. They roll and spin across the floor until it's spick-and-span. They can even sense and steer around obstacles like tables, or stop at the top of the stairs so they don't come crashing down.

What's your least favorite chore?
Draw a robot that could do it for you!

Kiwi Camp Day 2

Grownup Guide

Kitchen Chemistry

Activity	Do and learn	Time needed
Oil + Water Chemistry crate	**MAKE** a ship in a bottle and colorful bubble art. **EXPERIMENT** with oil and water. **LEARN** about oil and water chemistry	120 minutes or more
What Are Soap's Superpowers? video	**WATCH** the video. **PLAY** a puzzle quiz. **LEARN** about the chemistry of soap.	20 minutes
Rainbow Density Jar video	**WATCH** the video. **MAKE** a layered density jar. **LEARN** about density.	40 minutes or more
Milk Swirl Experiment printable	**EXPERIMENT** with colorful milk swirls. **LEARN** about the chemistry of soap.	30 minutes
Taste Test Experiment printable	**EXPERIMENT** with tasting foods. **LEARN** about your sense of taste.	30 minutes

Today, your camper will get hands-on with creative kitchen chemistry experiments! You can do these activities in any order you like, extend something if your kiddo is really into it, or cut things short if they're ready to move on. *(And don't forget to schedule time to visit the canteen for snacks — camp is hungry work!)* When you're ready to get started, it's easy as 1-2-3.

1. Just bookmark **kiwico.com/camp/kiwi/day2**,
2. print this guide,
3. and gather your gear.

Done? High five! We hope you and your camper have an awesome time making and learning together at Kiwi Camp, and we'd love to see what you create. Tag us with #kiwico to show off, or just to say hi!

See you at camp!
The Camp KiwiCo team

Gather your gear for Kitchen Chemistry

Oil + Water Chemistry crate
scissors
water
sugar, salt, lime, baking chocolate, and other foods to taste
pencil
whole milk
food coloring
dish soap
cotton swabs
shallow plate or dish

Rainbow Density Jar project *(you can also do this project with fewer layers – just leave out the liquids you don't have)*

light corn syrup
blue or clear laundry detergent
vegetable oil, olive oil, or canola oil
water
rubbing alcohol
lamp oil
red, blue, and yellow liquid colors (like food coloring)
tall jar
mixing stick
small bowls or cups
small bottles with spouts (optional)
small objects, like balls, toys, or rice (optional)

Kiwi Camp Day 2

What Are Soap's Superpowers?

You'll need

printable puzzle
pencil

Step 1

Watch the What Are Soap's Superpowers? video at **kiwico.com/camp/kiwi/day2**.

Step 2

Fill in the words for the sentences below.

Step 3

Put together the special letters to find the answer to the question:

What's a chemist's favorite type of dog?

What's a chemist's favorite type of dog?

1. Our hands and the foods we eat are naturally _____. ___ ___ ☐ ___

2. Humans have been using soap for _____ of years. ___ ___ ___ ___ ___ ☐ ___ ___ ___

3. The water-fearing, or _____, end of a soap molecule can easily attach to oil. ___ ___ ___ ___ ___ ___ ___ ___ ☐ ___ ___

4. The water-loving, or _____, end of a soap molecule can easily dissolve in water. ___ ___ ___ ___ ☐ ___ ___ ___ ___ ___ ___

5. _____ _____ is caused when water molecules stick together, forming a super-strong layer on top. ___ ___ ☐ ___ ☐ ___ ___ ☐ ___ ___ ___ ___ ___ ___

6. _____ can break up that super-strong layer. ___ ☐ ___ ___

7. Milk is made up of _____ and fat. ___ ___ ___ ___ ☐

What's a chemist's favorite type of dog?

A ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Y retriever!

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Kiwi Camp Day 2

Rainbow Density Jar

You'll need

- light corn syrup
- blue or clear laundry detergent
- vegetable oil, olive oil, or canola oil
- water
- rubbing alcohol
- lamp oil
- red, blue, and yellow liquid colors (like food coloring)
- tall jar
- mixing stick
- small bowls or cups
- small bottles with spouts (optional)
- small objects, like balls, toys, or rice (optional)

Step 1

Watch the Rainbow Density Jar video at **kiwico.com/camp/kiwi/day2**.

Step 2

Mix a drop of red liquid color, a drop of blue liquid color, and a ½ cup of corn syrup. Pour the purple mixture into the bottom of the jar.

Step 3

If you're using clear laundry detergent, mix a drop of blue liquid color and a ½ cup of laundry detergent. If you're using blue laundry detergent, you can use it as is. Slowly pour the laundry detergent into the jar, on top of the corn syrup.

Step 4

Mix a drop of blue liquid color, a drop of yellow liquid color, and a ½ cup of water. Slowly pour the green-colored water into the jar, on top of the laundry detergent.

Step 5

Slowly pour a ½ cup of vegetable oil into the jar, on top of the water.

Step 6

Mix a drop of red liquid color, a drop of yellow liquid color, and a ½ cup of rubbing alcohol. Slowly pour it into the jar, on top of the vegetable oil.

Step 7

Slowly pour a ½ cup of lamp oil into the jar, on top of the rubbing alcohol.

You made a rainbow density jar!

Step 8

If you'd like, try dropping small objects into the jar to see where they land.

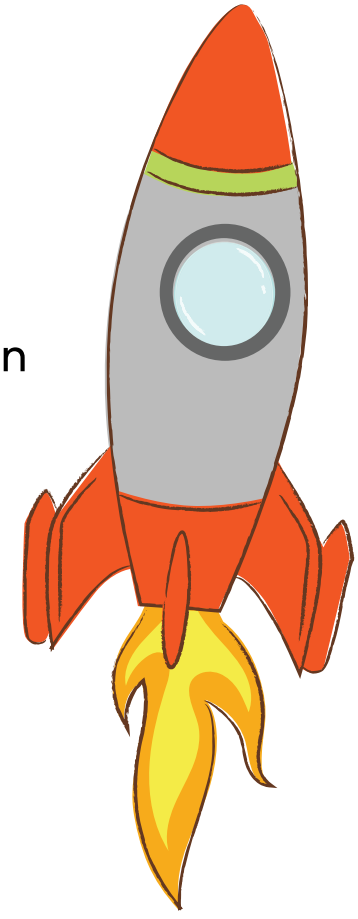
What's going on?

In your rainbow density jar, you layered the liquids from densest to least dense. That's how they floated on top of each other in clean, colorful bands.

Believe it or not, there are liquids out there that are a lot denser than corn syrup, or a lot less dense than lamp oil.

The densest liquid in the world is **mercury**, the liquid in thermometers. Mercury is a metal that becomes a liquid at room temperature, and it's almost 14 times denser than water!

One of the least dense liquids in the world is **liquid hydrogen**, a type of rocket fuel. Hydrogen is a gas at room temperature, but it becomes a liquid when it's very, very, VERY cold. Liquid hydrogen is 14 times less dense than water!



Kiwi Camp Day 2

Milk Swirl Experiment

You'll need

- whole milk
- food coloring
- dish soap
- cotton swabs
- shallow plate or dish

Step 1

Pour a thin layer of milk into the plate or dish.

Step 2

Squeeze a few drops of food coloring in the center of the milk. Just one drop per color is a good amount.

Step 3

Dip the end of the cotton swab into the dish soap.

Step 4

Touch the swab to the center of the milk and watch closely.

Step 5

Watch the color explosion! You should be able to touch the swab several more times before the explosions stop. (If you want to try it again, you'll need to pour the milk out and start over.)

What did you see in this experiment?
Explain what happened to your grownup!

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What's going on?

Why do the colors burst? **The secret is in the tiny drop of dish soap.**

You can demonstrate the power of soap by smearing some oil onto two identical plates. Give yourself just 30 seconds each to clean one with just water, and the second with water and dish soap. The one you clean with only water will probably still feel very oily, while the one you washed with soap will feel much cleaner.

Soap molecules are special. One end of each molecule is **hydrophilic**, or water-loving. That end of the molecule easily dissolves in water. The other end is **hydrophobic**, or water-fearing. That end won't go near the water molecules, but it will attach easily to the oil. With the hydrophobic end of the soap molecule grabbing onto the oil, the plate is clean in no time!

That's exactly what you're seeing in the milk explosion. In addition to water, milk contains lots of fat and protein. Just like oil, the fat and protein molecules attach easily to soap molecules. When the soap touches the milk, it starts grabbing as many fat and protein molecules as it can. The attraction between the soap and the fat causes the molecules to move quickly, creating bursts of color!

Kiwi Camp Day 2

Taste Test Experiment

You'll need

- printable worksheet
- sugar
- salt
- lime
- baking chocolate
- all sorts of other sweet, salty, sour, and bitter foods (like orange peels, soy sauce, maple syrup, pickles, arugula, dried fruit, plain yogurt, and cheese)
- pencil

Step 1

Fill out the worksheet with the names of all the foods you'll be taste testing.

Step 2

Get your taste buds warmed up by trying the sugar, salt, lime, and baking chocolate. The sugar will taste sweet, the salt will taste salty, the lime will taste sour, and the baking chocolate will taste bitter.

Step 3

Next, try each of the other foods. What do they taste most like — the sugar (sweet), the salt (salty), the lime (sour), or the baking chocolate (bitter)? Fill out your worksheet.

Step 4

Jot down some notes about what else each food tastes like. Are there any that are mostly bitter, but also a little sweet? Mostly sweet, but also a little salty? Are there some foods that are a little sour, and others that are *really* sour?

Step 5

Based on this experiment, what do you think your favorite flavor is? What was your favorite food from all the foods you taste tested? Jot it all down!

Bonus challenge:

Come up with a recipe that uses all four flavors — sweet, salty, sour, and bitter. What ingredients will you use?

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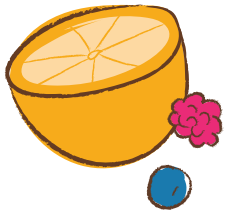
	This food is mostly . . .				Describe the flavor
Name of Food	sweet	salty	sour	bitter	
sugar					
salt					
lime					
baking chocolate					
My favorite flavor is . . .					
My favorite food is . . .					

What's going on?

Your tongue is covered in thousands of **taste buds**. They're able to tell what's in the food you're eating and let your brain know what it tastes like. So if there's sugar in your food, it'll taste sweet. If there's salt, it'll taste salty. If there's acid (like lemon juice), it'll taste sour.



Your taste buds aren't doing all the work, though. Your nose lets your brain know a lot about the food you're eating, too. That's why when you have a cold and you can't smell very well, you can't taste much either! In other words, *the nose knows!*

But it's not all sweet, sour, salty, and bitter. There's actually a fifth flavor called **umami**. Umami foods are meaty and savory and make your mouth water. If you've ever eaten soy sauce, mushrooms, tomatoes, or meats, you've tasted umami!

Kiwi Camp Day 3

Grownup Guide

Biology Lab

Activity	Do and learn	Time needed
Peek Into Ponds crate	**MAKE** a leaping lily pad and aquarium bottle. **EXPERIMENT** with sinking and floating.	90 minutes or more
Can Fish Stop Swimming? video	**WATCH** the video. **MAKE** a shark paper airplane. **LEARN** about buoyancy.	20–30 minutes
Make Your Own Pond Jar video	**WATCH** the video. **EXPERIMENT** with a pond jar. **LEARN** about pond ecosystems.	30–40 minutes, plus time for a trip to a pond and for observation
Froggy Jumping Contest printable	**PLAY** a froggy jumping game. **LEARN** math skills.	30-40 minutes
Hungry Fish printable	**MAKE** a ball-in-the-cup toy. **LEARN** fun fish facts.	30–40 minutes

Today, your camper will explore underwater ecosystems and discover how fish use the buoyancy of their bodies to float! You can do these activities in any order you like, extend something if your kiddo is really into it, or cut things short if they're ready to move on. *(And don't forget to schedule time to visit the canteen for snacks — camp is hungry work!)* When you're ready to get started, it's easy as 1-2-3.

1. Just bookmark **kiwico.com/camp/kiwi/day3**,
2. print this guide,
3. and gather your gear.

Done? High five! We hope you and your camper have an awesome time making and learning together at Kiwi Camp, and we'd love to see what you create. Tag us with #kiwico to show off, or just to say hi!

See you at camp!
The Camp KiwiCo team

Gather your gear for Biology Lab

Peek Into Ponds crate
paper airplane (made from regular printer paper)
scissors
tape or glue
marker
ruler
toilet paper tube
string
large bead (or a few small beads)
Kiwi Crate box
pencil

Make Your Own Pond Jar project

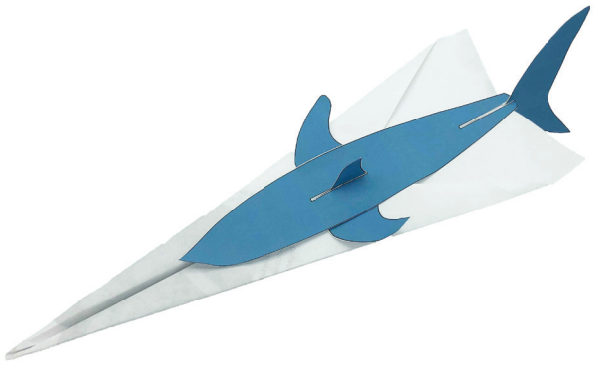
containers with lids
clear jar with a lid
magnifying glass (optional)
You'll also need to take a trip to a real pond!

Kiwi Camp Day 3

Can Fish Stop Swimming?

You'll need

- printable shark pieces
- paper airplane (made from regular printer paper)
- scissors
- tape or glue



Step 1

Watch the Can Fish Stop Swimming? video at **kiwico.com/camp/kiwi/day3** to learn about how fish and sharks float — and what happens when they stop.

Step 2

Cut out the printable shark pieces, making sure not to cut through the green or navy lines. Ask your grownup for help!

Step 3

Fold the tail fin along the green line so that the blue side is facing out, then tape or glue the white sides together. Repeat for the top fin.

Step 4

Turn the tail fin upright, slide it between the middle crack in the airplane, then tape or glue it down.

Step 5

Tape or glue the middle crack together.

Step 6

Tape or glue the side fins to the shark body along the navy lines. Make sure all the blue sides are facing up and that the fins are on the correct sides.

Step 7

Attach the body and side fins to the top of the airplane.

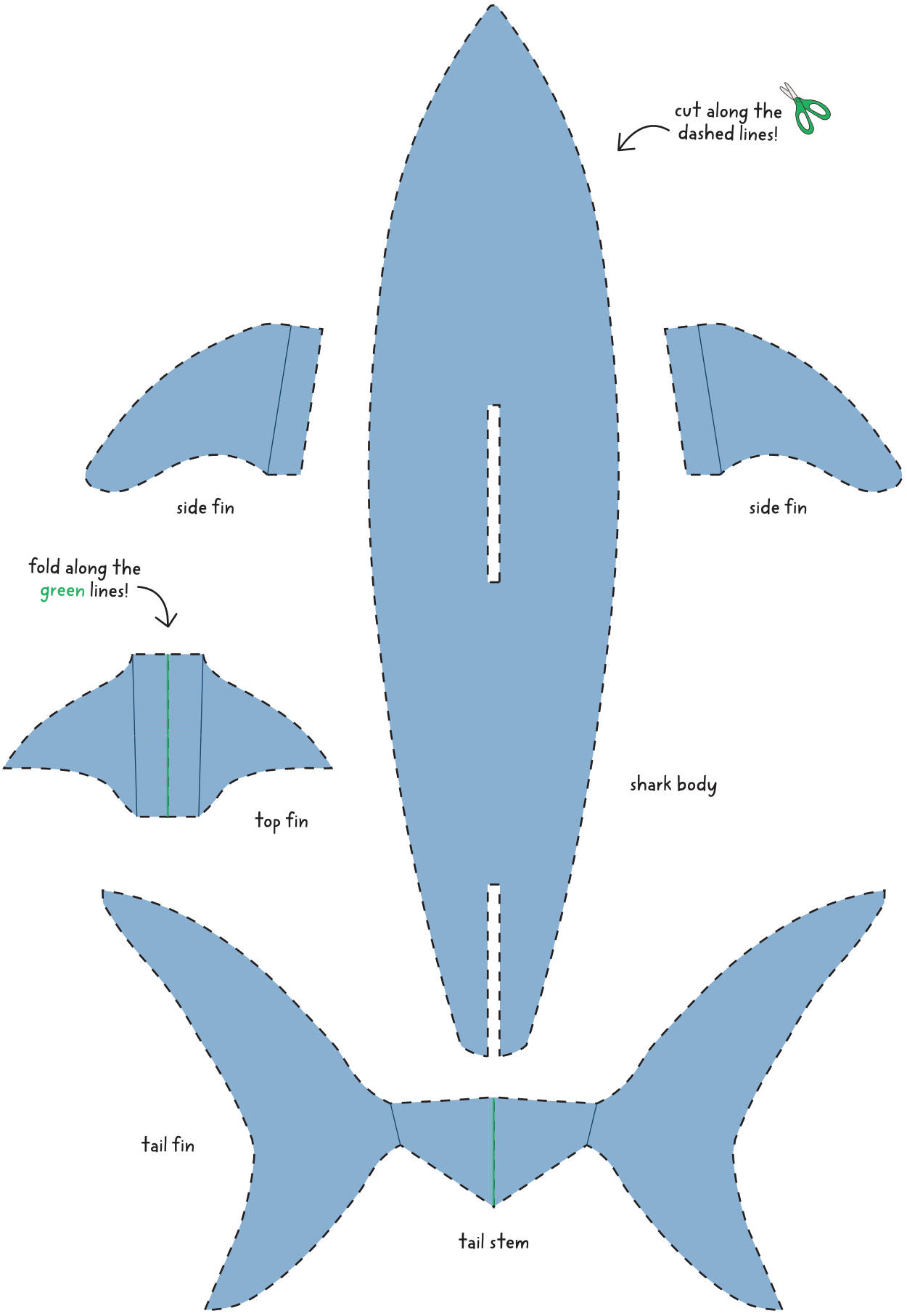
Step 8

Stick the top fin into the middle slit of the shark body, then use tape or glue to secure.

Step 9

Hold the airplane by the bottom and throw it to send your shark "swimming" through the air!

- **What did you discover about buoyancy from the video?**
- **How far can you fly your swimming shark?**
- **Next time you're at the pool, experiment with you own buoyancy. Can you float without moving your body? What if you hold onto a floaty toy?**



What's going on?

When your shark airplane soars through the sky, it's not all that different from a shark in the water.

As long as its tail keeps pushing it forward and the water flowing past its fins keeps lifting its body up, a shark will stay afloat. But if it ever stops swimming, it sinks!

As long as your airplane keeps gliding, the air beneath it lifts it up. But as soon as it stops, it drops! *Plop*.

Kiwi Camp Day 3

Make Your Own Pond Jar

You'll need

- containers with lids
- clear jar with a lid
- magnifying glass (optional)
- to take a trip to a real pond!

Step 1

Watch the Make Your Own Pond Jar video at **kiwico.com/camp/kiwi/day3**.

Step 2

Take a trip to a local pond! Ask your grownup to help you put some mud, plants, and pond water into containers to take home.

Step 3

Add a layer of mud to the bottom of your jar. Then add some plants.

Step 4

Slowly pour the pond water into the jar. Ask your grownup for help.

Step 5

Seal up the jar, put it near a window, and wait a few days. (Make sure there are no fish or snails in there — they need to stay in the pond!)

Step 6

Check your jar — what do you see inside? If you want, use a magnifying glass to take a closer look!

If you're done making observations, dump the water (and the pond life!) back into the pond.

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Teeny tiny pond life

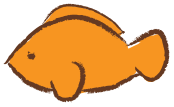
No two pond jars will be exactly alike. That's because ponds in different places are home to different critters. But here are a few aquatic plants and animals you might spot in your jar. (Try using a magnifying glass or a microscope to look for really itty-bitty ones.)

Look for long green strings floating in your water. That's a type of **algae**, an aquatic plant. For a lot of pond critters, algae is an important part of a healthy diet.

Is the water in your jar kind of green? That may be thanks to another type of teeny-tiny algae — too small for the eye to see — that floats around in the water.

See any creepy-crawly critters? You might have picked up some **insect larva**. A larva is a younger form of an adult animal, and might look very different from the adult — like a tadpole and a frog.

You might even see a little fish swishing and swimming around. If you do, scoop it out and return it to the pond. Fish need a larger ecosystem to survive!

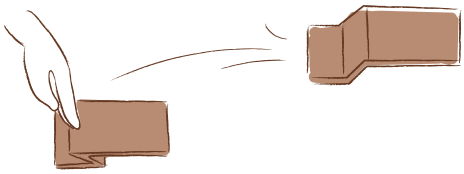


Kiwi Camp Day 3

Froggy Jumping Contest

You'll need

- printable target
- printable score sheet
- Kiwi Crate box
- marker
- ruler
- scissors
- pencil



Get ready

Make two jumping frogs using the instructions from your *explore!* magazine, or follow the steps below.

Step 1

Cut the front flap off of your Kiwi Crate box. Then cut off and discard the side tabs.

Step 2

Cut the flap to be 7 inches (17.8 cm) long and 2 inches (5.1 cm) tall.

Step 3

Make a mark at 1 ½ inches (3.8 cm) and 3 ½ inches (8.9 cm).

Step 4

Fold the cardboard, green side to green side, at the 3 ½-inch (8.9-cm) mark.

Step 5

Fold the cardboard, brown side to brown side, at the 1 ½-inch (3.8-cm) mark.

Step 6

Draw a frog on the brown side of the cardboard.

Step 7

Repeat Steps 1-6 to make a second jumping frog.

Step 8

To make your frog jump, flip it over to the brown side and hold it down with a finger at the fold. Then let your finger slide off the fold.

Have a contest!

Step 1

Set the printable target on a hard surface.

Step 2

Challenge a friend to a jumping contest! Take turns trying to get your frogs to jump onto the circles on the target.

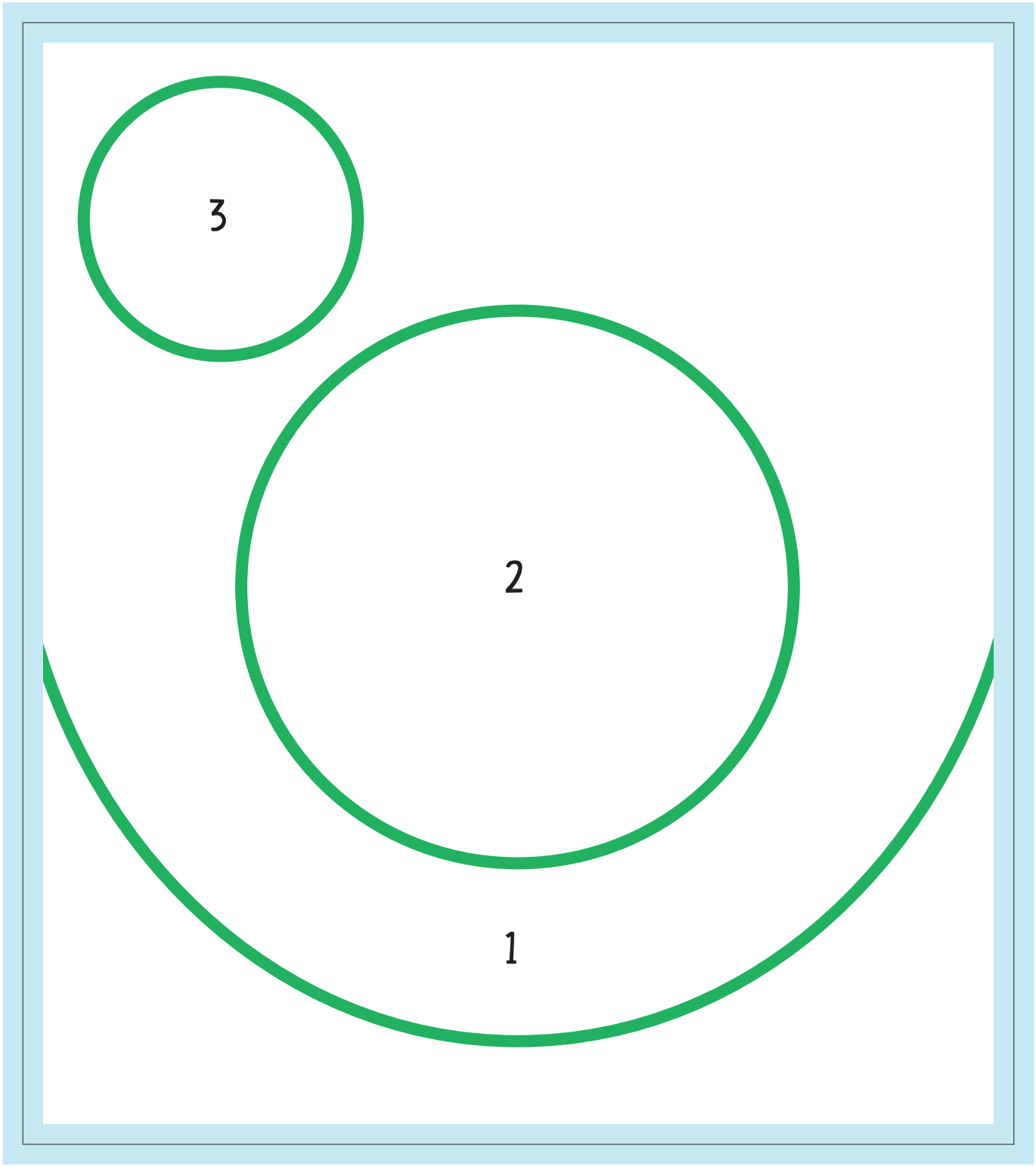
Step 3

The number on the circle you land on is your score! Keep track of the scores with the printable score sheet.

Step 4

At the end, add together all the numbers. Whoever has the highest score, wins!

Target



Score sheet

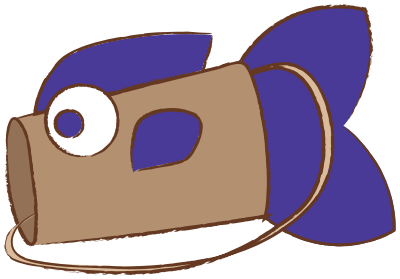
	Player 1: _____	Player 2: _____
Jump 1		
Jump 2		
Jump 3		
Jump 4		
Jump 5		
Jump 6		
Jump 7		
Jump 8		
Total score:		

Kiwi Camp Day 3

Hungry Fish

You'll need

- printable hungry fish template
- string
- toilet paper tube
- scissors
- tape
- large bead (or a few small beads)



Step 1

Cut a piece of string four times as long as the toilet paper tube.

Step 2

Flatten one end of the toilet paper tube.

Step 3

Tie a knot on one end of the string and tape it inside the flattened end of the tube, near the edge of the crease. Make sure it's secure!

Step 4

Tape the flattened end of the tube closed.

Step 5

String a large bead (or a few smaller beads) onto the other end of the string. Tie the string off to secure the bead.

Step 6

Cut out the pieces from the printable hungry fish template.

Step 7

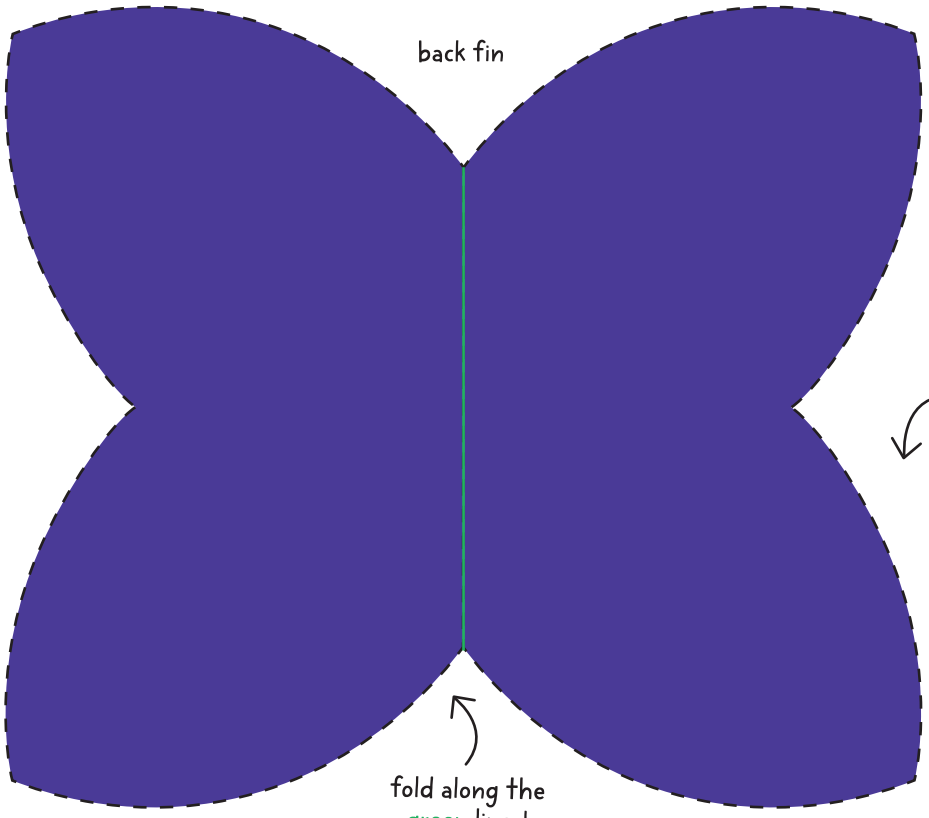
Fold along the green lines so that the purple side faces out, then tape the sides together.

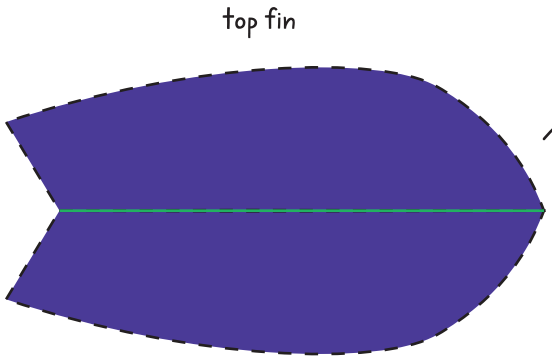
Step 8

Tape the edge of each of the four fins onto the tube, so that they can flap up and down or side to side. Tape on the eyeballs.

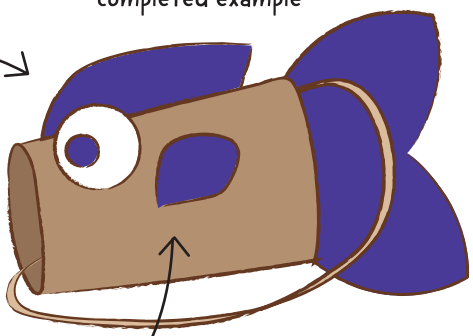
Step 9

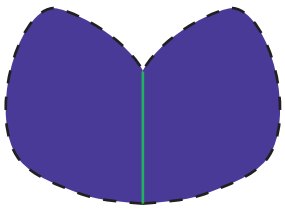
Hold the fish by the tube, then swing it upwards to try and get the bead to land inside its mouth!

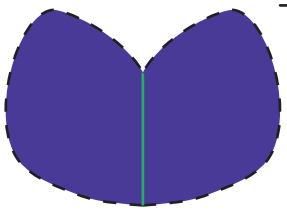




completed example







Fish facts

There are over 25,000 species of fish on Earth . . . that we know about. Scientists think there may be thousands of other species we just haven't studied yet!

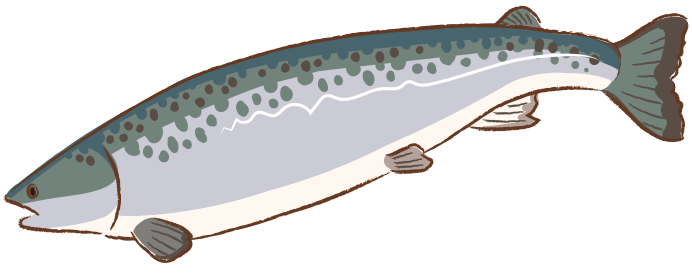

halibut

The fastest fish in the world, the **sailfish**, can swim over 68 miles per hour (109 km/h) — as fast as a car driving on the highway! Sailfish like to whoosh through schools of fish, breaking them apart and grabbing a snack or two. Talk about *fast food*.

One of the smallest fishes in the world can fit on the tip of your finger!

Being a fish out of water might be a problem for most, but the **African lungfish** can take it. When water levels go down, this species just holes up underground and takes a nap (hibernates) — for months, or even years!

salmon



Kiwi Camp Day 4

Grownup Guide

Awesome Animals

Activity	Do and learn	Time needed
Veterinarian Starter Kit crate	**MAKE** a model of organ and muscle systems. **PLAY** a check-up game with an X-ray lightbox. **LEARN** how to be a veterinarian.	90 minutes or more
Meet a Veterinarian video	**WATCH** the video. **LEARN** how to be a veterinarian.	10 minutes
Make Your Own Dog Treats video	**WATCH** the video. **MAKE** healthy dog treats. **LEARN** about training with treats.	30 minutes, plus time for baking and cooling
Animal Ears Experiment printable	**MAKE** paper animal ears. **EXPERIMENT** with listening. **LEARN** about animal adaptations.	40 minutes or more
Playful Pets Coloring Cards printable	**MAKE** cute pet drawings. **LEARN** about caring for our furry friends.	30 minutes or more

Today, your camper will explore animal anatomy and learn about caring for our furry friends! You can do these activities in any order you like, extend something if your kiddo is really into it, or cut things short if they're ready to move on. *(And don't forget to schedule time to visit the canteen for snacks — camp is hungry work!)* When you're ready to get started, it's easy as 1-2-3.

1. Just bookmark **kiwico.com/camp/kiwi/day4**,
2. print this guide,
3. and gather your gear.

Done? High five! We hope you and your camper have an awesome time making and learning together at Kiwi Camp, and we'd love to see what you create. Tag us with #kiwico to show off, or just to say hi!

See you at camp!
The Camp KiwiCo team

Gather your gear for Awesome Animals

Veterinarian Starter Kit crate
scissors
tape
pencil
paper
music player
markers or crayons
3 cups whole wheat flour
2 eggs
1 cup 100% pure pumpkin puree
mashed banana
baking sheet
parchment paper
cookie cutters (optional)
rolling pin (optional)

Kiwi Camp Day 4

Meet a Veterinarian

Watch 9-year-old animal lover and aspiring veterinarian Ali interview Dr. Niccole Bruno, a veterinarian at the Animal Companion Hospital in Texas.

What is a veterinarian?

A veterinarian is a doctor who treats animals. Vets do careful checkups to figure out what's wrong with a sick animal, give them medicine, and even do surgery. Some veterinarians treat pets, while others work with zoo animals, farm animals, or even wild animals!

Who is Dr. Niccole Bruno?

Dr. Niccole Bruno has been a veterinarian for 15 years, but she's wanted to be a vet since she was just a kid! When she's treating an animal, she pays attention to everything from its teeth to its organs to its allergies. (That's right — animals have allergies, too!) Besides being the chief veterinarian at the hospital where she works, she's also a mentor to veterinary students, helping them become the amazing animal doctors of tomorrow.

If you were a veterinarian, what kinds of animals would you care for? What pets would you have?

CAMP KiwiCo

Kiwi Camp Day 4

Make Your Own Dog Treats

You'll need

- 3 cups whole wheat flour
- 2 eggs
- 1 cup 100% pure pumpkin puree
- mashed banana
- baking sheet
- parchment paper
- cookie cutters (optional)
- rolling pin (optional)

Step 1

Watch the Make Your Own Dog Treats video at **kiwico.com/camp/kiwi/day4**.

Step 2

Preheat your oven to 350°F (177°C).

Step 3

Mix the eggs, pumpkin, and mashed banana together. Add flour and stir until it's all mixed in.

Step 4

If you're using cookie cutters, lightly dust both your rolling pin and your work surface with flour. Roll out the dough and cut out your treats with a cookie cutter.

Step 5

If you're not using a cookie cutter, roll the dough into small balls and press them with your palm to flatten. Make smaller treats for small dogs, and bigger treats for big dogs.

Step 6

Put the cookies on a parchment-lined baking sheet and bake for about 20 minutes. Let them cool completely, then give them to your favorite canine friends!

What's so *paw*-some about dog treats?

If you want to teach a dog to sit, shake hands, or bark to the tune of your favorite song (!), you're going to need treats. Treats help your dog stay focused and understand when they're doing a trick right.

Some human foods (like grapes and chocolate) can make dogs really sick, while others (like pumpkins, apples, carrots, and cheese) are healthy and delicious. That's why you should always ask a vet before feeding a furry friend something new.

And remember, don't go overboard with the treats! Just like you wouldn't eat candy for dinner (even if you'd like to), a dog's diet should be made up of mostly healthy dog food . . . and just a few treats a day. (And no, they don't get to have *any* candy, even if they roll over for it.)

Kiwi Camp Day 4

Animal Ears Experiment

You'll need

- printable animal ear templates
- scissors
- tape
- pencil
- paper
- music player

Step 1

Cut out the printable animal ear templates. Ask your grownup for help!

Step 2

Roll a **cone ear** into a cone shape. Tape it down securely so it doesn't unroll. Repeat with the other cone ear.

Step 3

To wear the **rabbit ears**, fold the rounded ends around your ears, so the pointy ends stick up.

Step 4

Now draw and cut out your own pair of animal ears. What kind of ears will you make?

Step 5

Test your ears! Put on a pair, then ask a grownup to turn some music on.

- **How well can you hear if you point your ear toward the sound? What about if you face away?**
- **Can you hear better if you move the ears around, like animals do?**

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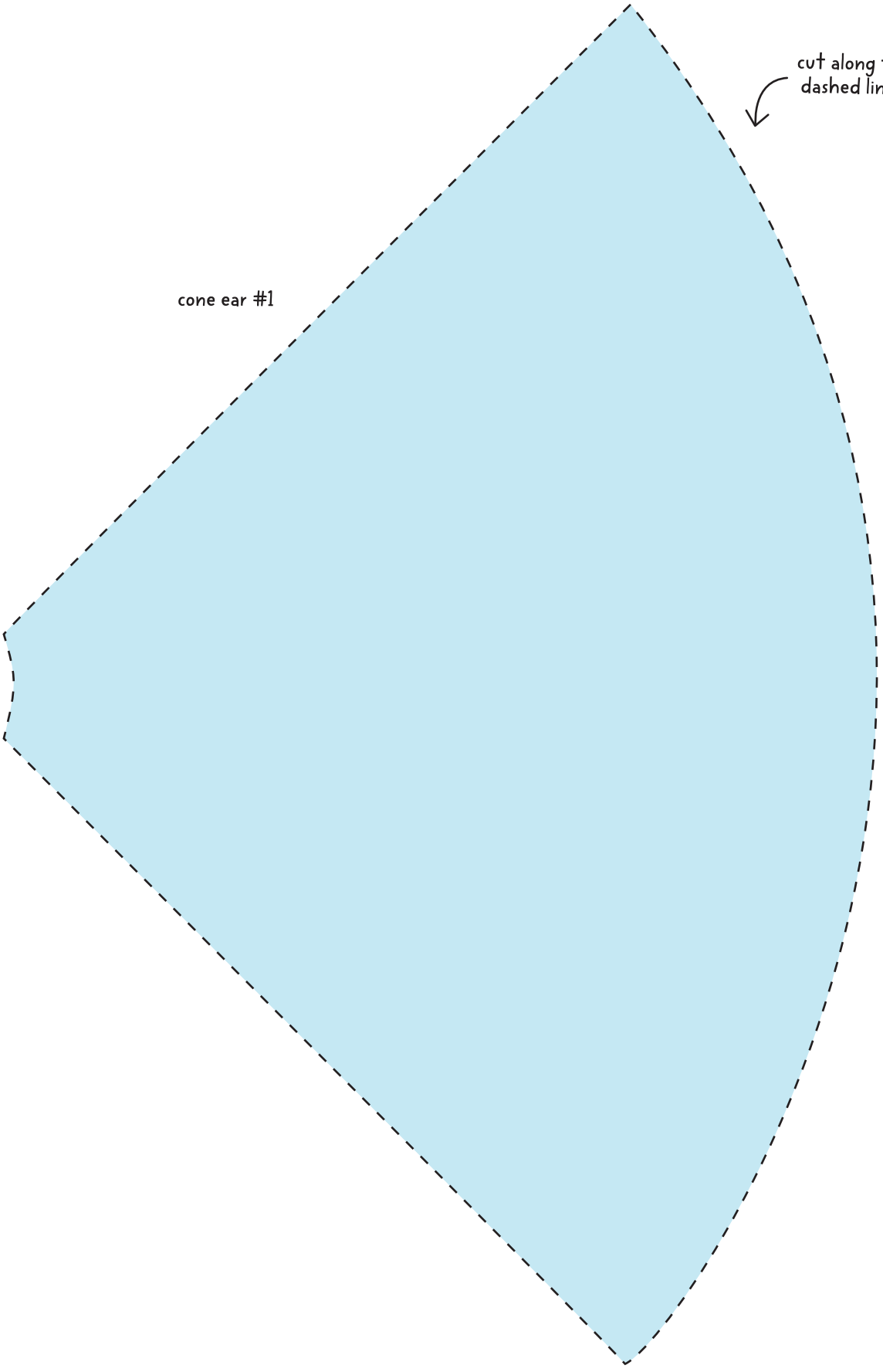
cut along the dashed lines!

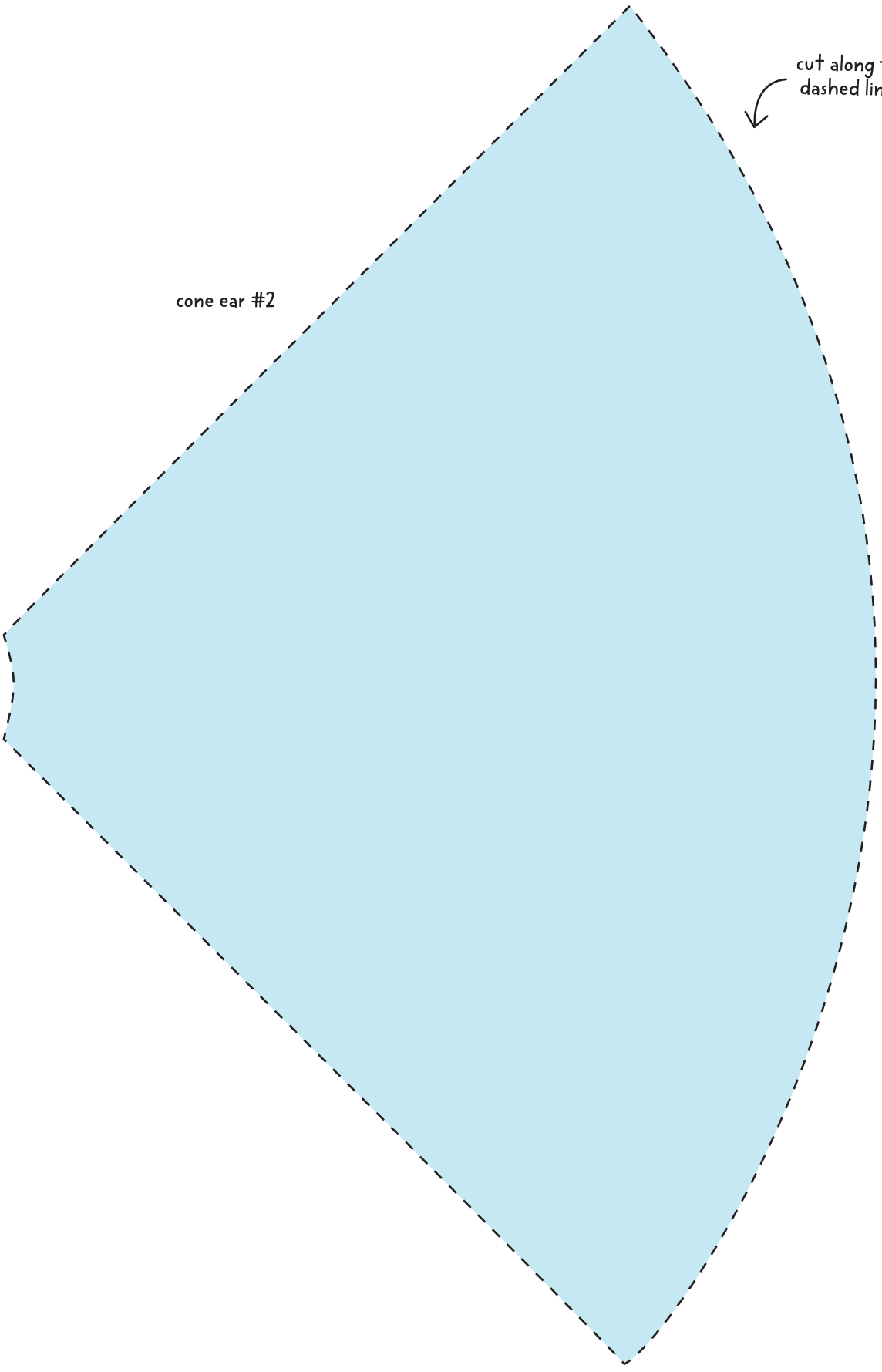
cone ear #1

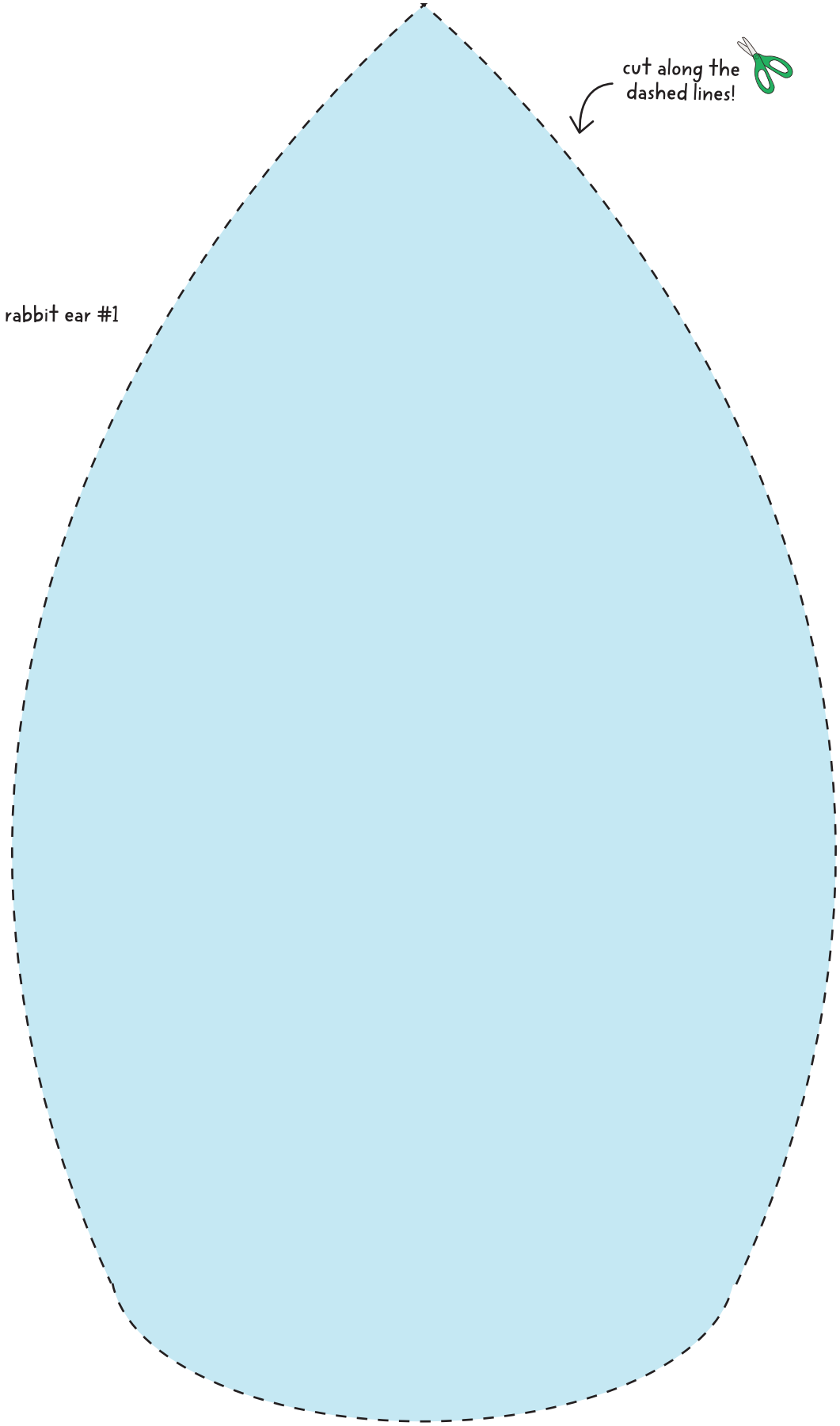


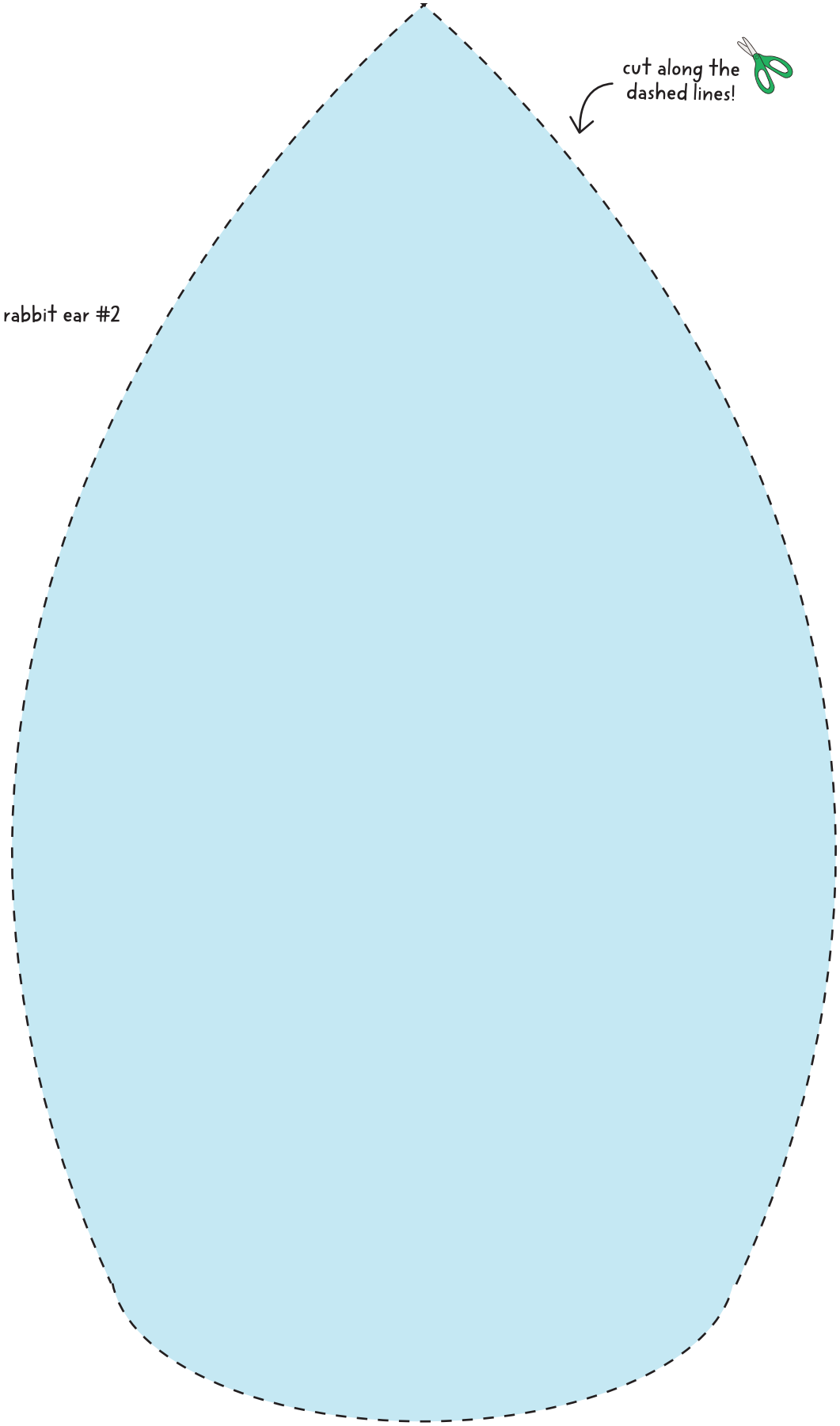
CAMP KiwiCo

cut along the dashed lines!

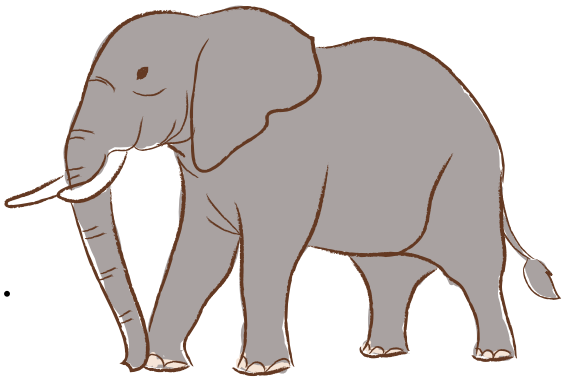
cone ear #2







Hear hear



Animal ears come in all shapes and sizes — because different animals need to hear different things.

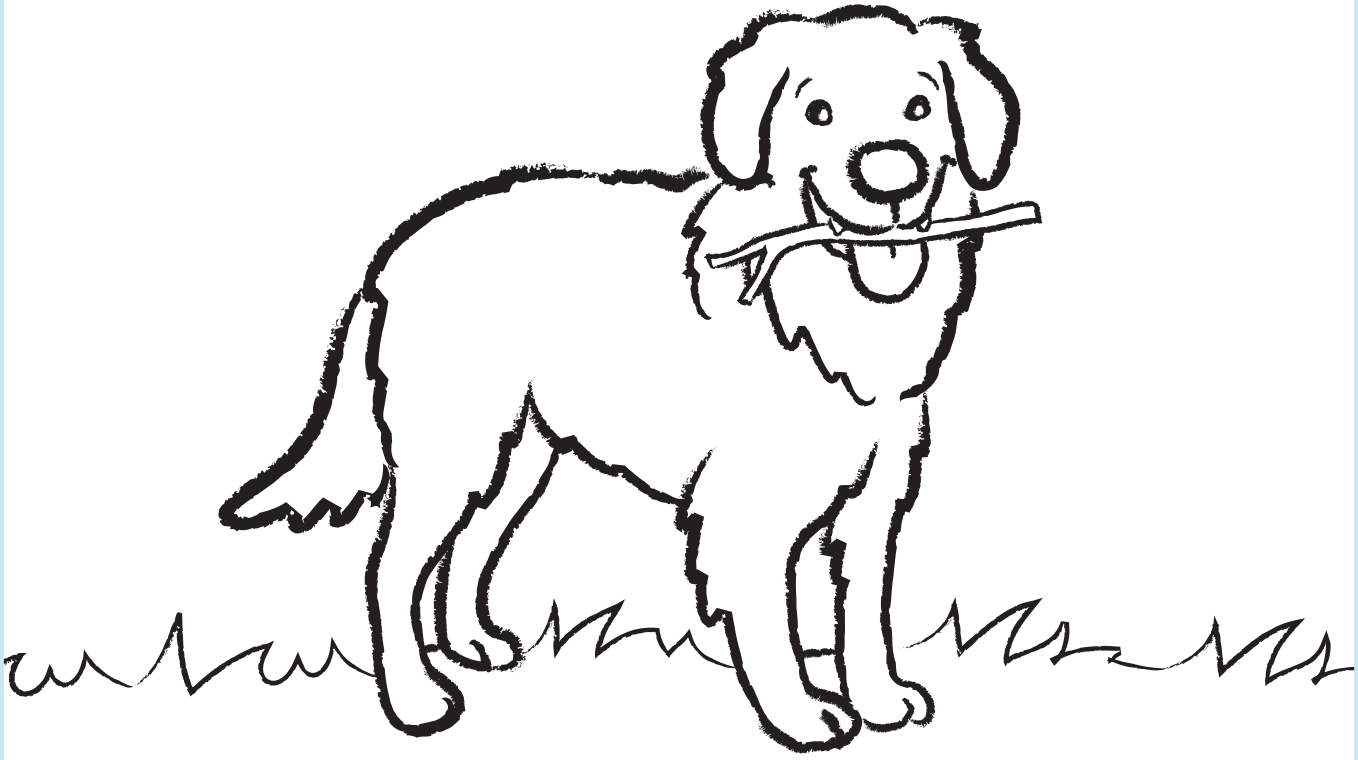
The ears of an **African elephant** are enormous — a single ear is bigger than all of you! That's how elephants can talk to each other from miles and miles away.

Certain **owls** have ear openings that are **asymmetrical**, meaning they don't match. The opening of one ear is higher than the other. Together, they help the owl figure out exactly where their prey is, and . . . *SNATCH!*

Rabbit ears are curved to help them pick up tiny sounds. Plus, rabbits can wiggle their ears around to figure out where the sounds are coming from. This helps them know when it's time to go — because there's a predator on the prowl!

Kiwi Camp Day 4

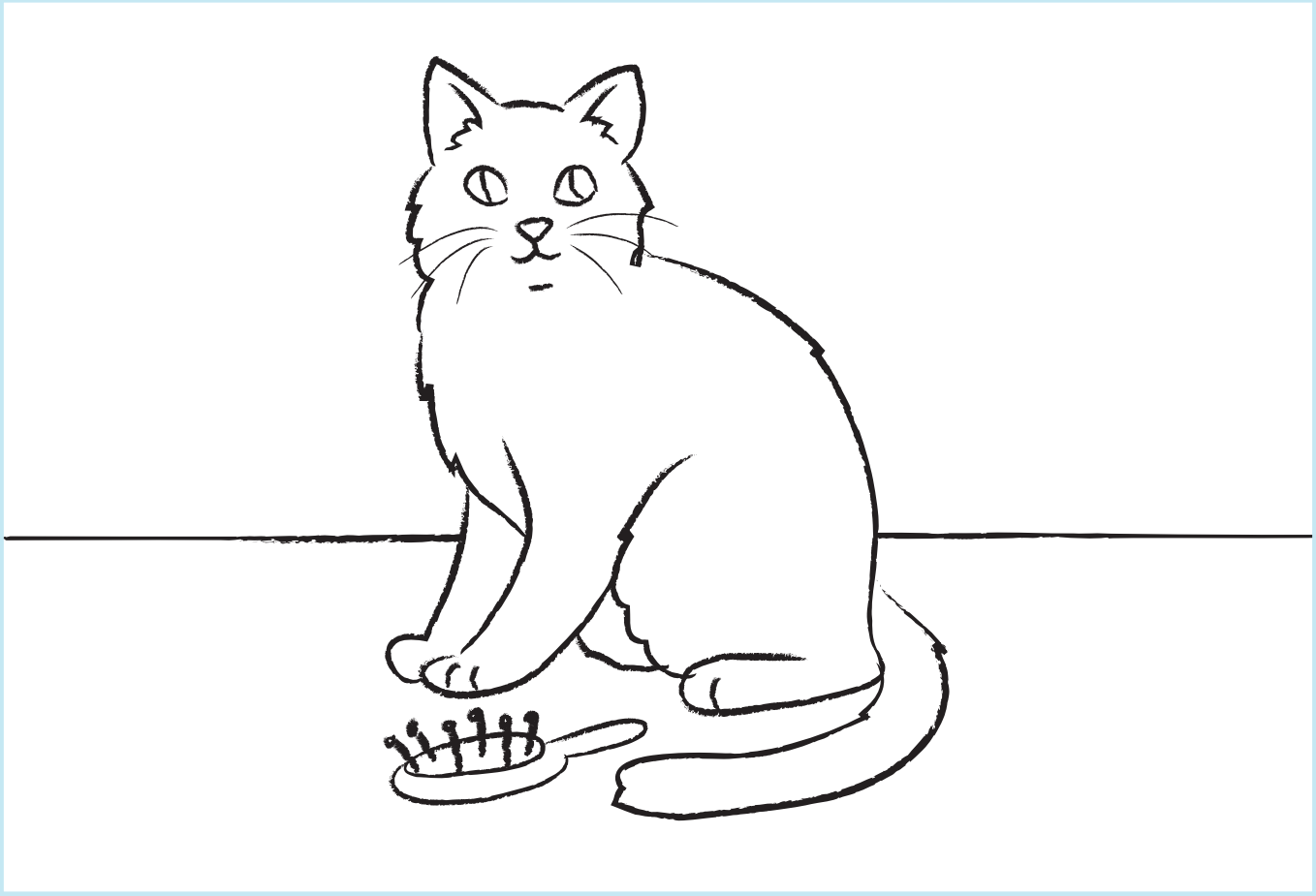
Playful Pets Coloring Cards



Pets need exercise.

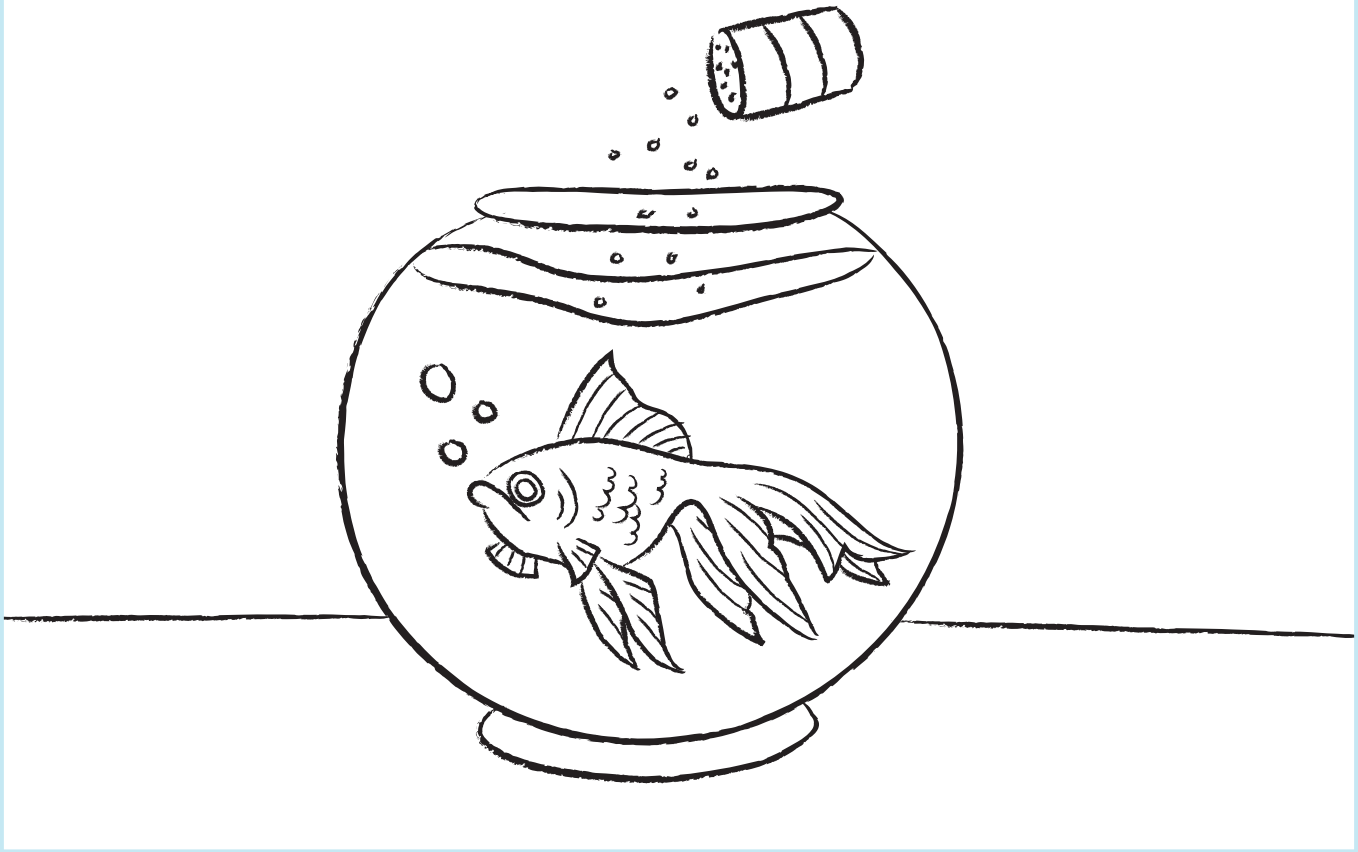
Wild dogs spend many hours a day running around in packs, hunting for food. Pet dogs don't have to hunt, but they still love a good game of fetch. Exercise keeps their bodies strong and their brains busy. (So they're less likely to chew up the couch!)

CAMP KiwiCo



Pets need grooming.

Cats have rough tongues covered in little pokey spines — kind of like combs! They lick themselves to clean and untangle their fur. But they also appreciate being brushed by their human friends; it makes them feel loved and cared for. If they trust you enough, they might even groom you back! *Meow.*



Pets need food.

A pet goldfish has no way to seek out its own snacks. It needs a human friend to feed it fish flakes, which can be made up of fish, squid, shrimp, clams, and all sorts of other healthy, hearty goodies.

Pets need shelter.

Guinea pigs need a cave-like place to hide away when they're scared, stressed, or sleepy. That's why their human friends put tunnels, huts, and other hiding spots inside their cages — so they feel safe and sound.

Pets need love.

Just like people, parakeets love attention. They like to cuddle with their human friends, climb all over them, or just hang out perched on their arm. You can show a parakeet love by talking to them and singing to them!

Kiwi Camp Day 5

Grownup Guide

Space Quest

Activity	Do and learn	Time needed
Solar System crate	**MAKE** a light-up space mobile. **EXPERIMENT** with a meteor-launch game. **LEARN** about our solar system.	90 minutes or more, plus drying time for the paint
Meet an Astronaut video	**WATCH** the video. **LEARN** about becoming an astronaut.	10 minutes
Jupiter Jar video	**WATCH** the video. **MAKE** a swirly, glittery Jupiter jar. **LEARN** about Jupiter's atmosphere.	40 minutes
Planet Run printable	**MAKE** a scale model solar system. **PLAY** and run to the planets. **LEARN** the distances to the planets.	40 minutes or more
Space Sudoku printable	**PLAY** sudoku puzzles. **LEARN** math skills.	30 minutes

Today, your camper will explore space with an astronaut and learn about our solar system! You can do these activities in any order you like, extend something if your kiddo is really into it, or cut things short if they're ready to move on. *(And don't forget to schedule time to visit the canteen for snacks — camp is hungry work!)* When you're ready to get started, it's easy as 1-2-3.

1. Just bookmark **kiwico.com/camp/kiwi/day5**,
2. print this guide,
3. and gather your gear.

Done? High five! We hope you and your camper have an awesome time making and learning together at Kiwi Camp, and we'd love to see what you create. Tag us with #kiwico to show off, or just to say hi!

See you at camp!
The Camp KiwiCo team

Gather your gear for Space Quest

Solar System crate

scissors

clear jar with strong seal

red and yellow liquid colors (like food coloring)

water

3 tablespoons mica powder (red and yellow works best — look for this with cosmetic crafting supplies)

markers or crayons

pencil

timer

Kiwi Camp Day 5

Meet an Astronaut

Watch 9-year-old aspiring astronaut Aden interview Dr. Ellen Ochoa, a veteran NASA astronaut who has spent nearly 1,000 hours in space.

What is an astronaut?

An astronaut is someone who travels to outer space to study and explore what's out there. Different astronauts may be pilots, engineers, scientists, and doctors, but they all have something in common — they're highly trained to survive the challenges of spaceflight!

Who is Dr. Ellen Ochoa?

Dr. Ellen Ochoa is a scientist, inventor, and the world's first Hispanic woman astronaut. She flew on four space shuttle missions — conducting experiments, studying the effects of the Sun on Earth's atmosphere, and even launching a research satellite using a robotic arm. Besides being a science superstar, Ochoa also loves music. She's great at playing the flute, on Earth or in space!

If you were an astronaut, what would you explore? Imagine a mission that you'd go on!

CAMP KiwiCo

Kiwi Camp Day 5

Jupiter Jar

You'll need

clear jar with strong seal

red and yellow liquid colors (like food coloring)

water

3 tablespoons mica powder (red and yellow works best — look for this with cosmetic crafting supplies)

Step 1

Watch the Jupiter Jar video at **kiwico.com/camp/kiwi/day5**.

Step 2

Add the mica powder to the jar.

Step 3

Fill the jar to the top with water. Make sure it doesn't overflow!

Step 4

Add 1 drop of yellow liquid color and 1 drop of red liquid color.

Step 5

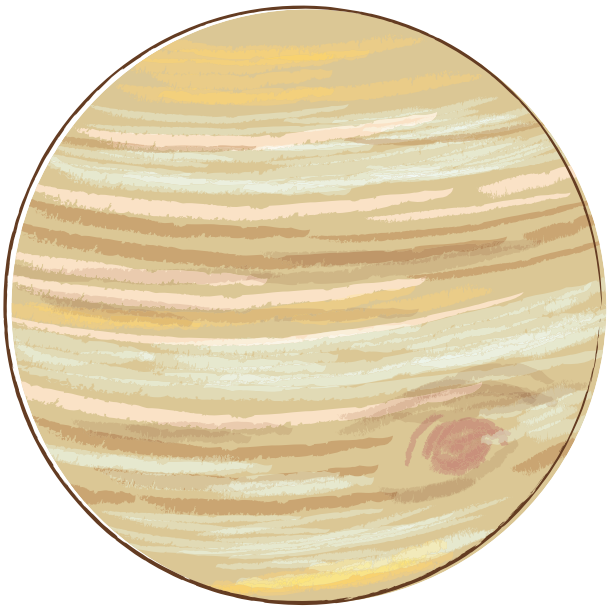
Seal the jar and shake!

Step 6

You made a Jupiter jar! Try spinning it like a planet to watch the liquid move and swirl — just like the gases move on Jupiter.

CAMP KiwiCo

Meet Jupiter



Earth's surface is made up of solids and liquids — like rocks, dirt, and lots of water. But the surface of Jupiter is just colorful streams of whirly, swirly gas. That's why it's called a **gas giant**.

Mostly, its surface is made up of two gases — hydrogen and helium. **Helium gas** is the stuff inside floating party balloons and blimps. **Hydrogen gas** was once used in blimps as well, but not anymore — because it tends to catch fire easily!

Hydrogen and helium are both colorless gases. So what gives Jupiter its amazing red, orange, yellow, and brown colors? Scientists think it might be the chemicals and minerals that make up the storm clouds in its sky!

Kiwi Camp Day 5

Planet Run

You'll need

- printable Sun and planets
- scissors
- markers or crayons
- timer

Step 1

Color in your printable Sun and planets. Then ask a grownup to cut them out.

Step 2

Find a big, open space outside, where you can run.

Step 3

Start from one side. Place the Sun on the ground. (You can weigh it down with something heavy if it's a windy day.)

Step 4

You're going to use your feet (your actual feet!) to measure out the distances between the planets.

One length of your foot represents about 10 million miles (16 million km)!

Starting at the Sun, measure out 3 lengths of your foot, standing toe-to-toe, then place Mercury on the ground.

Step 5

Measure out another 3 feet, then place Venus on the ground.

Step 6

Measure out another 3 feet, then place Earth on the ground.

Step 7

Measure out 5 feet, then place Mars on the ground.

Step 8

Measure out 32 feet, then place Jupiter on the ground.

Step 9

Measure out 39 feet, then place Saturn on the ground.

Step 10

Measure out 85 feet, then place Uranus on the ground.

Step 11

Measure out 100 feet (!), then place Neptune on the ground.

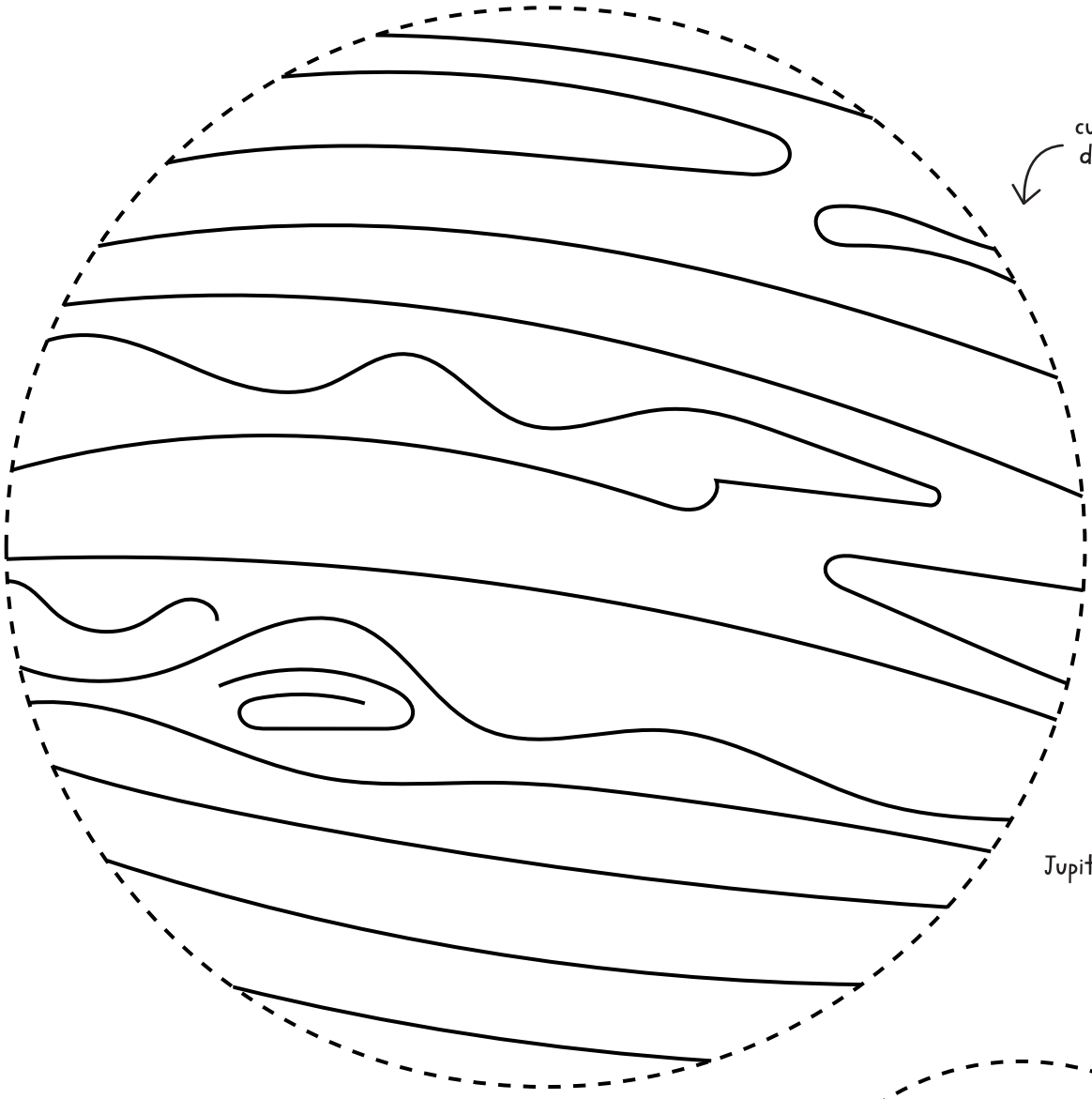
Step 12

Go for a planet run! Start at the Sun, then blast off to each one of the planets. Ask a grownup to time how long it takes you to get to Neptune.

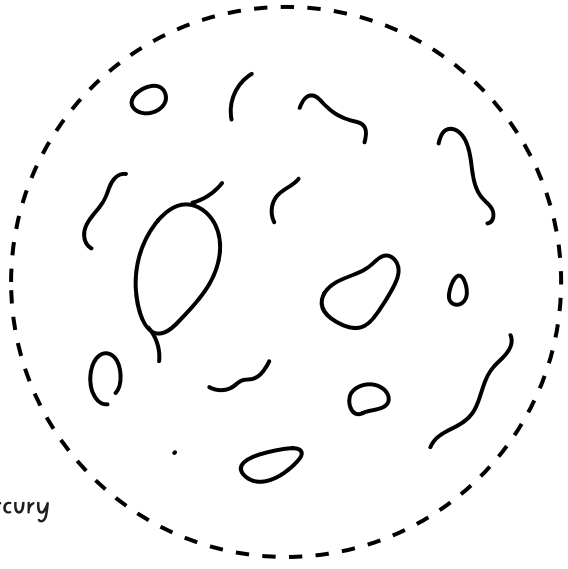
In real life, it took a spacecraft *12 years* to get from Earth to Neptune!

* size of planets not to scale

cut along the dashed lines!



Jupiter

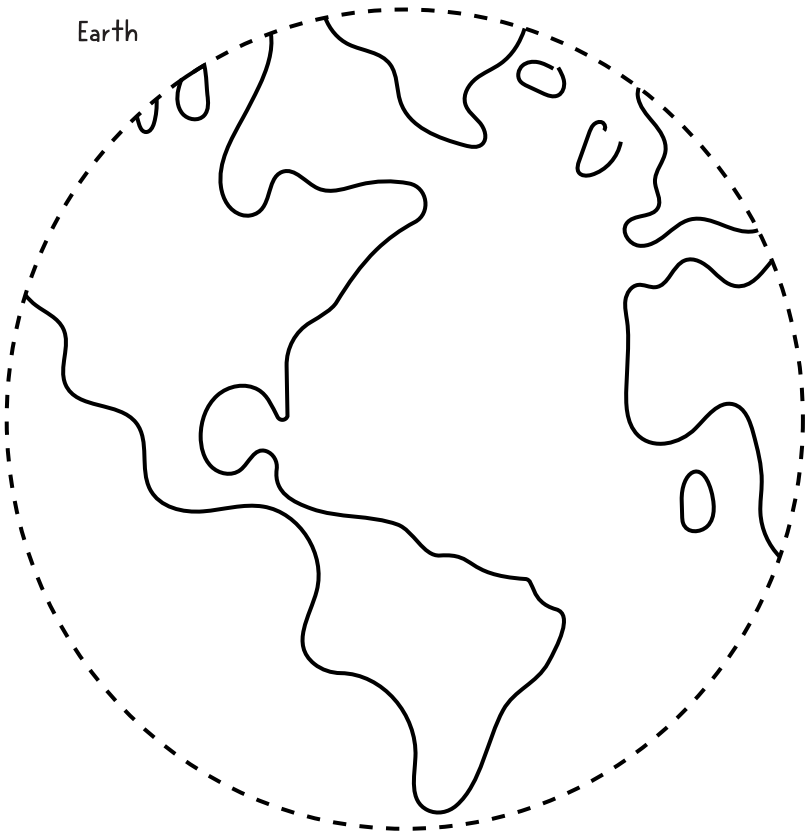


Mercury

CAMP KiwiCo

* size of planets not to scale

Earth



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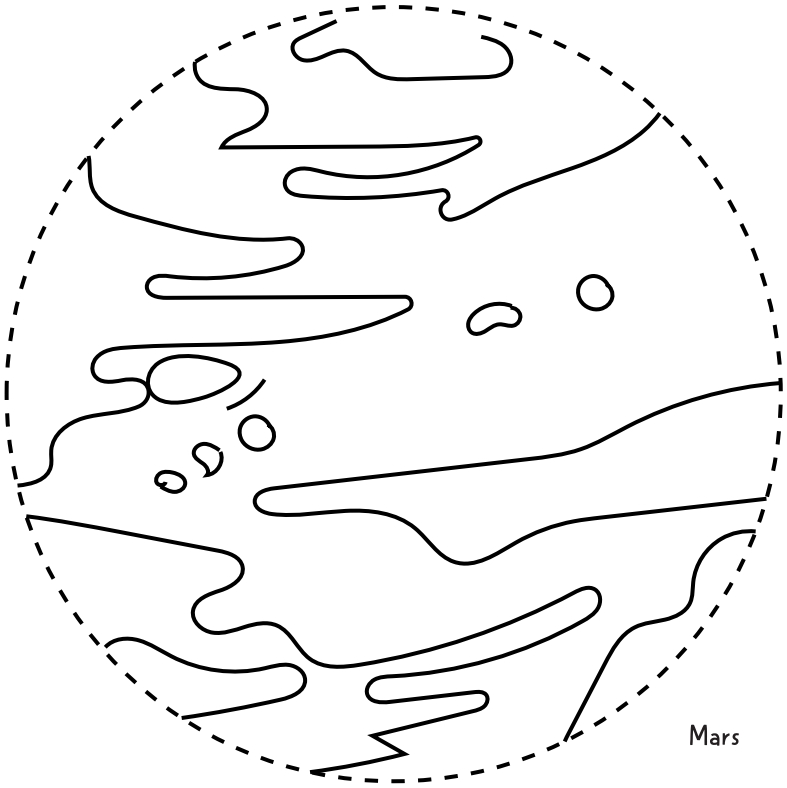

Mars

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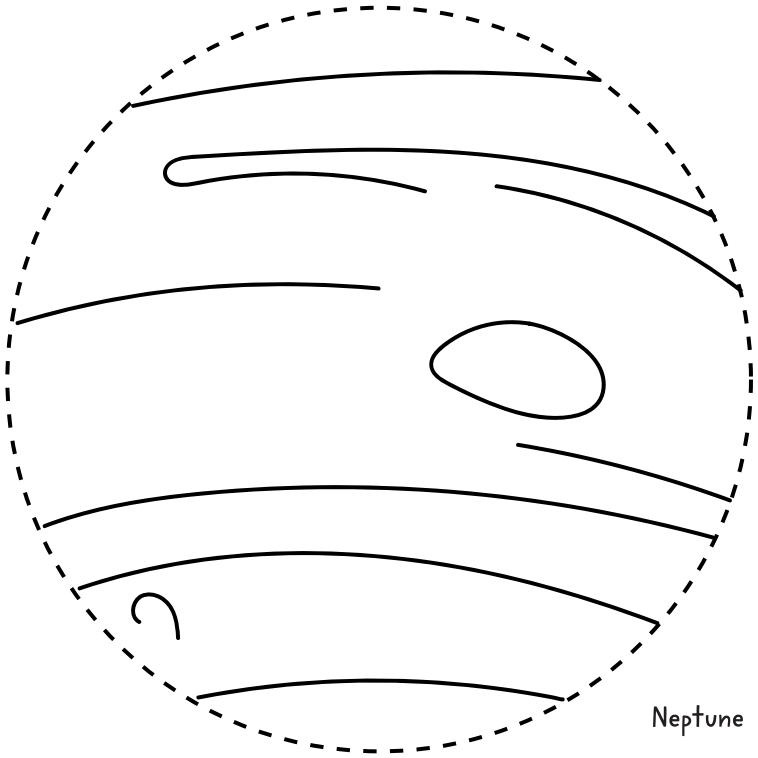
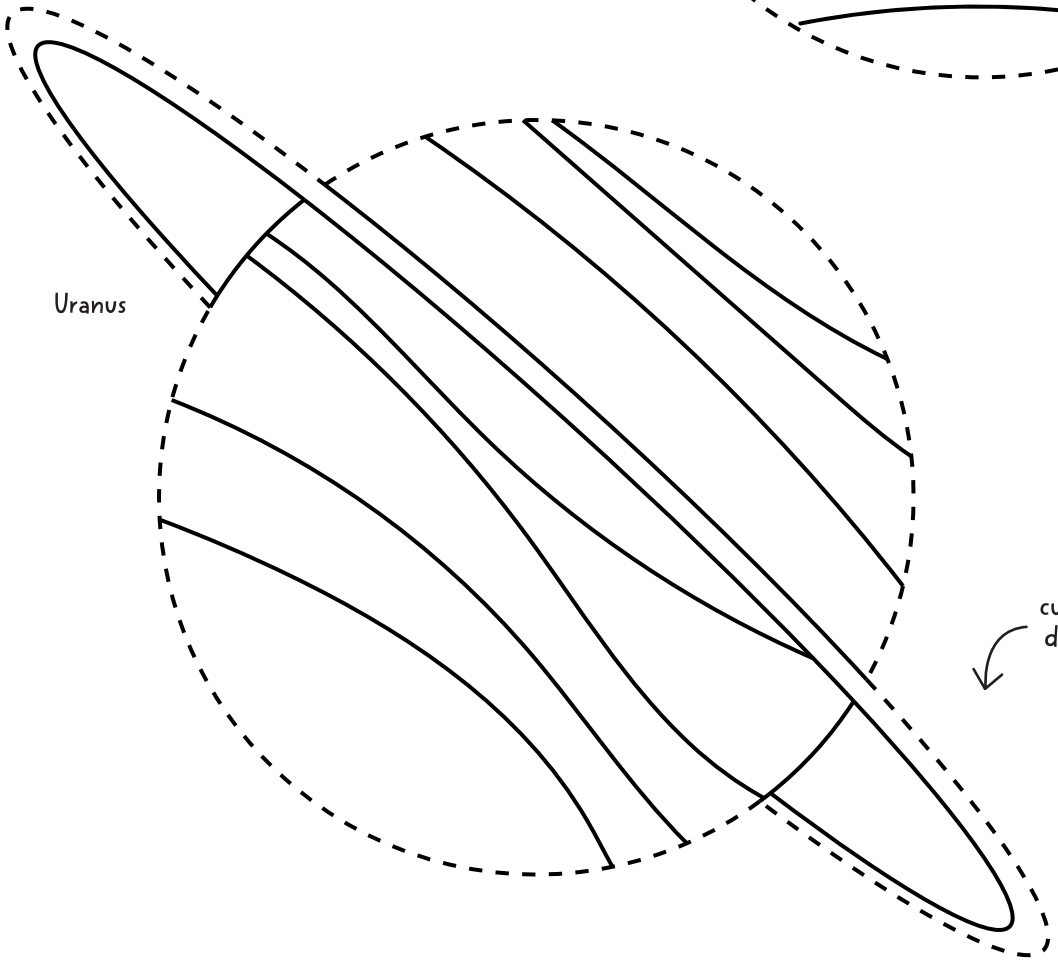


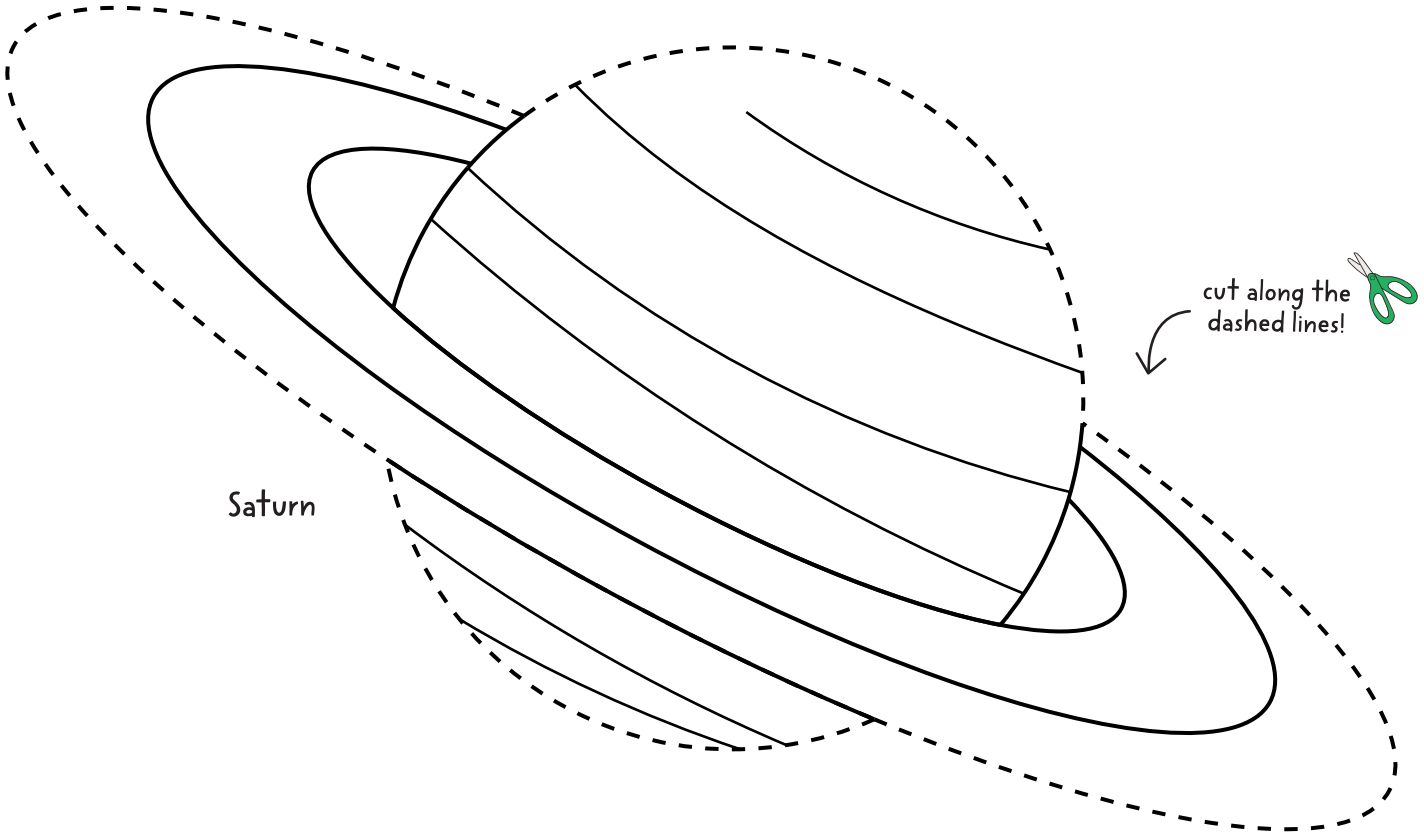
Neptune

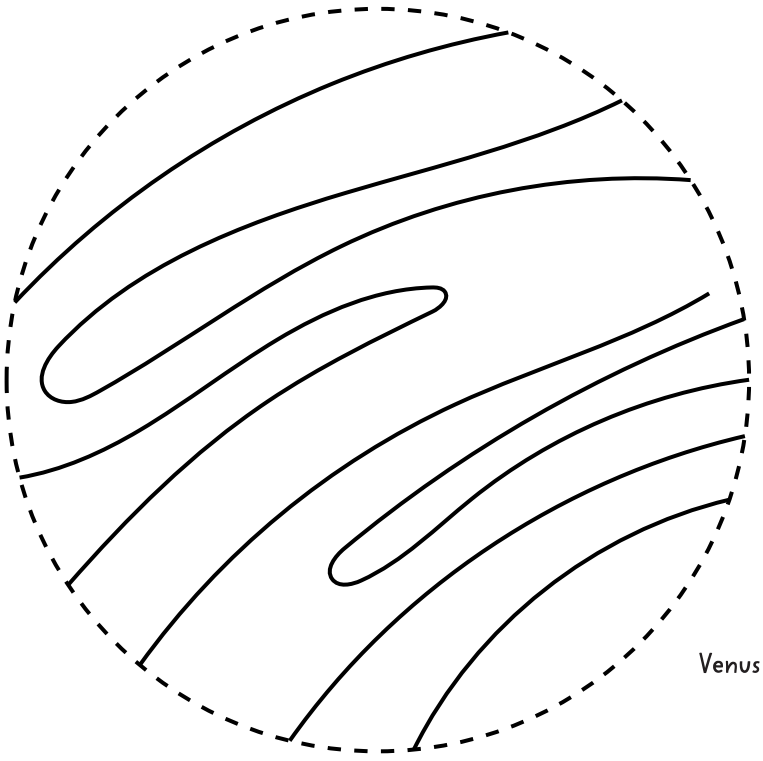


Uranus

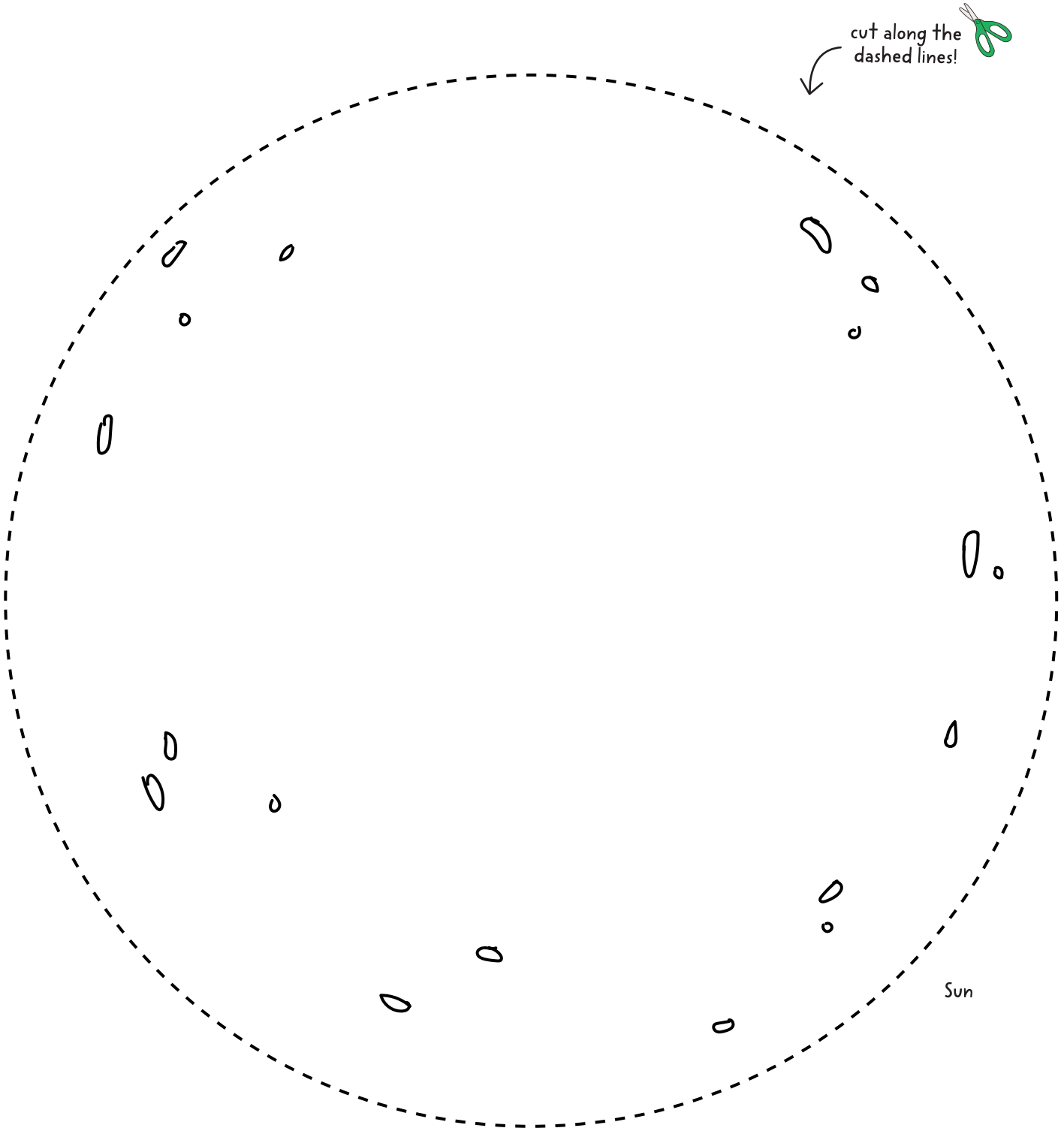
cut along the dashed lines!

* size of planets not to scale





* size of planets not to scale



Kiwi Camp Day 5

Space Sudoku

You'll need

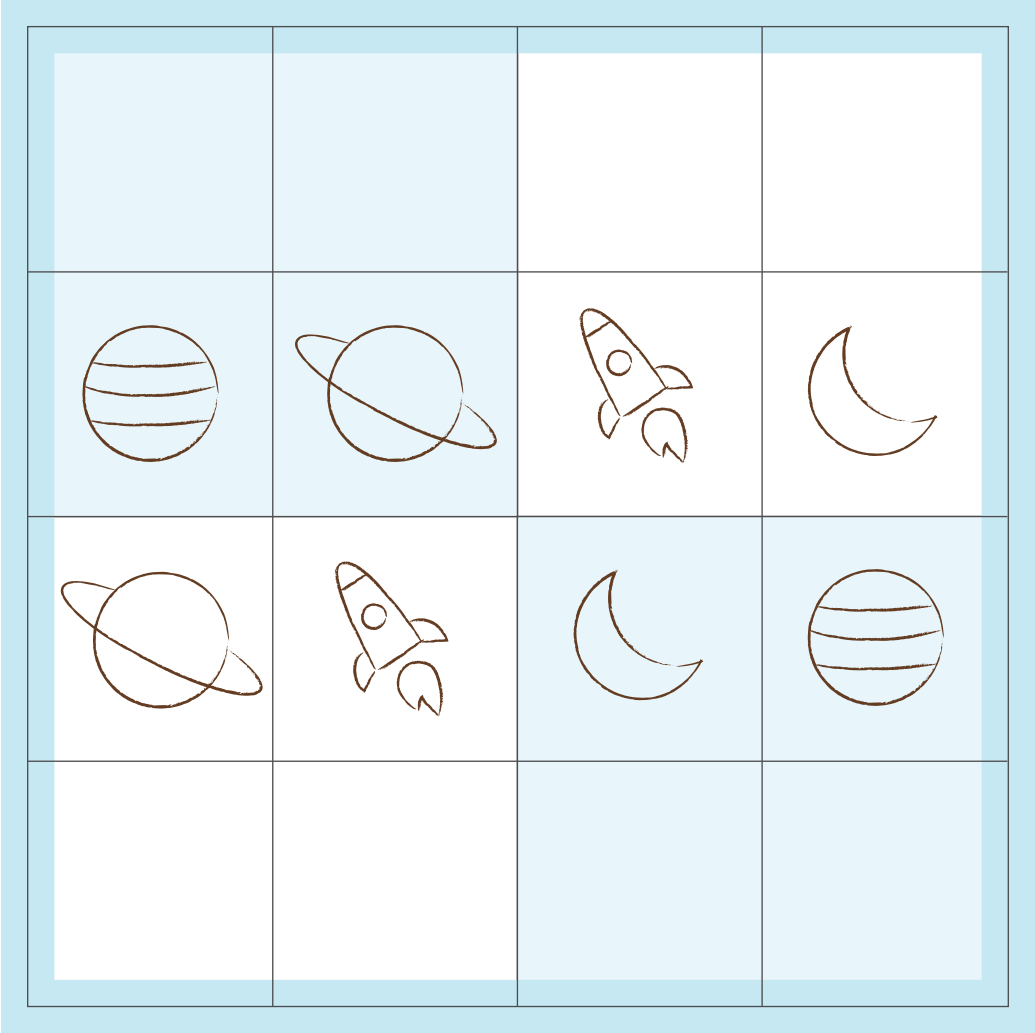
printable space sudoku puzzles

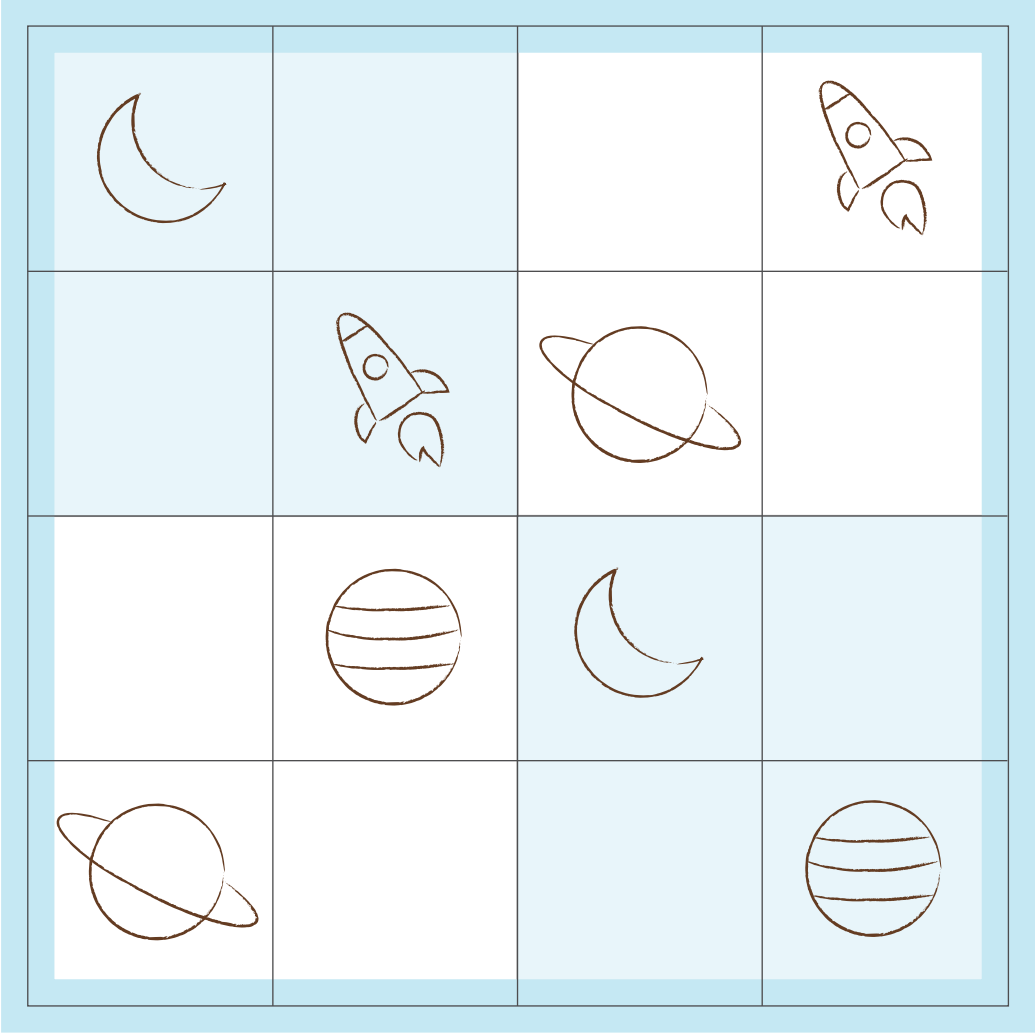
pencil

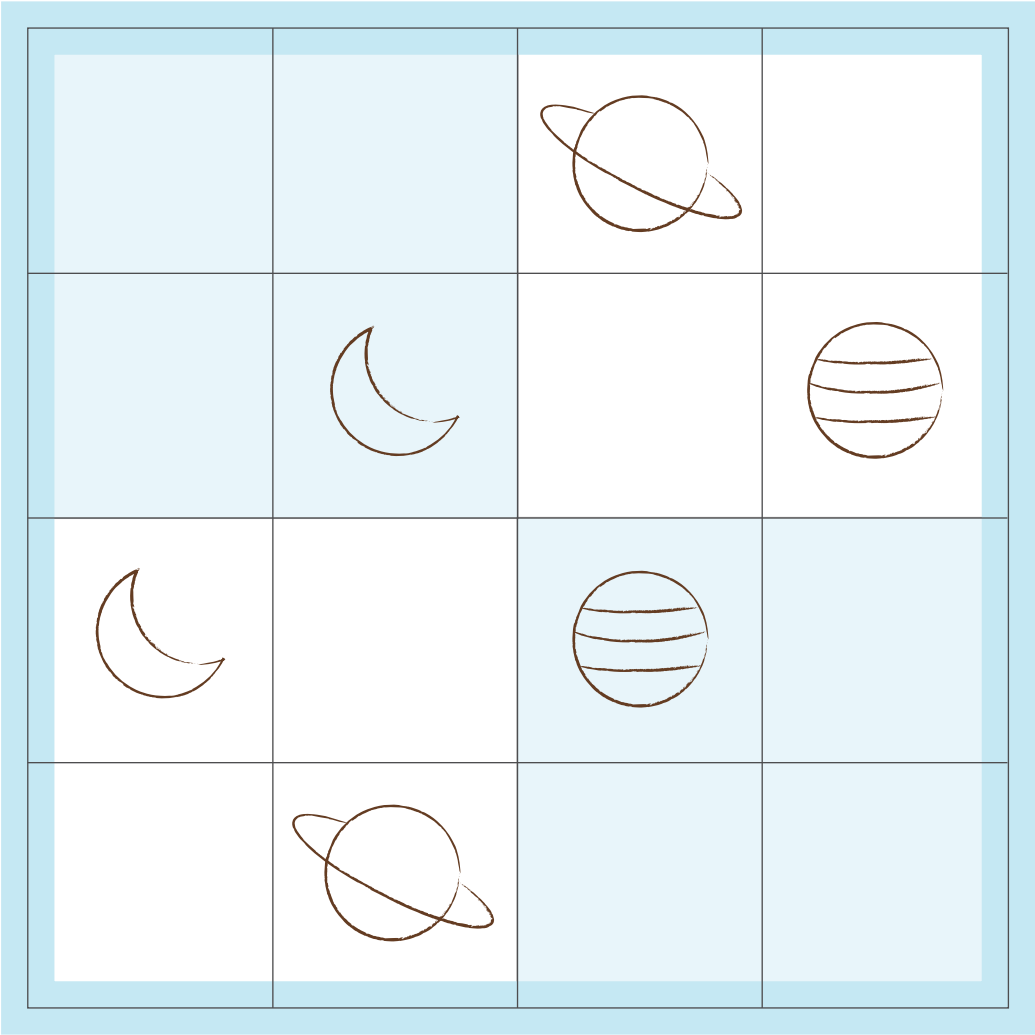
How to play

There are four shapes in each puzzle, and your job is to fill in the missing ones. But you have to follow these rules!

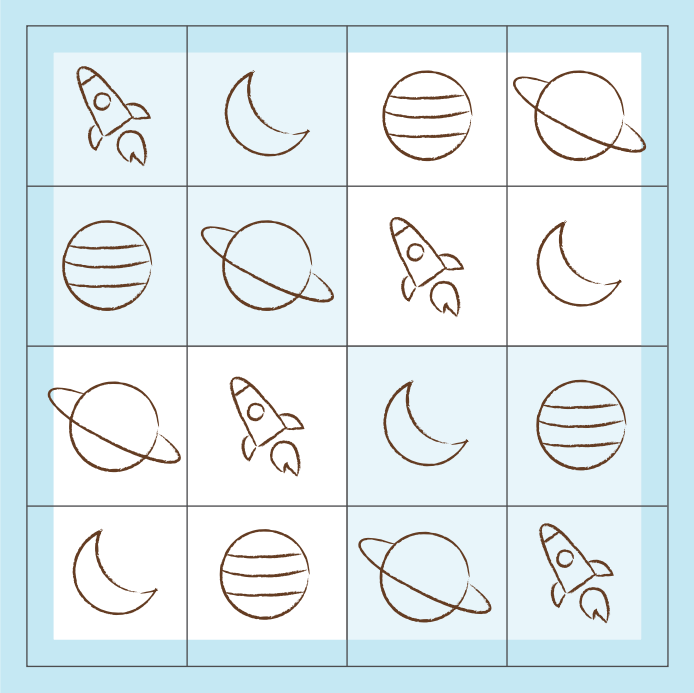
- Each shape can appear only once in each column.
- Each shape can appear only once in each row.
- Each shape can appear only once in each 2-by-2 box.

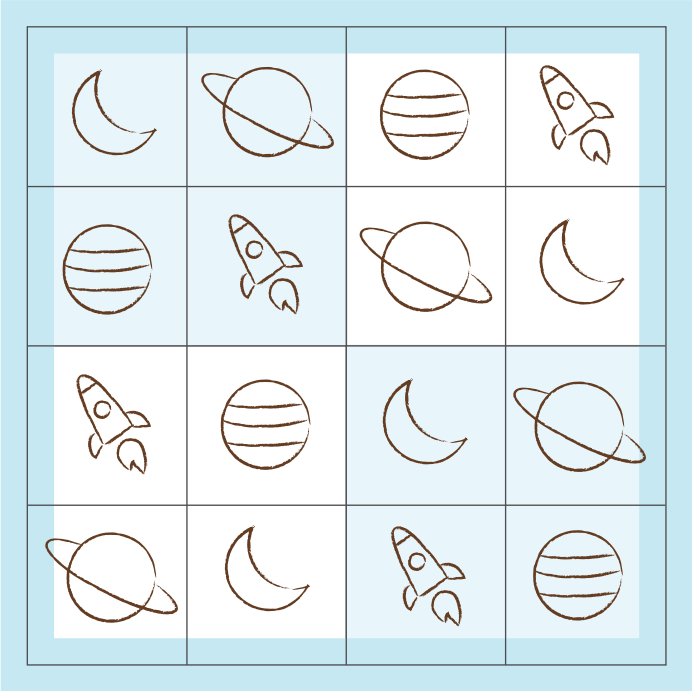


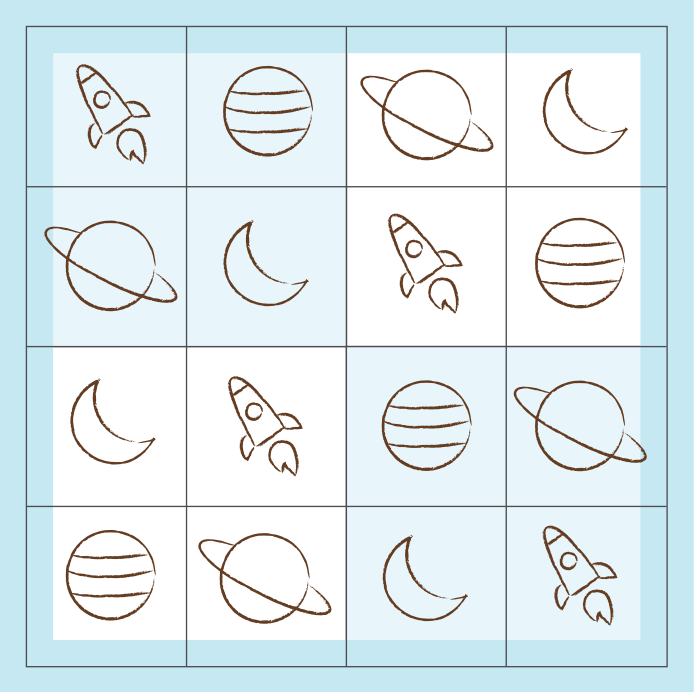




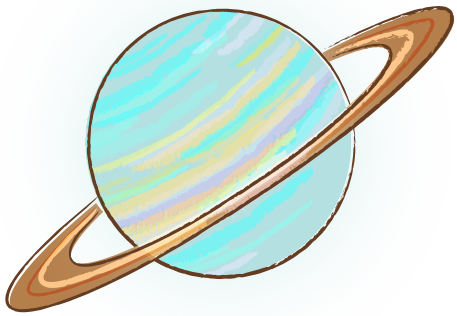
Answers







Fun facts



Jupiter is so big, it could fit over a *thousand* Earths inside of it. The giant storm on its surface (called the Great Red Spot) has been going on for hundreds of years!

Saturn is best known for its beautiful rings. The rings are made of countless bits of crushed-up rocks, ice, and dust. While Earth has just one moon, Saturn has 82 of them!

Why does the **Moon** look like it's changing shape from night to night? Because as it spins around Earth, different parts of it are lit up by the Sun.

To break free of Earth's gravity and enter space, a **rocket** has to travel about 7 miles per second (11 km per second). That's about 400 times faster than a car on the highway!