MEET YOUR BRAIN

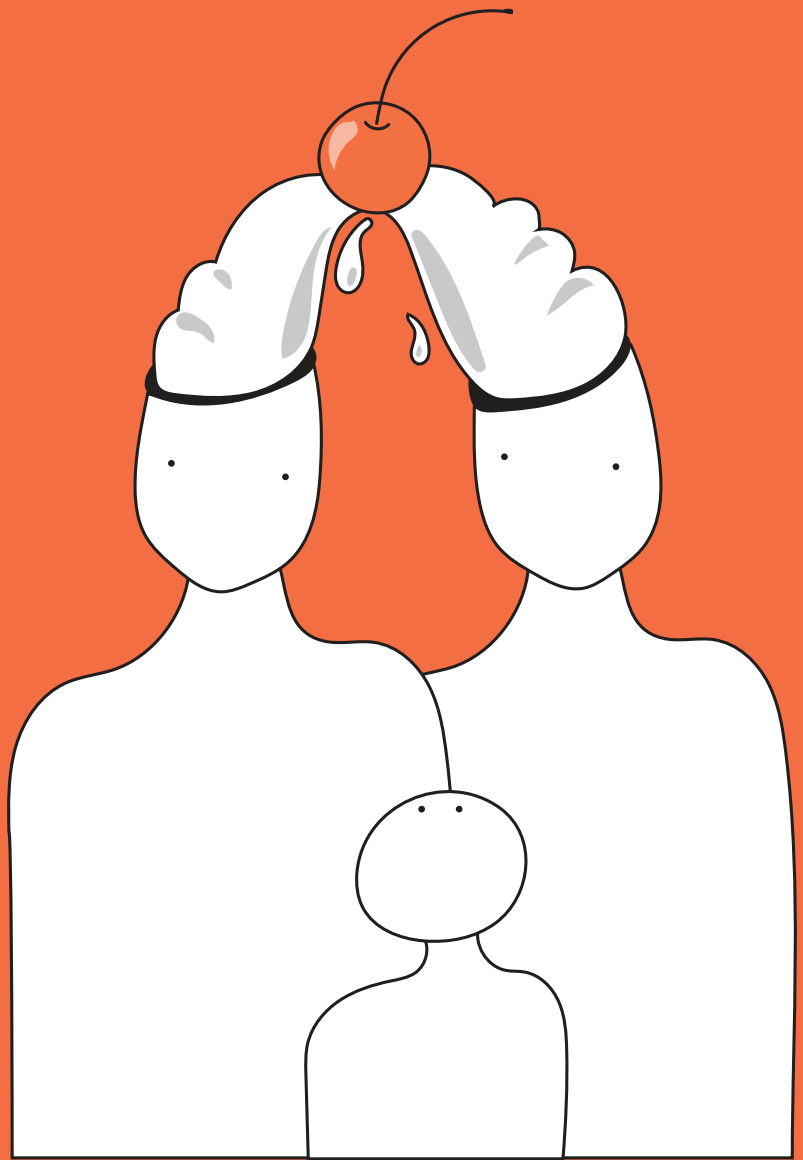
A playbook for parents to introduce the brain to children.


TO SOFYA

WHAT IS THIS?

Dear parents, teachers, grandparents, friends, and grown-up kids, **Meet Your Brain** is the first playbook of the HEART BRAIN KID set.
If you have this playbook, it means that you are interested in introducing the brain to a child and want to help her or him cultivate systems thinking.

This playbook includes a playful step-by-step guide that will help you and the child to explore the brain.

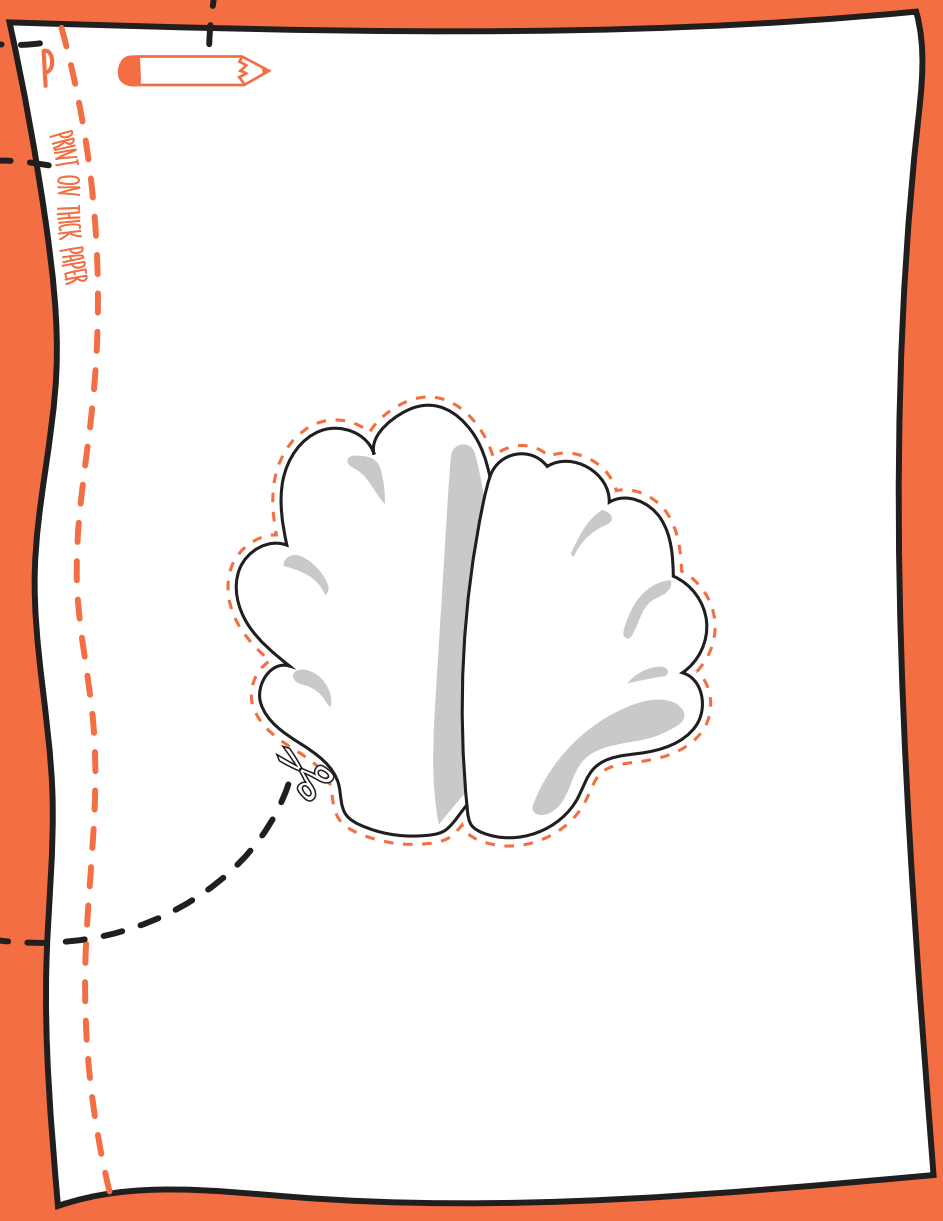


HOW TO USE THIS PLAYBOOK

There is no need to print
all of the pages of each exercise.
Just print the pages that
have a "P" in the top left corner.

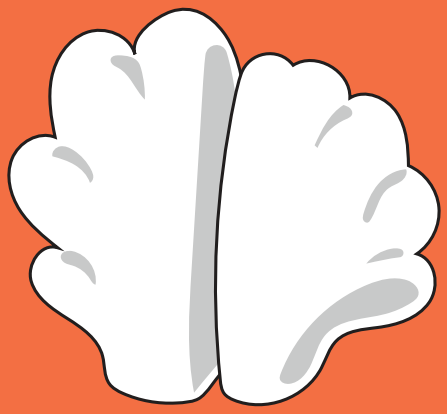
Tools you will need

Print the model pieces
on thick cardstock paper
so that they will be
structurally sound.



Cut out only when you see
scissors on the
dotted line.

LET'S PLAY TOGETHER AND DISCOVER THE BRAIN!



"If parents want to give their children a gift, the best thing they can do is to teach their children to love challenges, be intrigued by mistakes, enjoy effort, and keep on learning. That way, their children don't have to be slaves of praise. They will have a lifelong way to build and repair their own confidence."

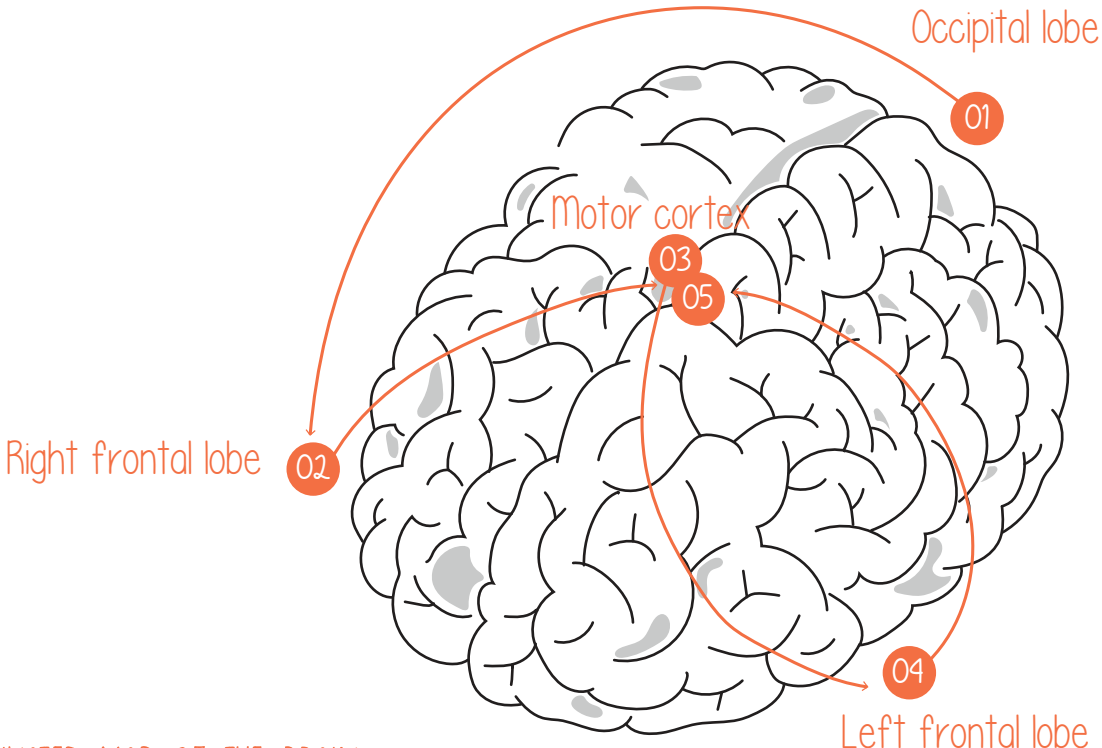
Carol Dweck,
author of Mindset (2006)

MEET YOUR BRAIN!

00. Warm up

Ask your child to personalize the image on the following page. Have the child visualize his or her brain and draw it in the glass bulb. Include some keywords around the bubble that the child associates with the brain's skills, talents, thoughts, and feelings.

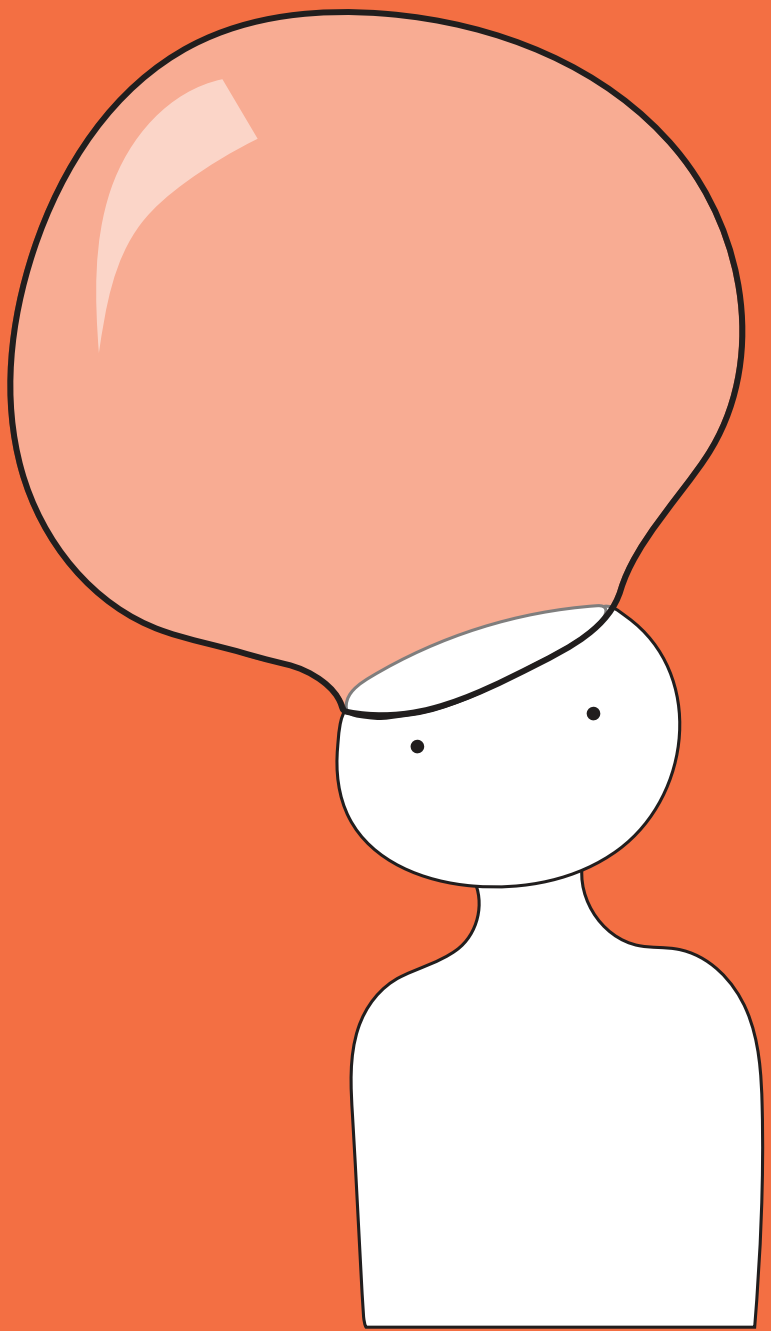
This exercise activates the brain's occipital lobe, its right and left frontal lobes, and its motor cortex.



ACTIVATED MAP OF THE BRAIN

My name is _____

I love my creative and playful brain!



THERE IS NO **YOU** WITHOUT A BRAIN

01. Where is your brain?

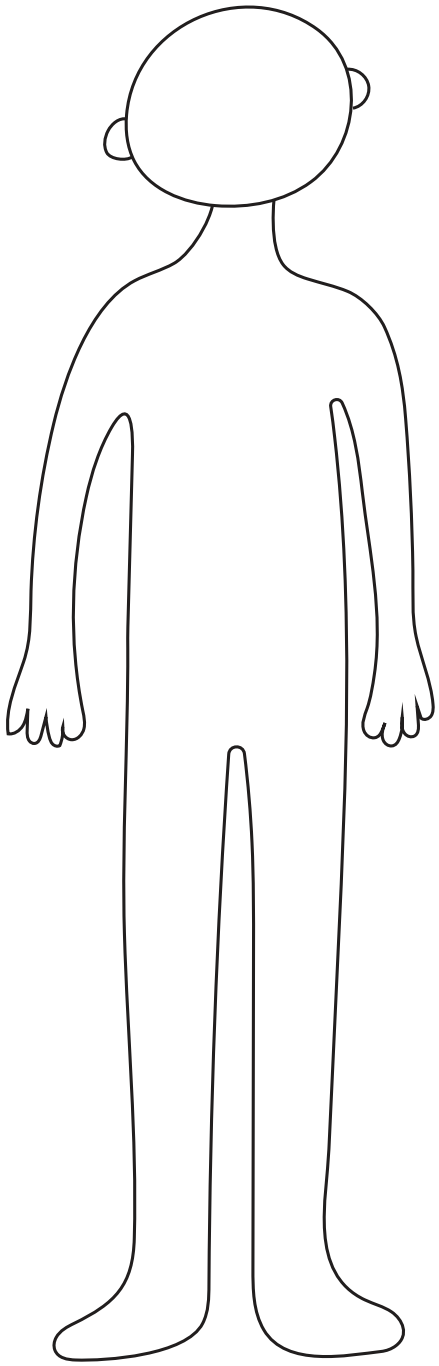
The aim of this exercise is to introduce the brain and what it looks like. But first, let's take a look at the many interconnected systems of the body by deconstructing the body into different layers. Allow the child time in each layer to ask questions and to try to understand the connections between the different systems.

For this next exercise, have your kid to draw herself or himself to begin creating a visual connection between her or his body and the material in these pages. Cut out the silhouette of the finished drawing. Then, cut out the other layers of the body and experiment with placing them over one another.

A SYSTEM IS A GROUP OF CONNECTED ELEMENTS IN ITS OWN ENVIRONMENT. A SYSTEM ADDRESSES A FUNCTION WHICH IS CONNECTED TO A BIGGER SYSTEM. IF YOU REMOVE ANY OF THESE ELEMENTS OR CHANGE ITS DYNAMIC, THE SYSTEM COLLAPSES AND CANNOT ACHIEVE ITS OBJECTIVES.

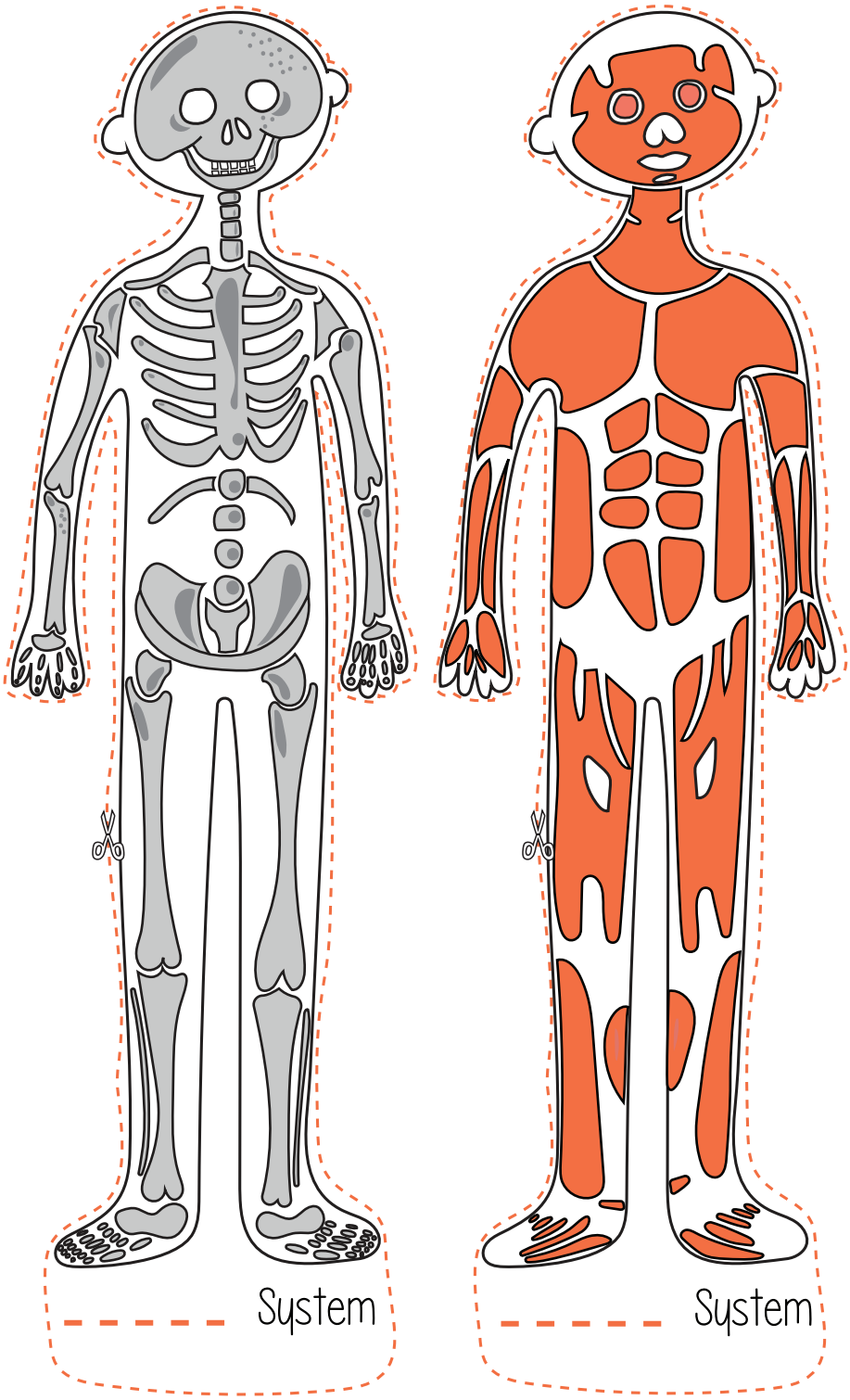
P

pencil, colored pencils, and scissors



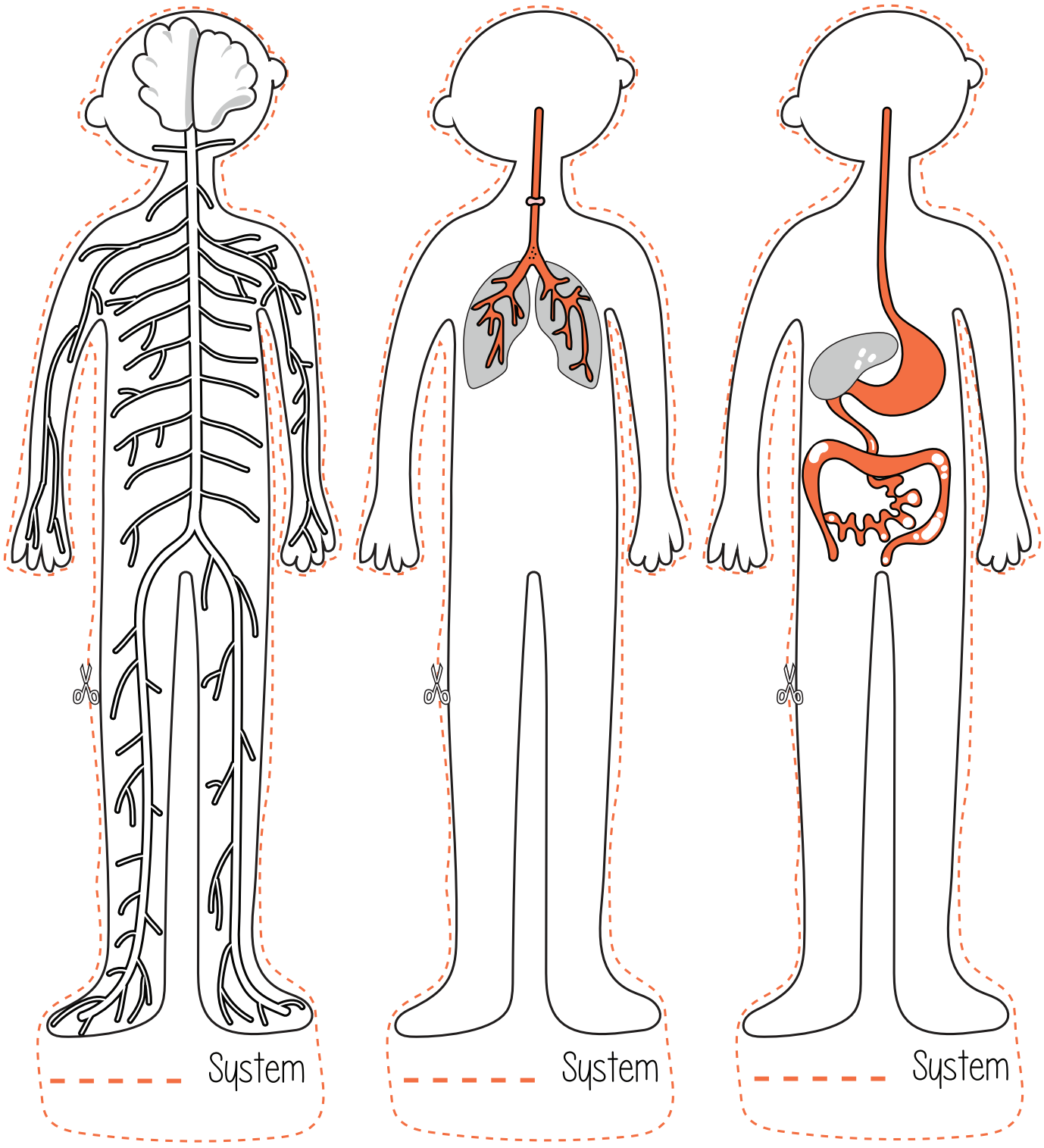
P

pencil and scissors

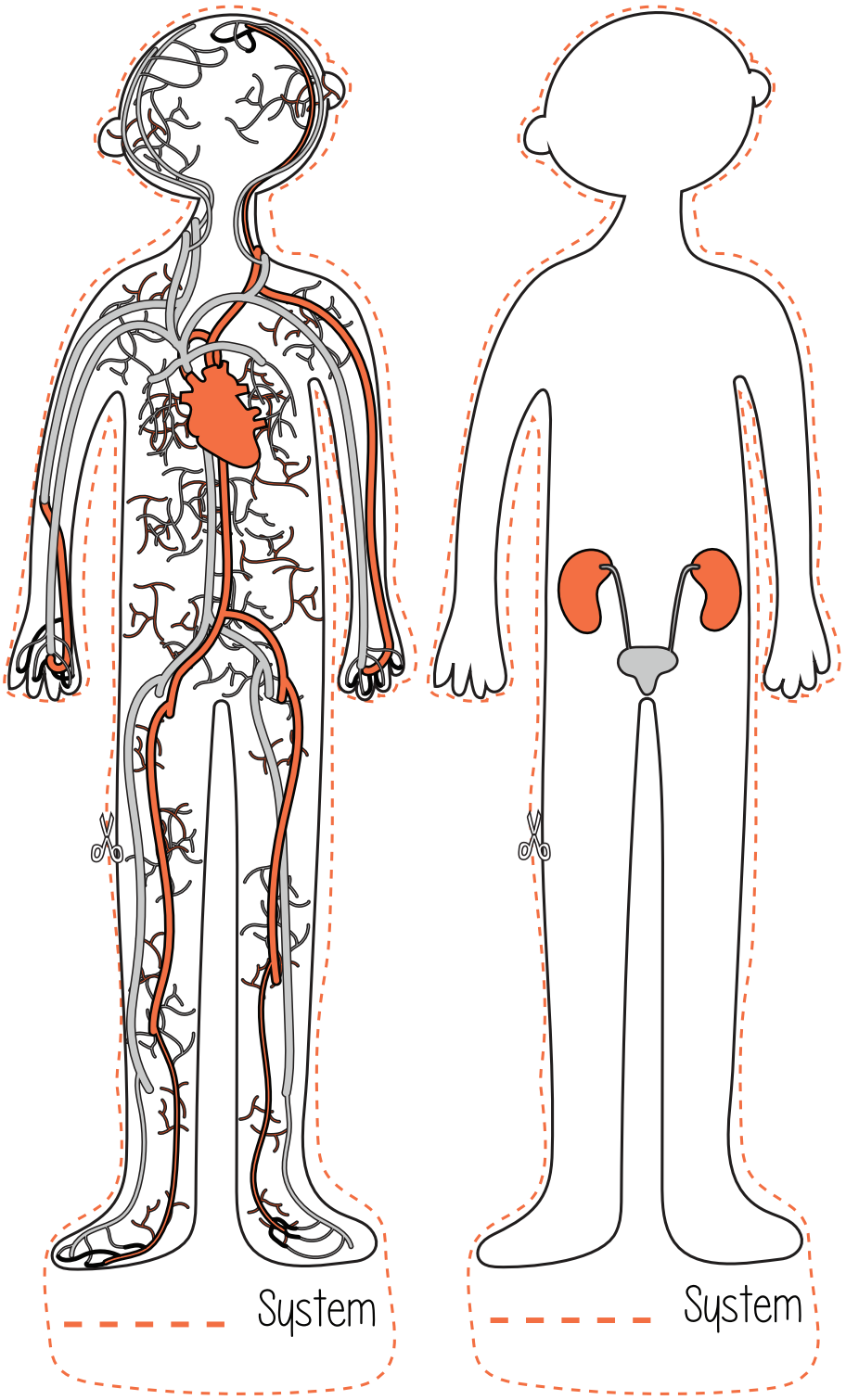


P

pencil and scissors



pencil and scissors



THE ANIMAL STORY

02. Every animal has a brain.

One way to better understand the human brain is to look at the brains of other animals. The size of an animal's body and brain are typically related with intelligence and speed. The brain response in big bodies takes more time than it does in small bodies, meaning distance matters in the nervous system. This exercise is aimed at helping your child to learn about different animals and to create empathy with them.

Get ready for some 3D crafting: it is time to play with animals!
Encourage your child to use his or her creativity to tell you the story of these animals and their interactions with one another.
This exercise will help to connect the right and left lobes of the child's brain and to encourage a visual, creative exploration.

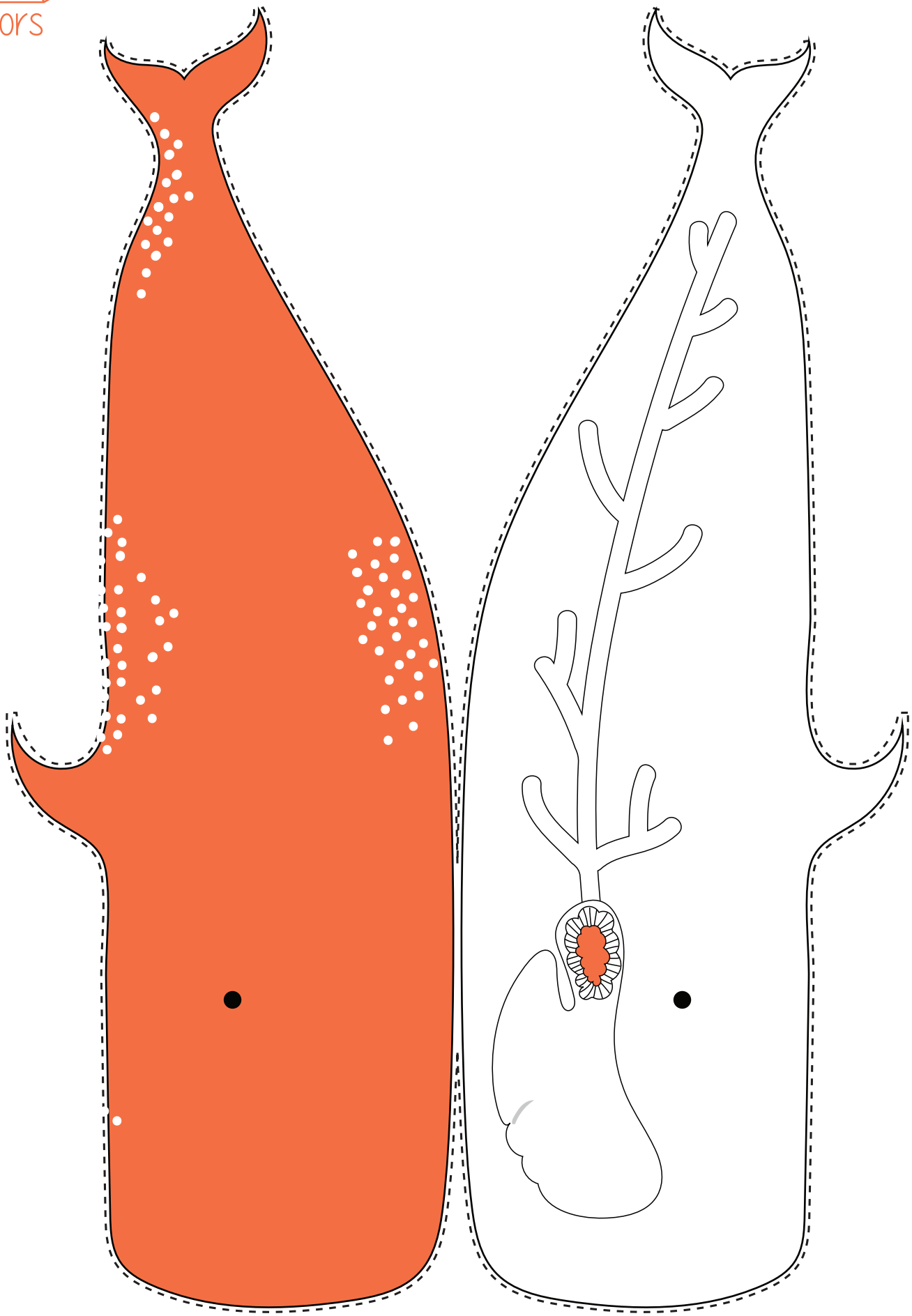
Write the story your child creates on the blank page that follows.

"The fact that they may not understand us, while we do not understand them, does not mean our 'intelligences' are at different levels, they are just of different kinds. When a foreigner tries to communicate with us using an imperfect, broken, version of our language, our impression is that they are not very intelligent. But the reality is quite different"

Professor Maciej Henneberg

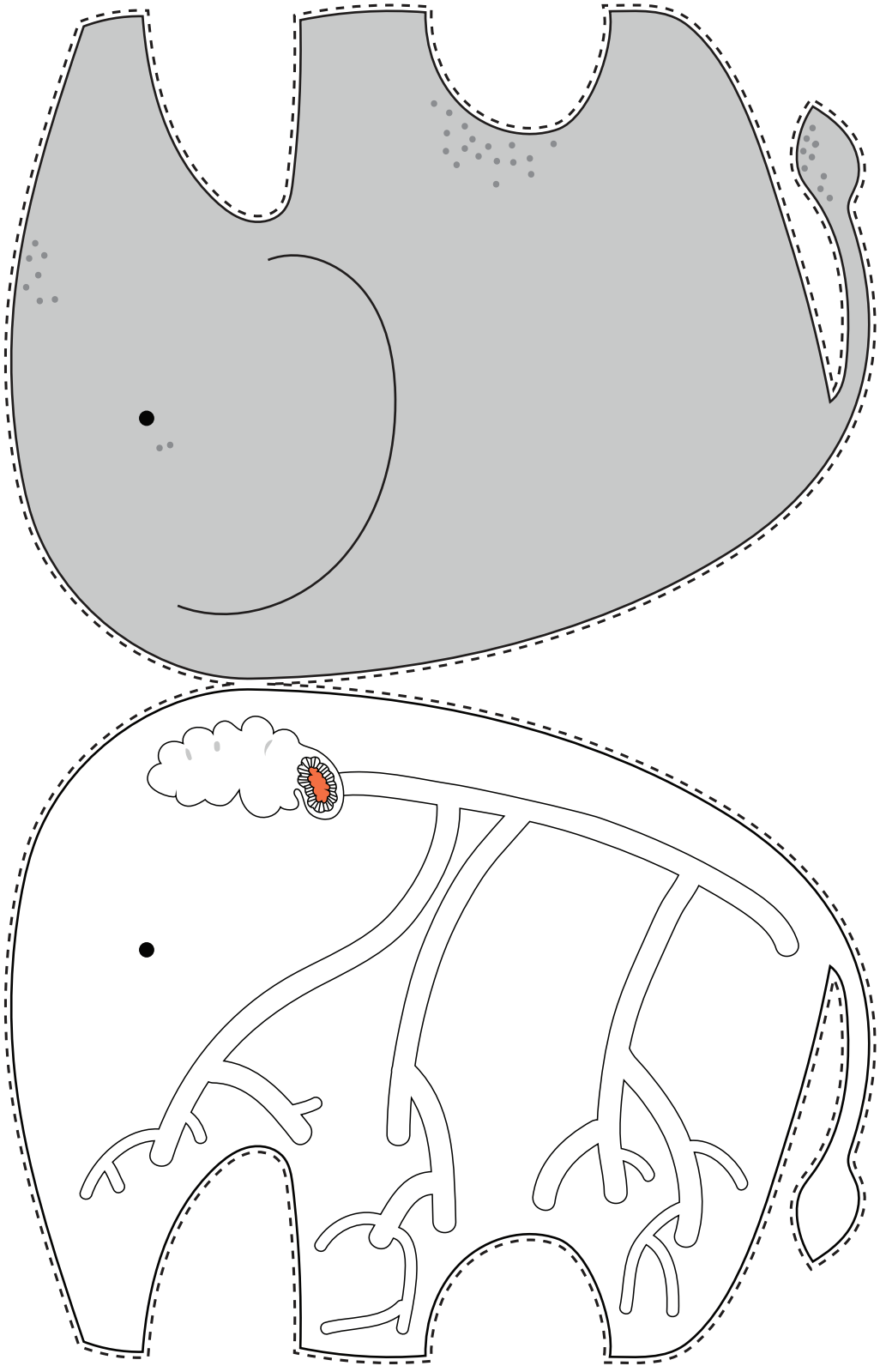
P

scissors



P

scissors



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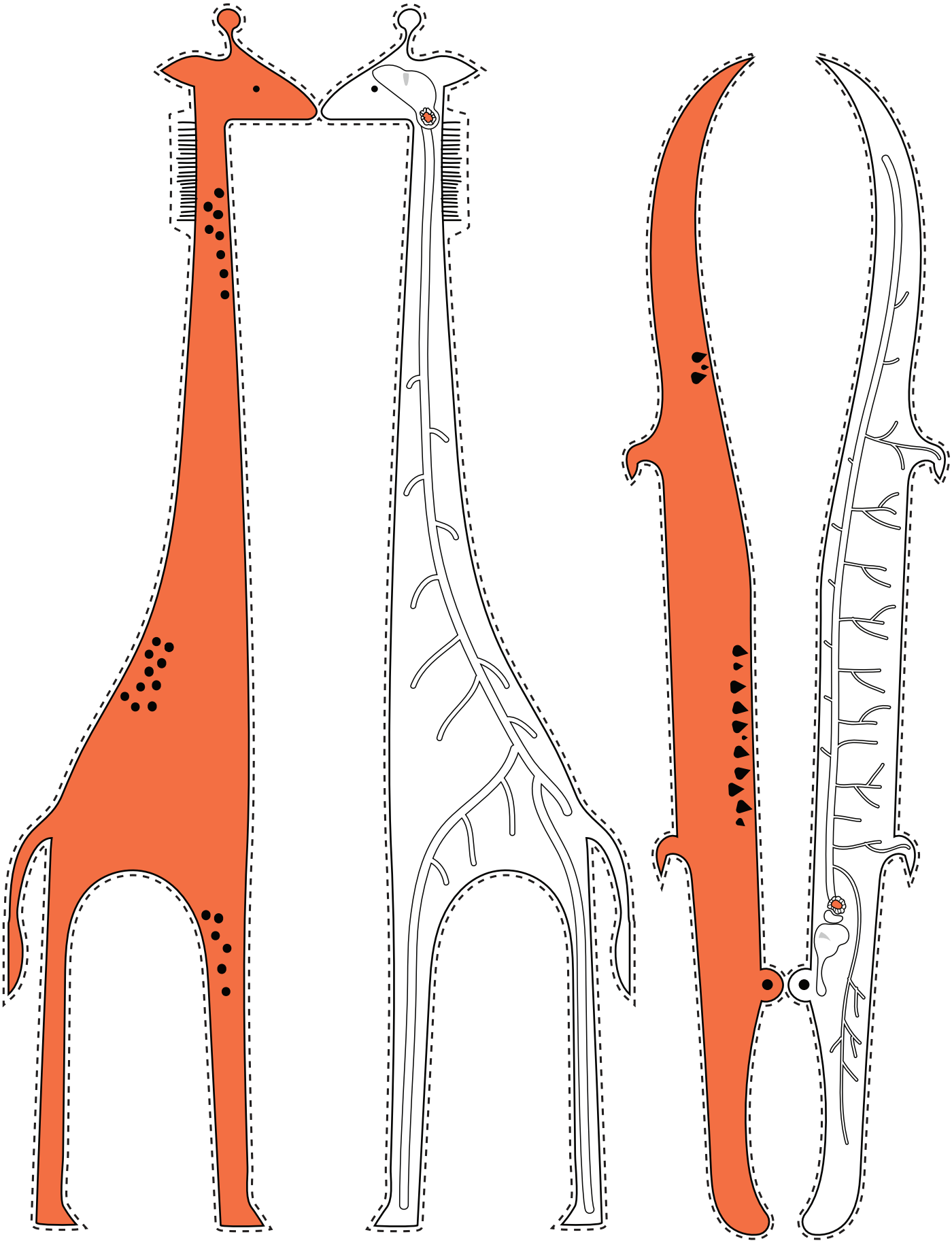
scissors



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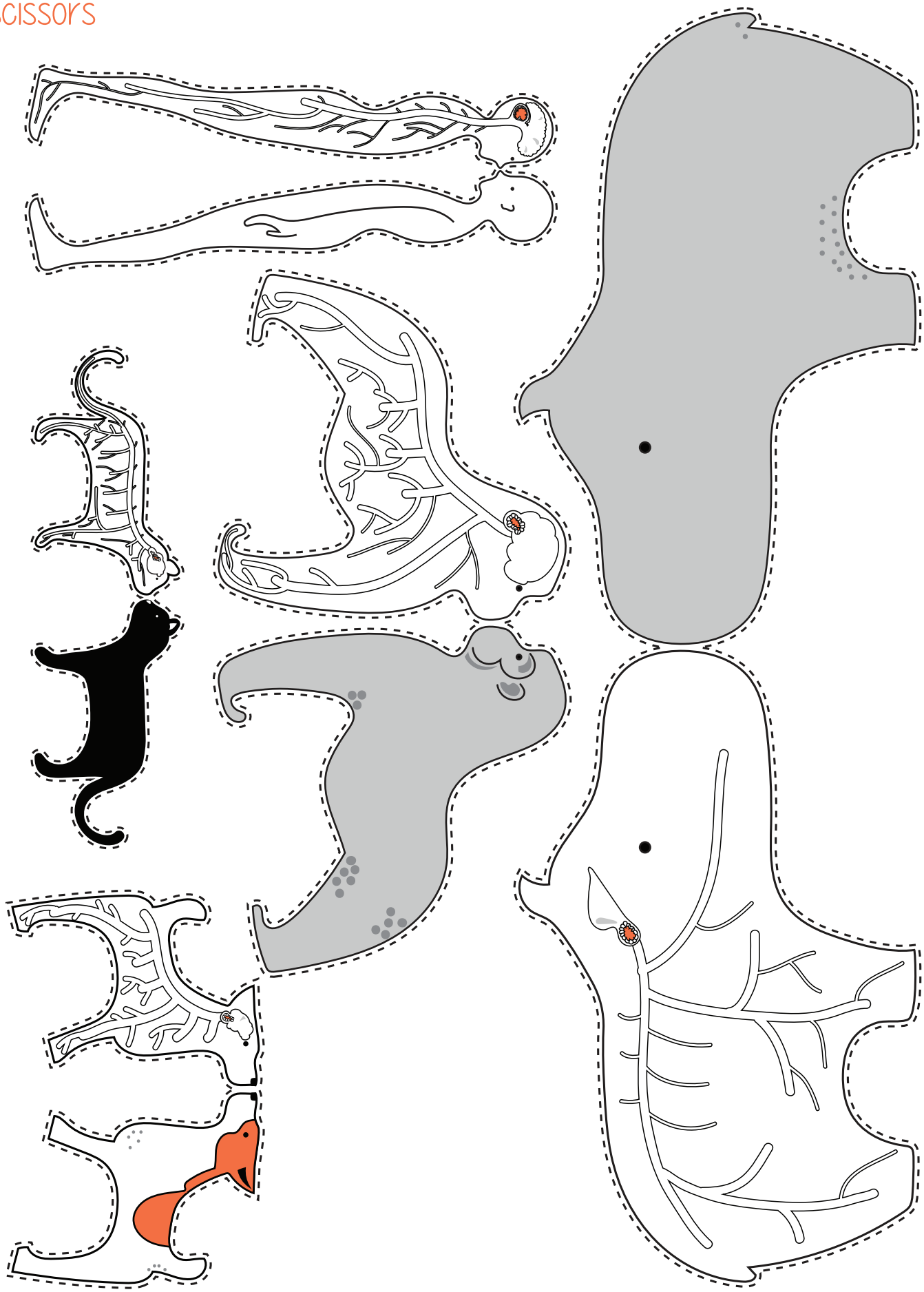
scissors



P

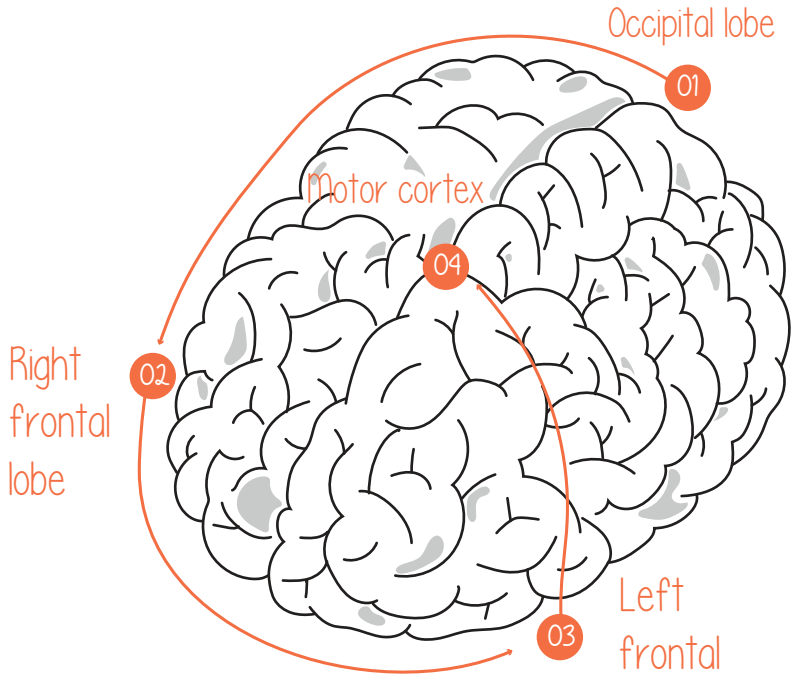
pencil

THE ANIMAL STORY

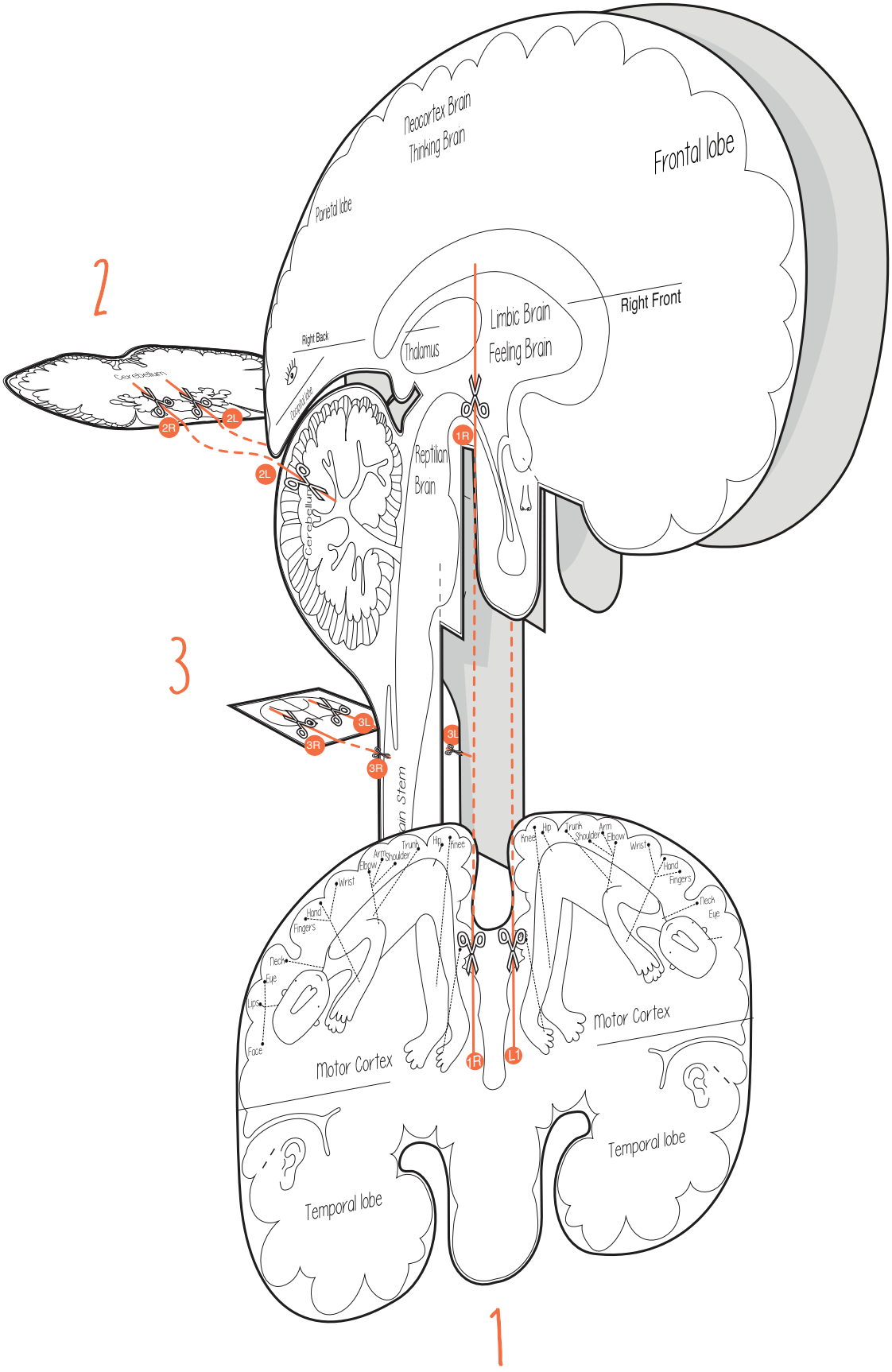
BUILDING A NERVOUS SYSTEM

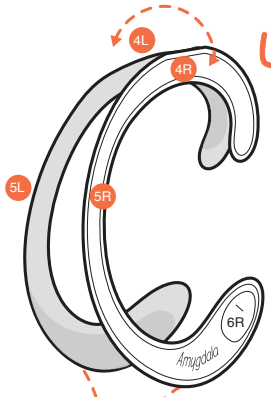
03. What is a brain?

The DIY paper brain is an exercise for making a 3D nervous system.
Craft-making requires both right and left brain coordination and hand-eye coordination.
It activates the temporal lobes, the limbic brain, the occipital lobe, the right frontal lobe, and the motor cortex.
Your child can color the different parts of the brain to help identify different regions.



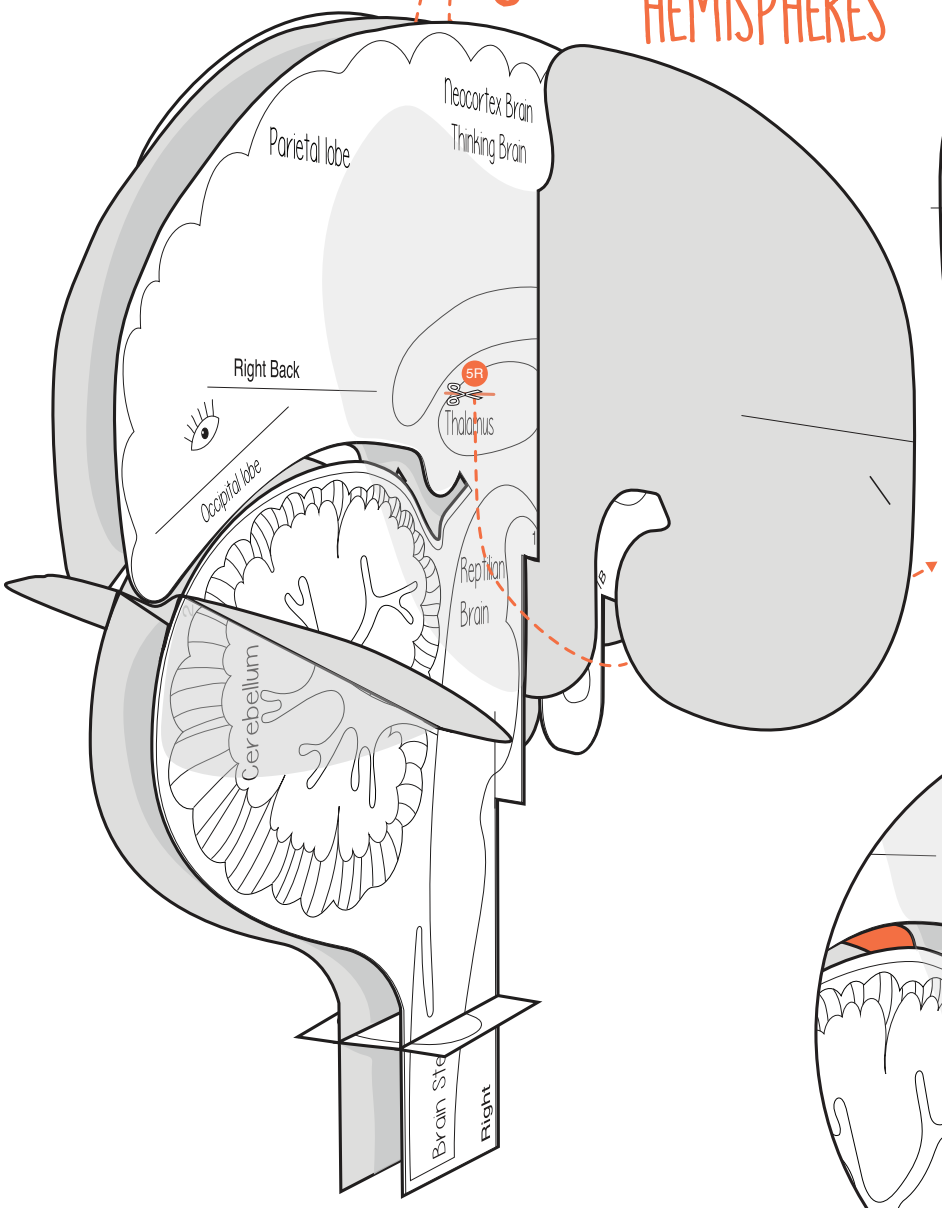
ACTIVATED MAP OF THE BRAIN

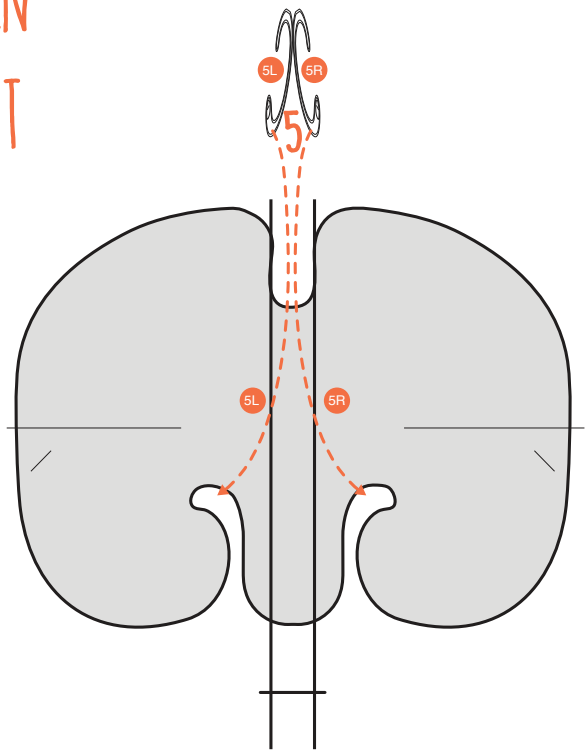

2
3
1
Neocortex Brain
Thinking Brain
Frontal lobe
Parietal lobe
Right Back
Right Front
Thalamus
Limbic Brain
Feeling Brain
Reptilian
Brain
Cerebellum
Brain Stem
2R
2L
1R
3L
3R
L1
Hip
Knee
Trunk
Shoulder
Arm
Elbow
Wrist
Hand
Fingers
Neck
Eye
Lips
Face
Motor Cortex
Temporal lobe

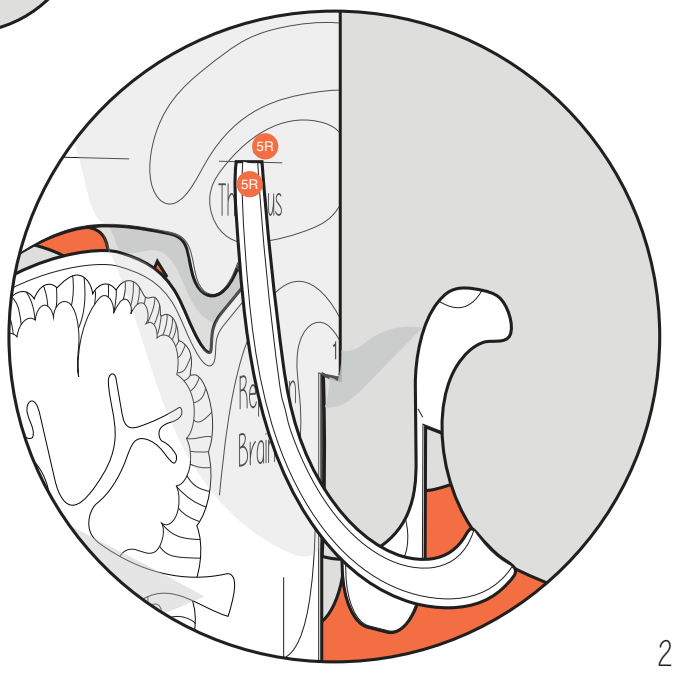


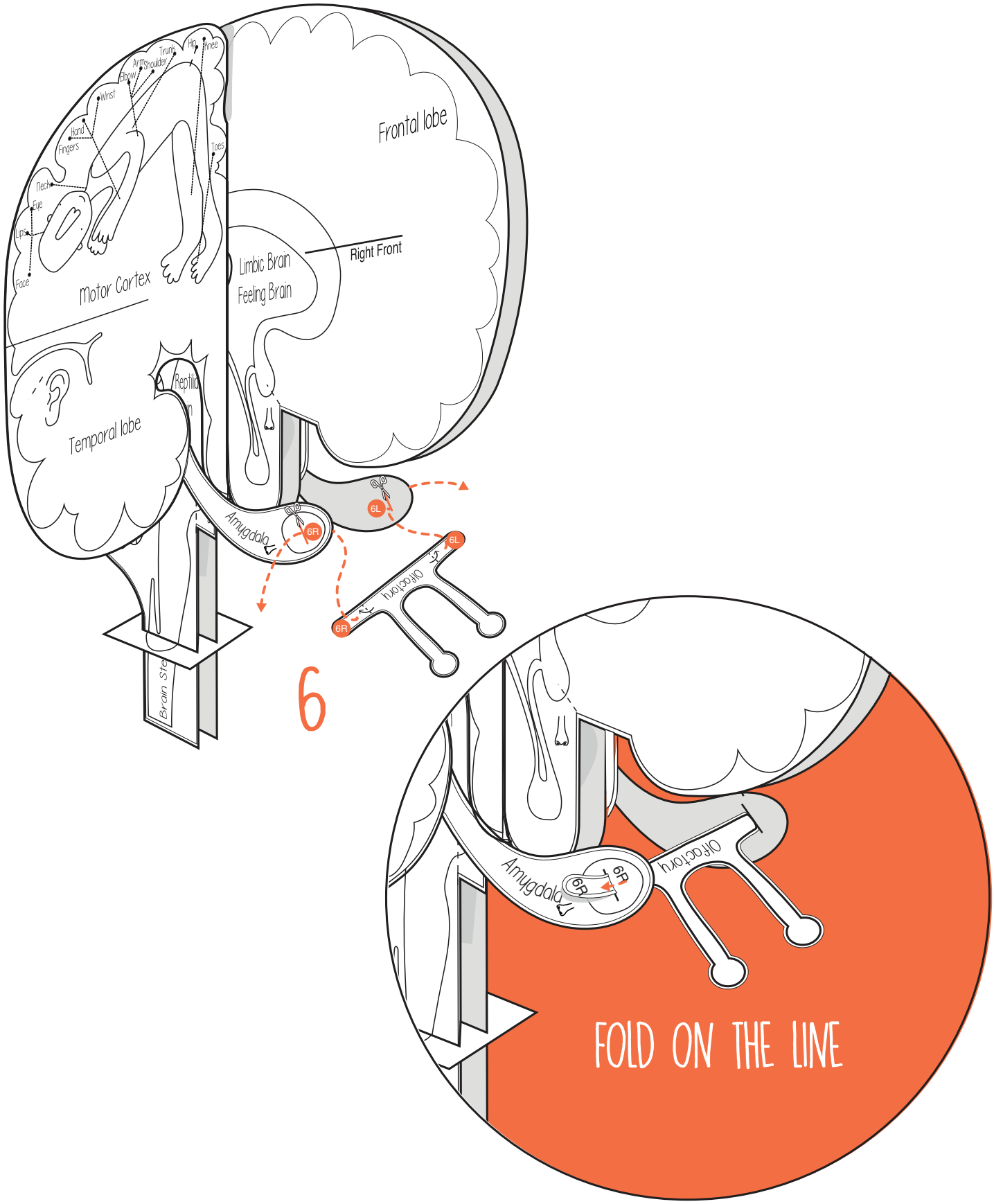
4 FOLD ON THE LINE

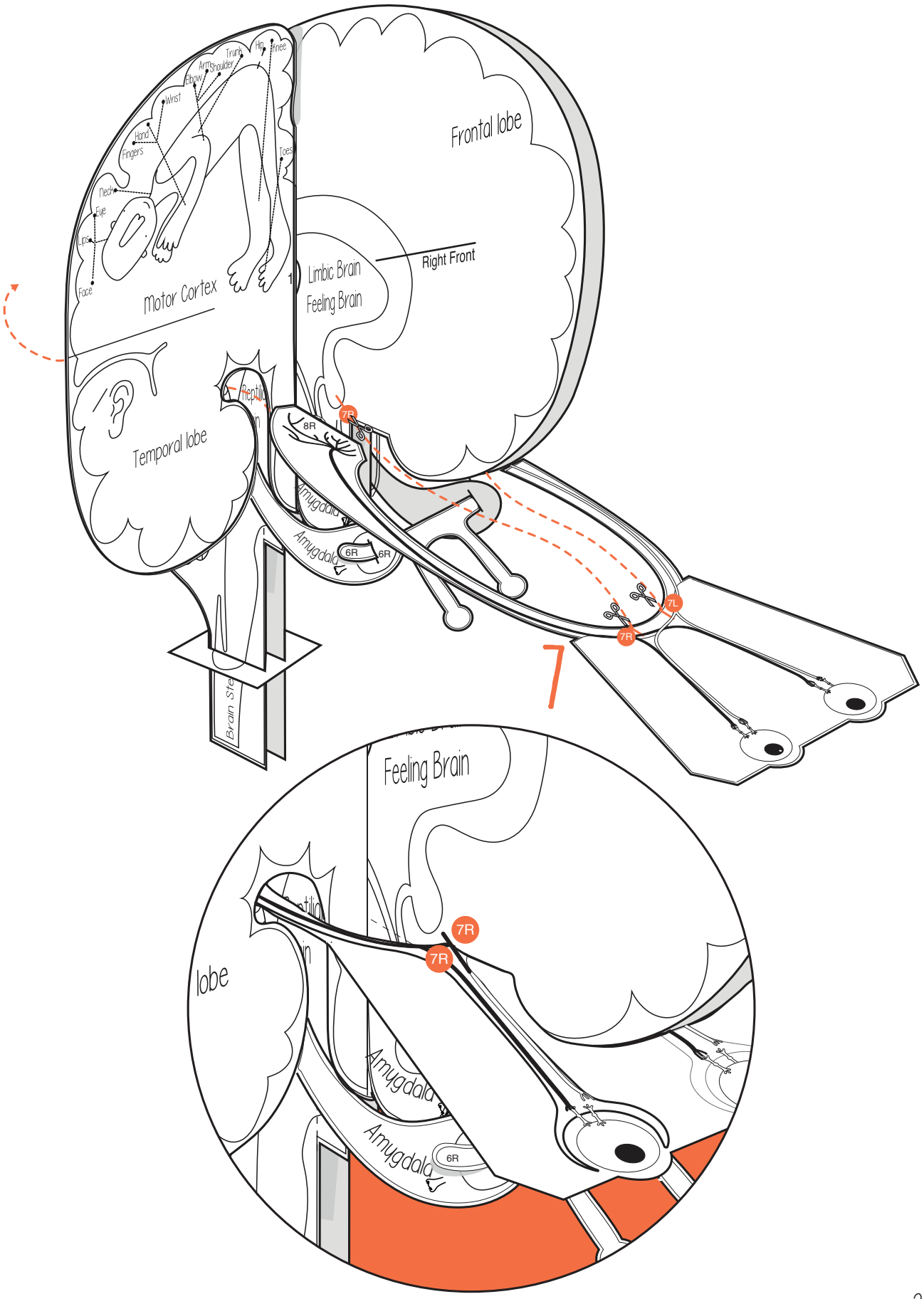
INSERT BETWEEN RIGHT AND LEFT HEMISPHERES



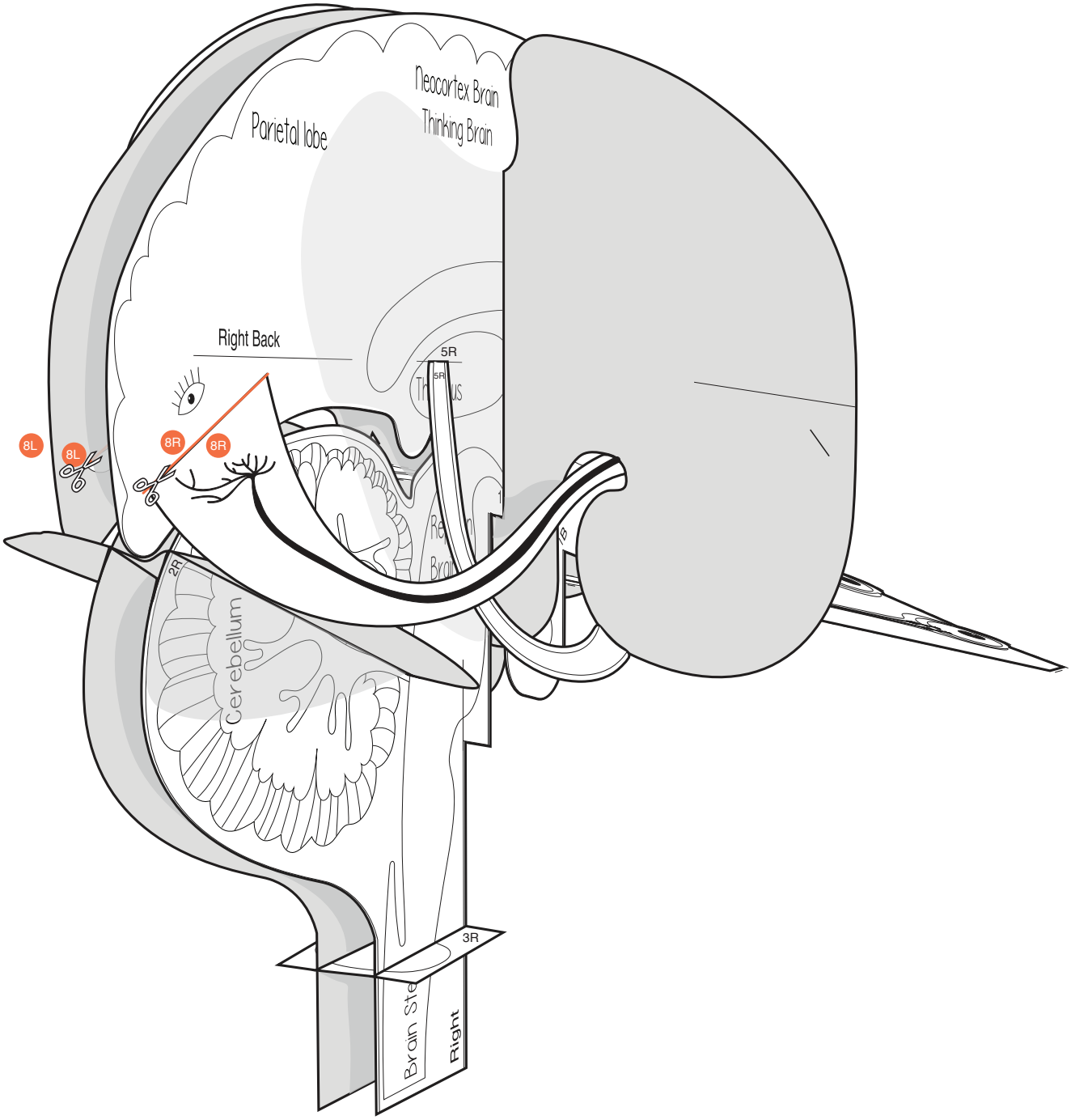


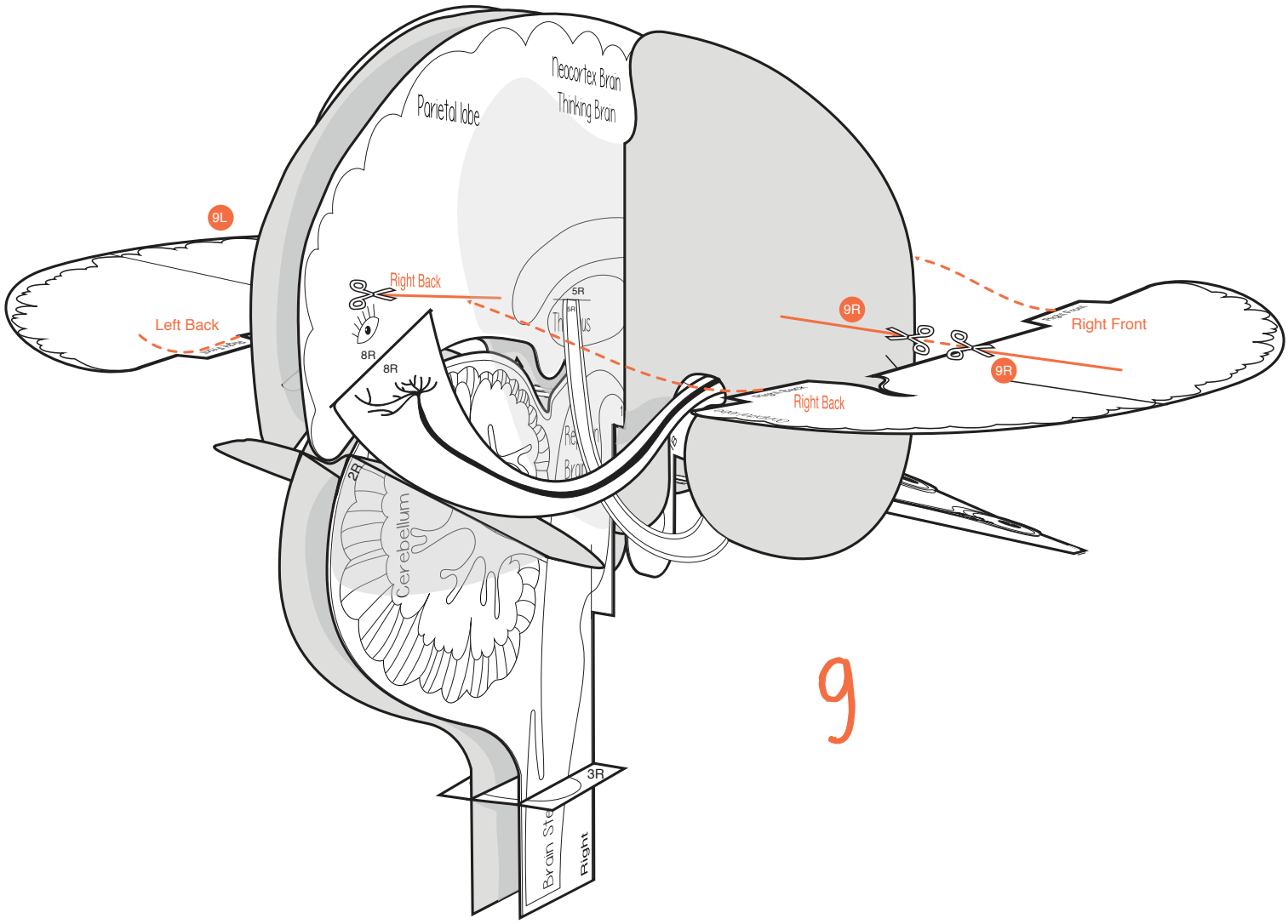



Frontal lobe
Limbic Brain
Feeling Brain
Right Front
Motor Cortex
Temporal lobe
Amygdala
6L
6R
Olfactory
Brain Ste
6
FOLD ON THE LINE

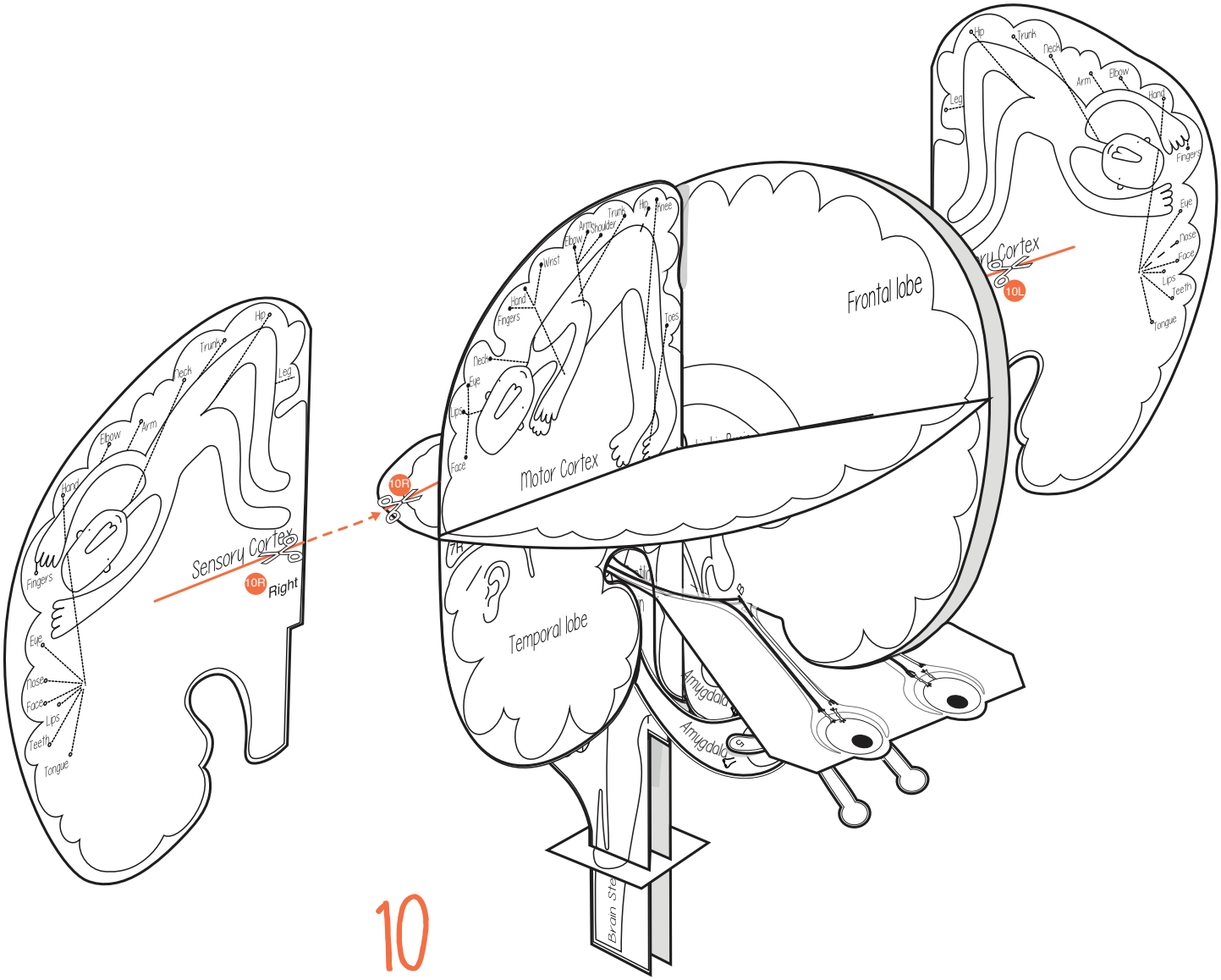

Frontal lobe
Motor Cortex
Limbic Brain
Feeling Brain
Right Front
Temporal lobe
Amygdala
Amygdala
7L
7R
8R
6R
6R
7
Feeling Brain
lobe
7R
7R
Amygdala
Amygdala
6R

8

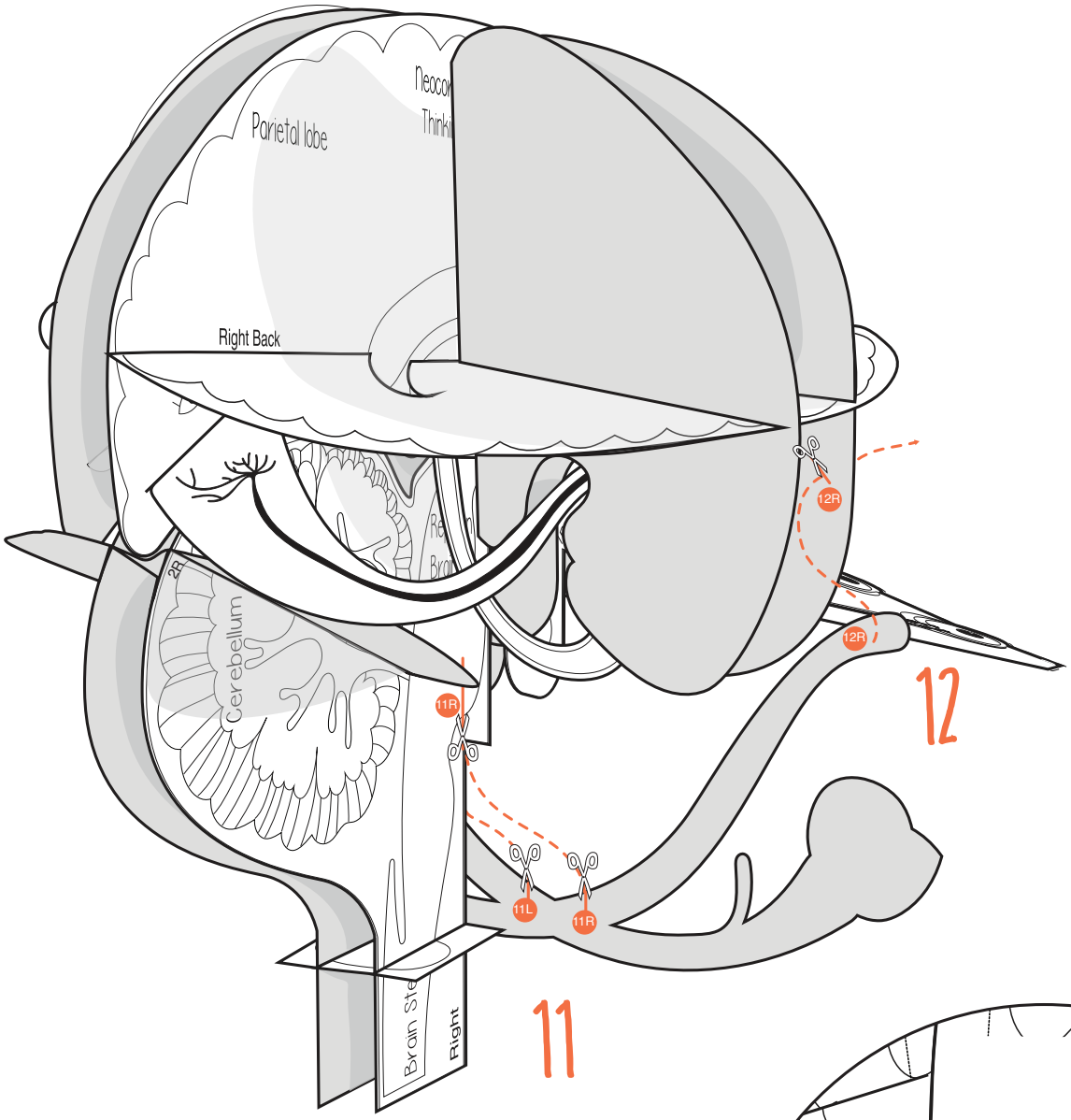

Neocortex Brain
Thinking Brain
Parietal lobe
Right Back
5R
8L
8L
8R
8R
2R
Cerebellum
3R
Right

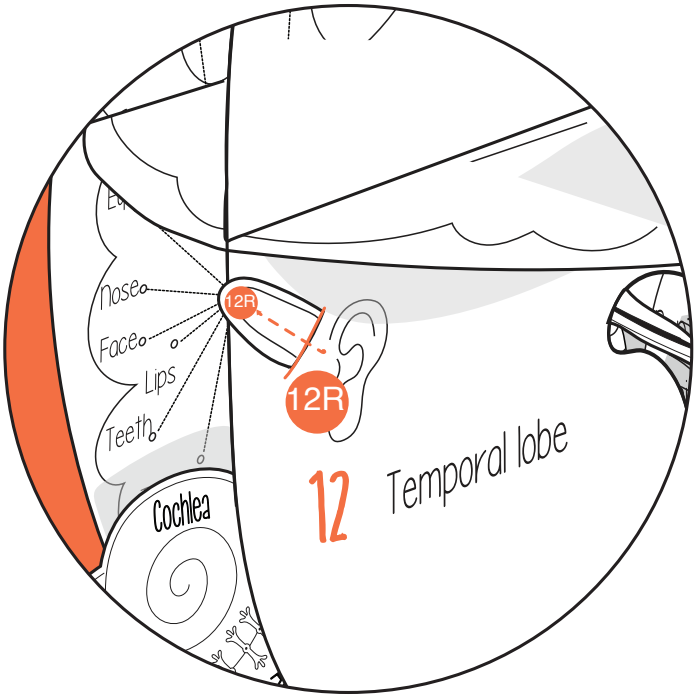

Neocortex Brain
Thinking Brain
Parietal lobe
9L
Left Back
Right Back
5R
8R
8R
9R
Right Front
9R
Right Back
2R
Cerebellum
3R
Right

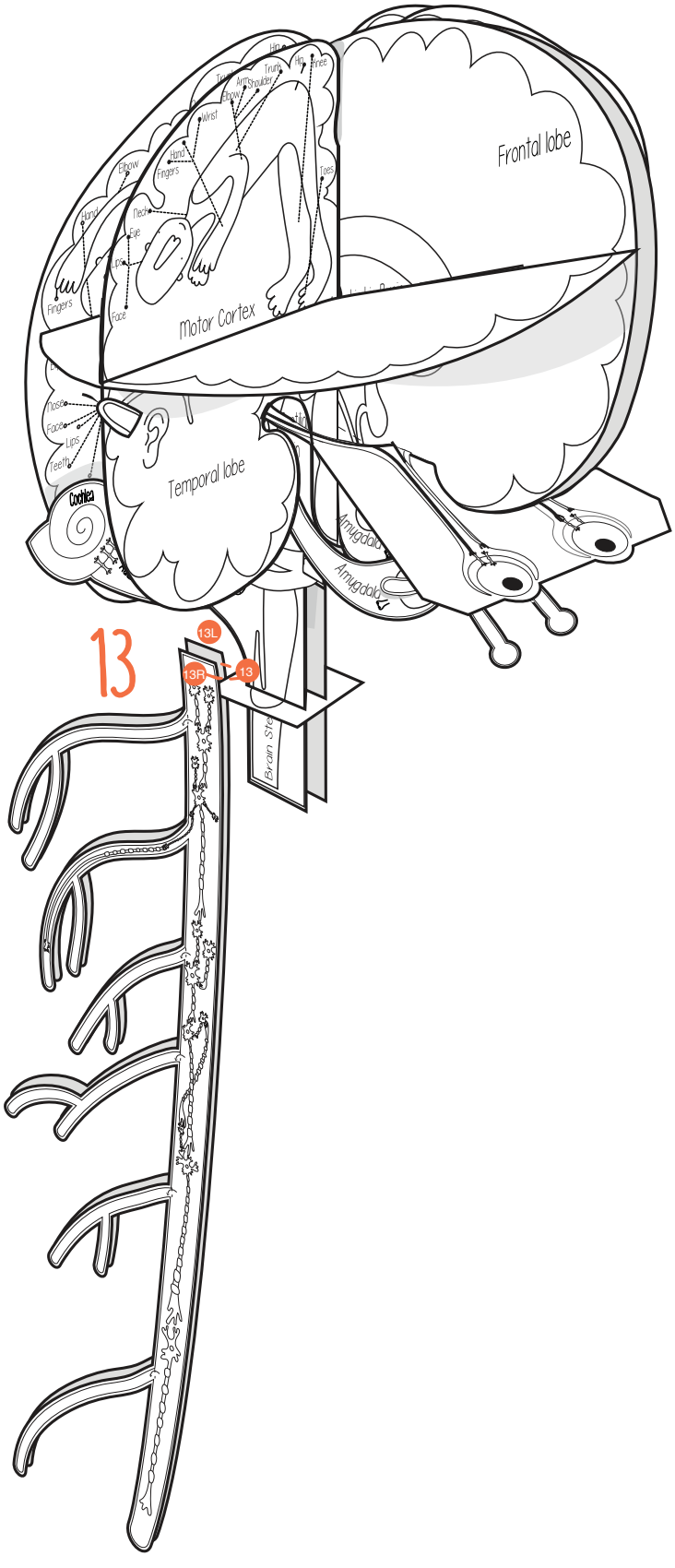
9

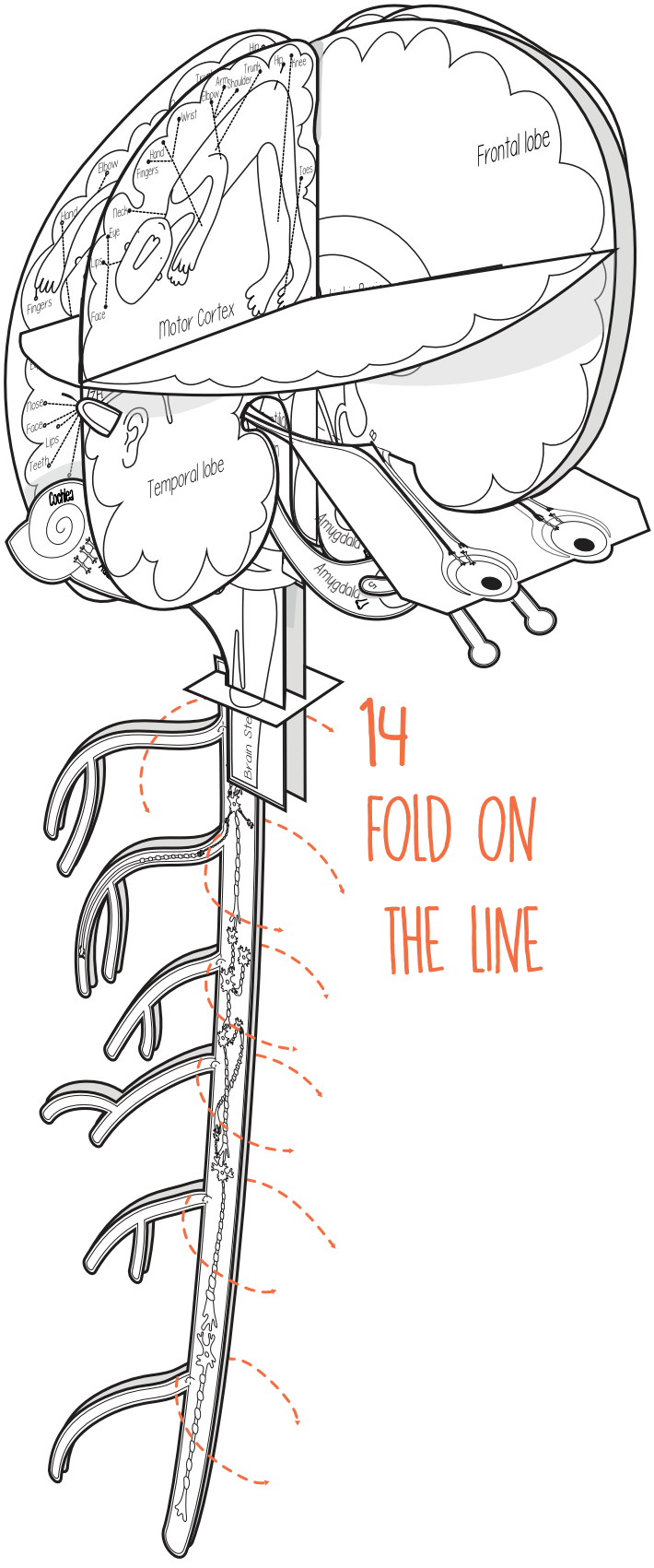

Hip
Trunk
Neck
Arm
Elbow
Hand
Leg
Fingers
Eye
Nose
Face
Lips
Teeth
Tongue
Sensory Cortex
10R
Right
Motor Cortex
10F
Frontal lobe
Temporal lobe
Amygdala
Amygdala
10L

10


Parietal lobe
Right Back
Cerebellum
Right
12R
12R
11R
11L
11R
12
11

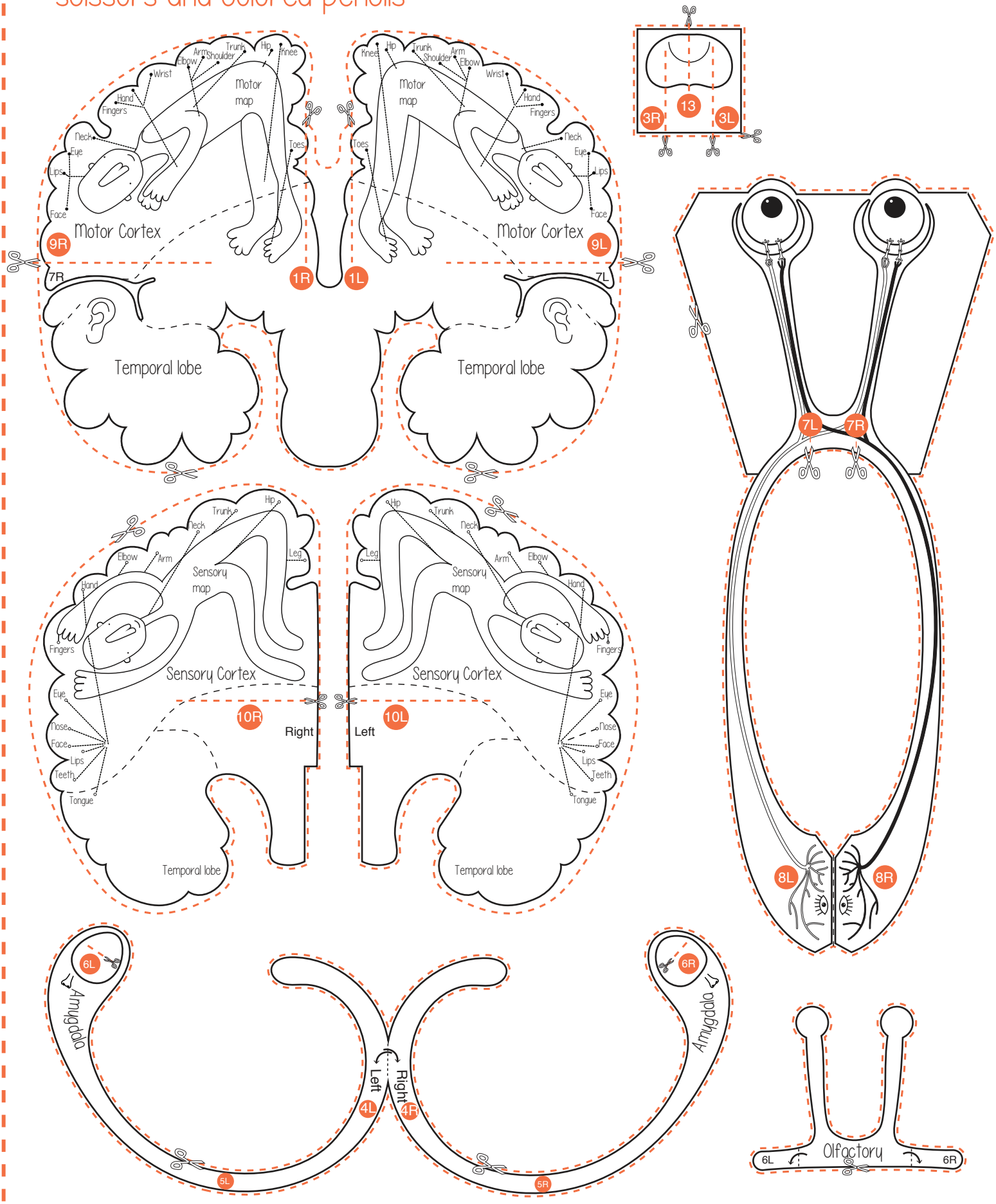

Nose
Face
Lips
Teeth
12R
12R
Cochlea
12 Temporal lobe


Frontal lobe
Motor Cortex
Temporal lobe
Cochlea
Amygdala
13
13L
13R
13

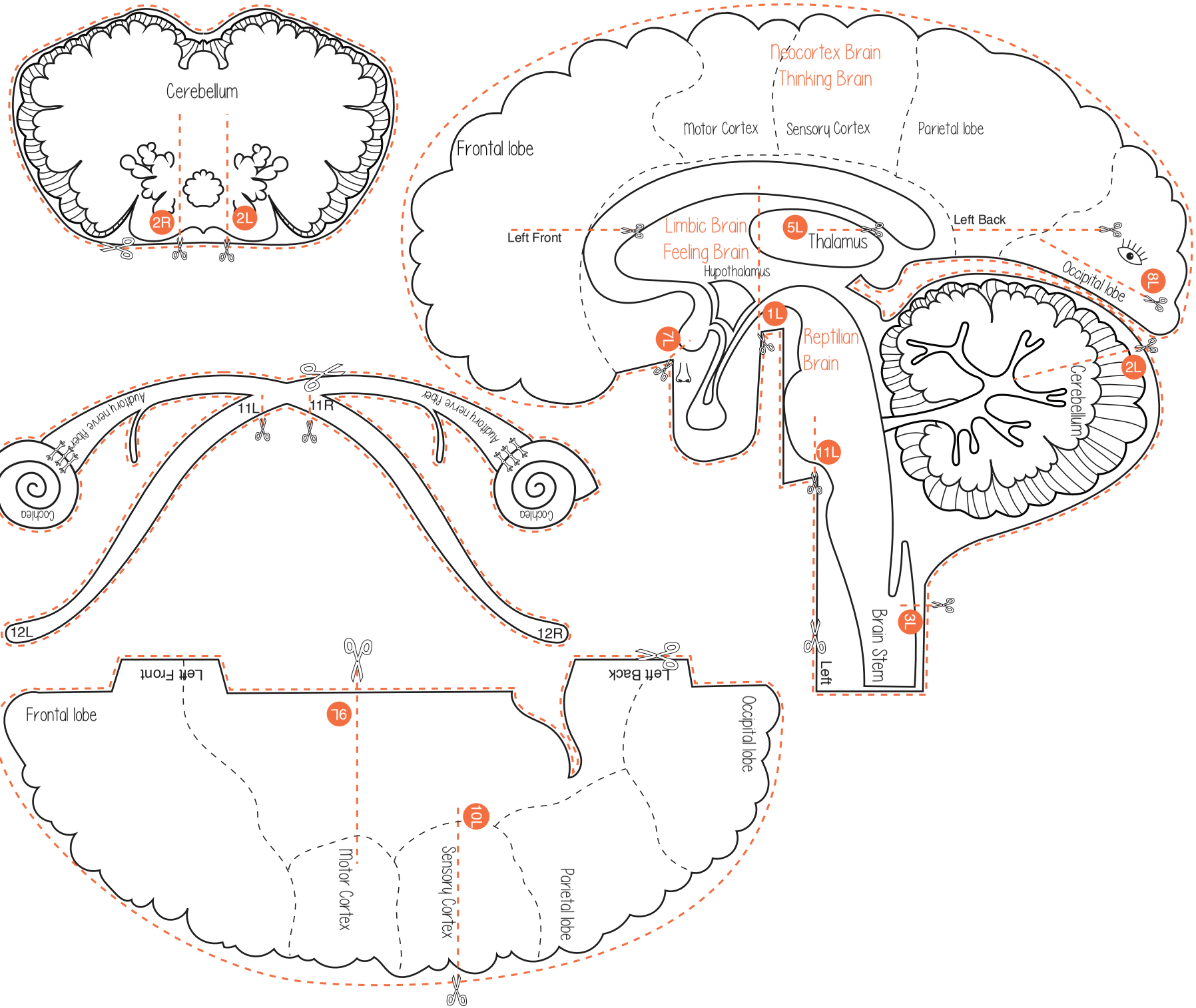

Frontal lobe
Motor Cortex
Temporal lobe
Cochlea
Amygdala
14
FOLD ON
THE LINE

PRINT ON THICK PAPER

scissors and colored pencils

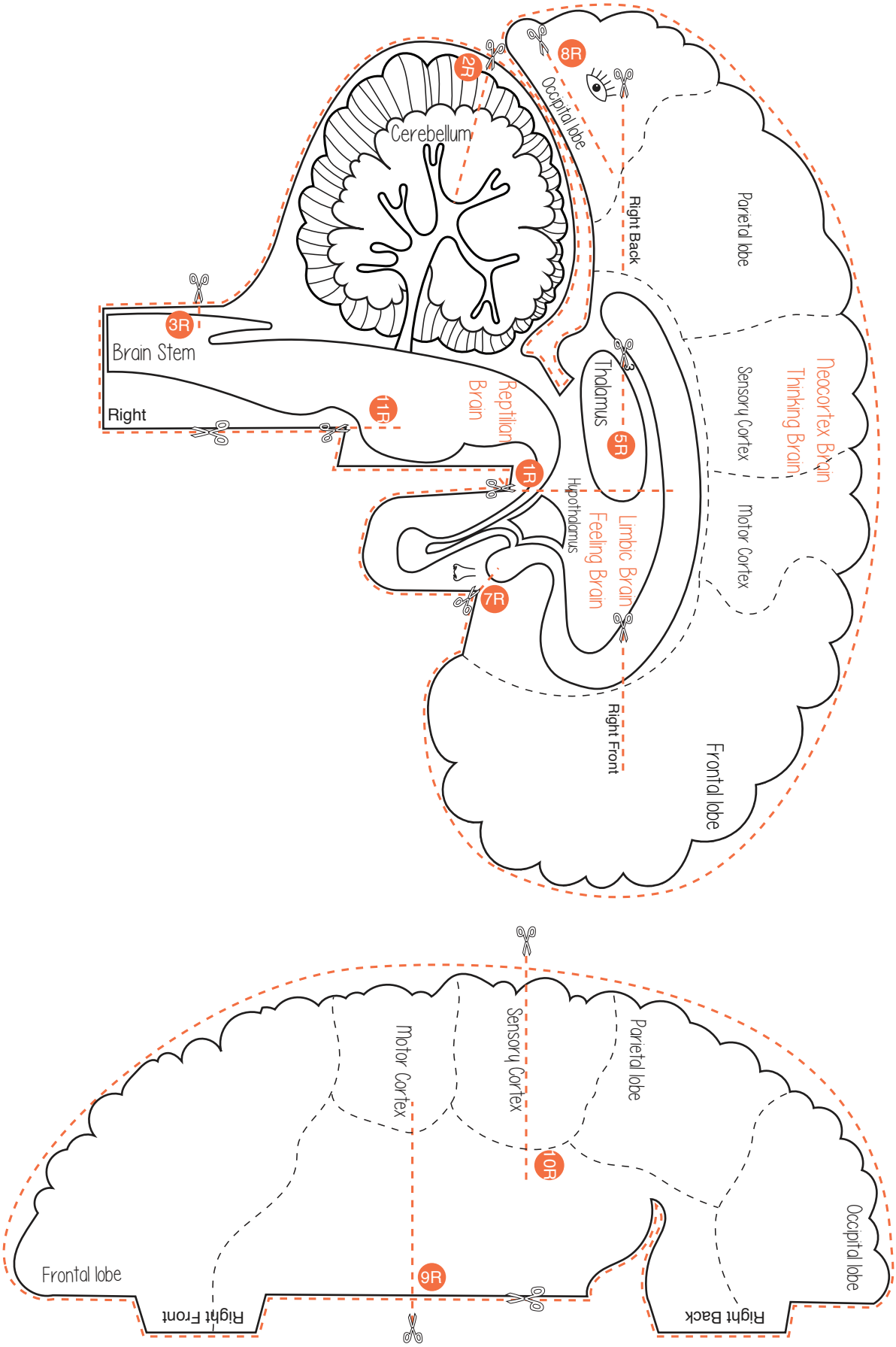


scissors and colored pencils



PRINT ON THICK PAPER

scissors and colored pencils



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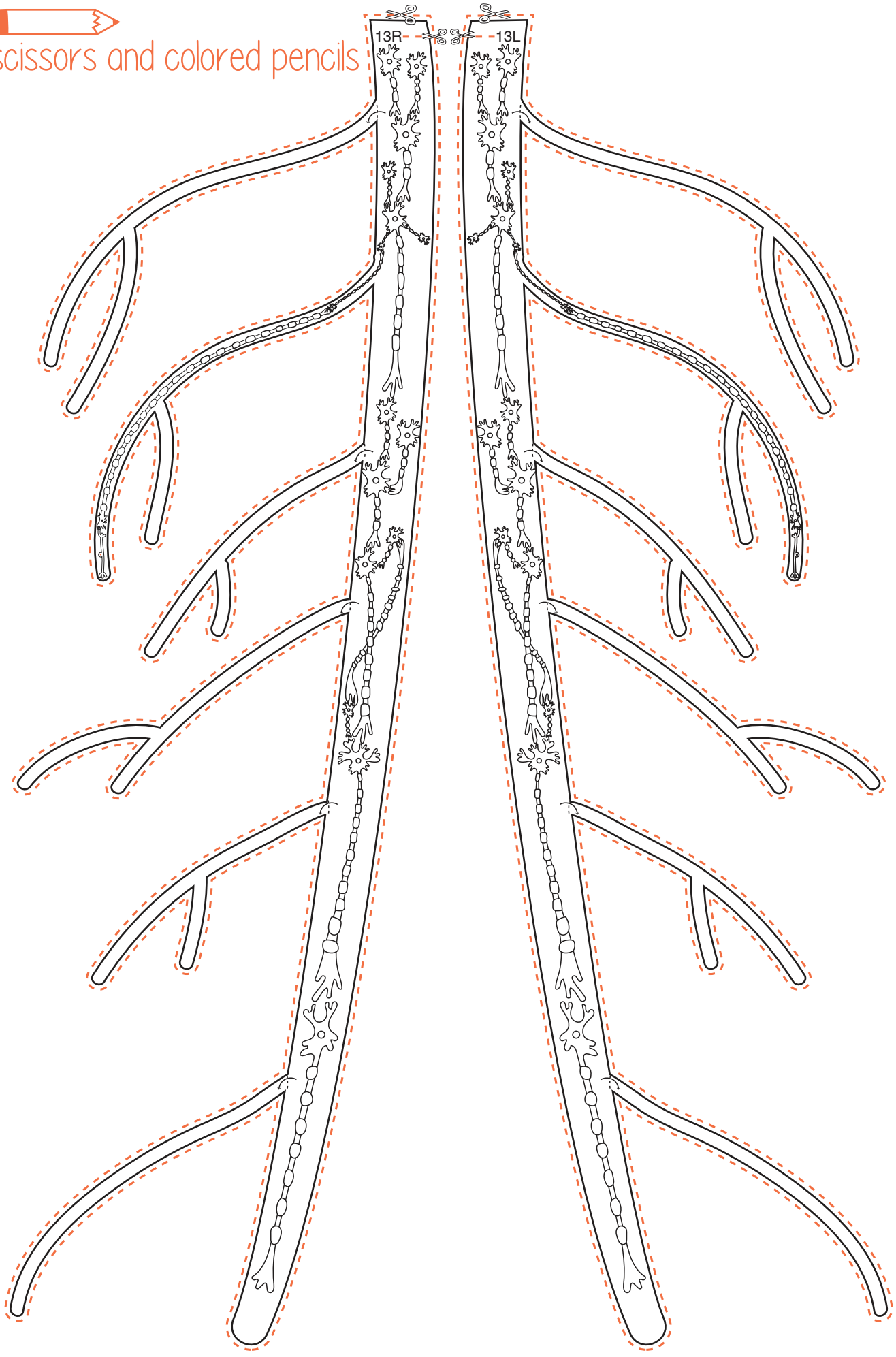
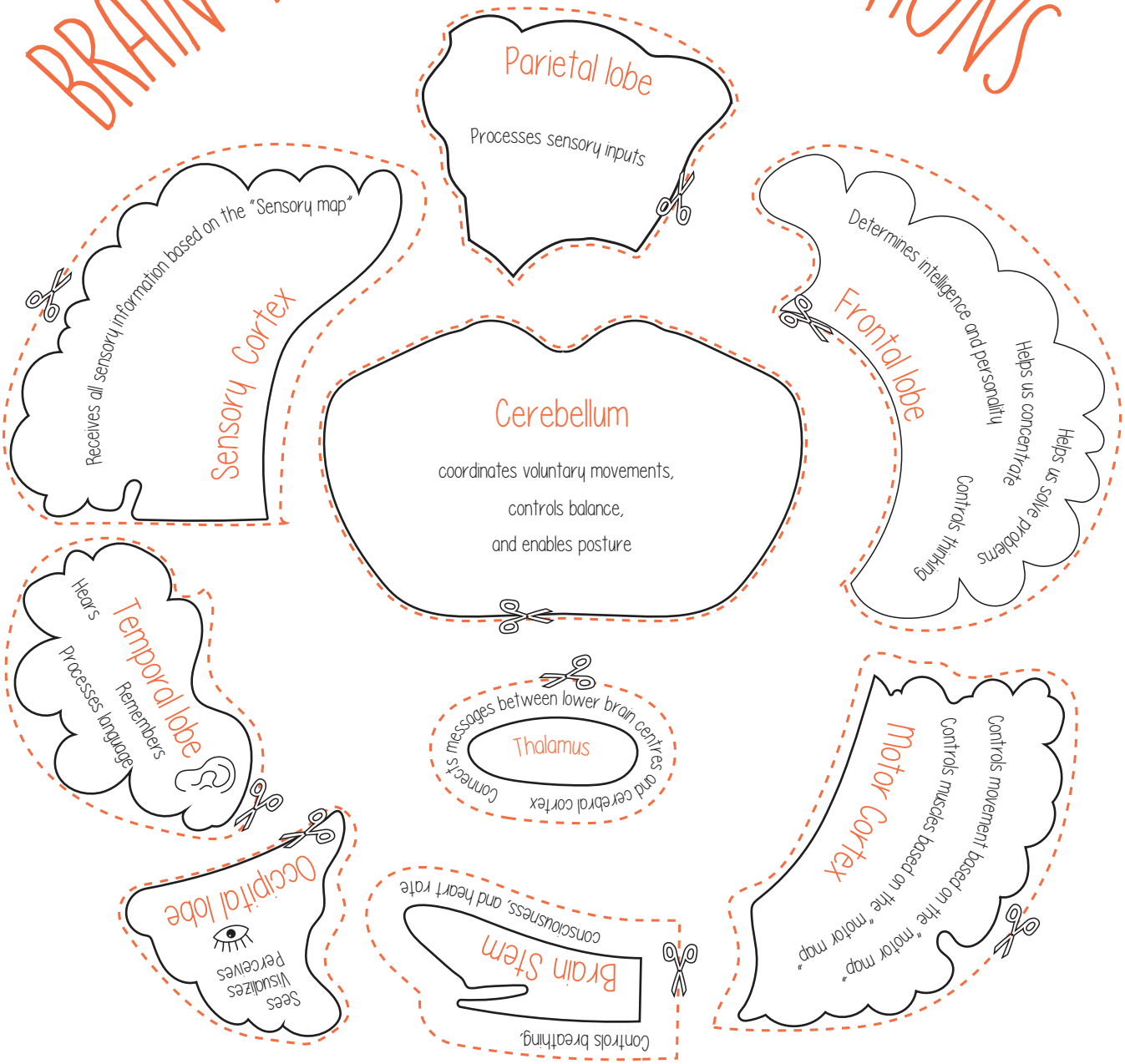
PRINT ON THICK PAPER

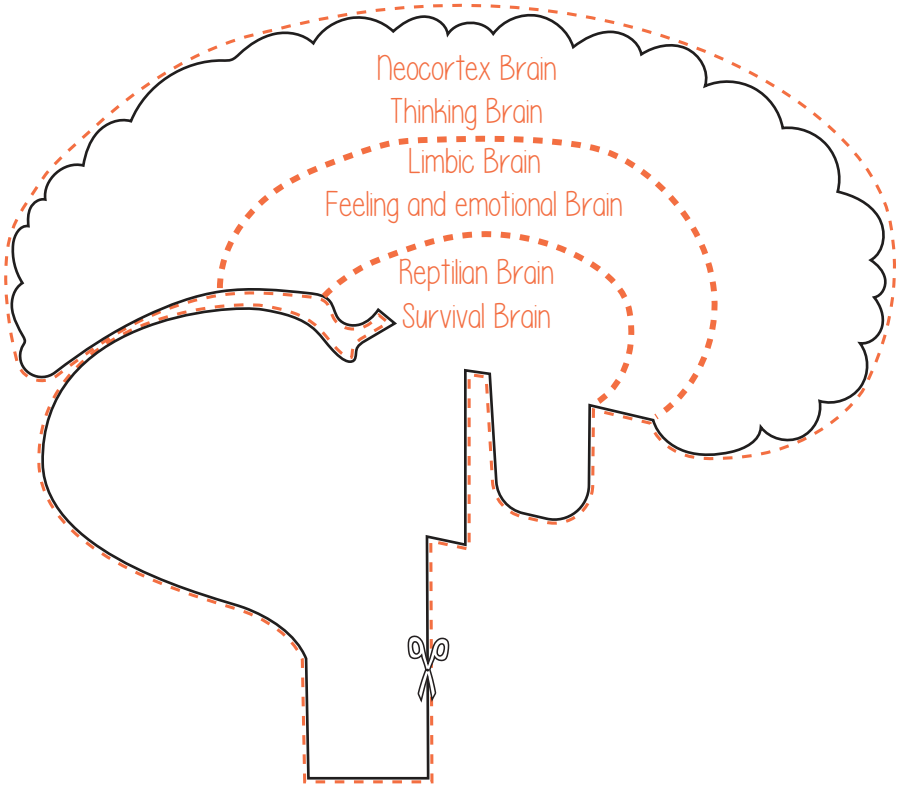
scissors and colored pencils

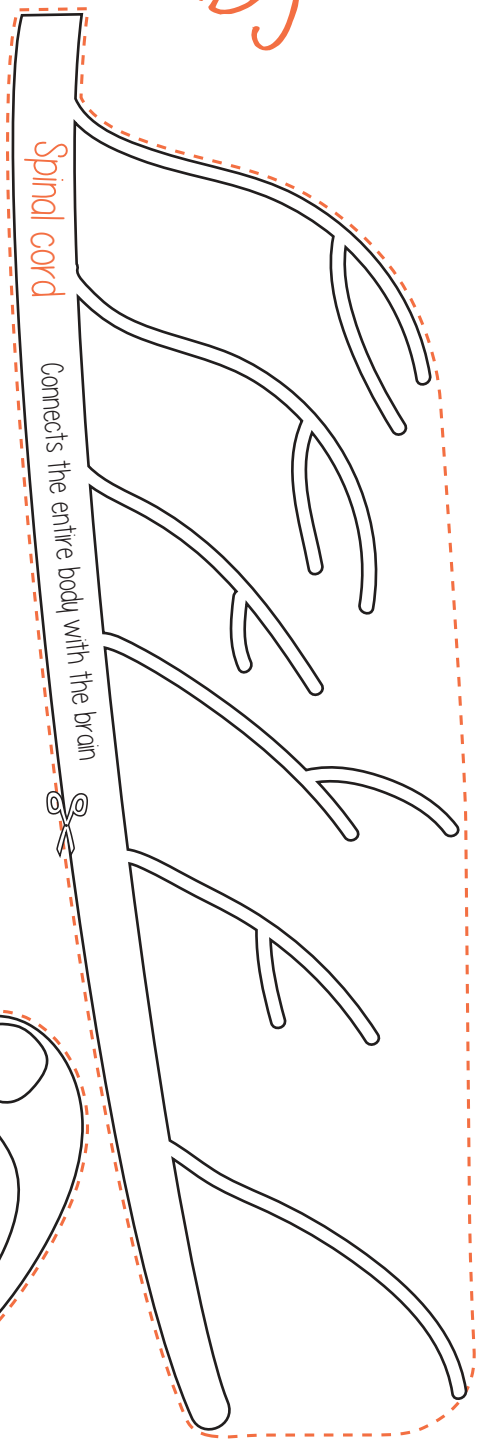


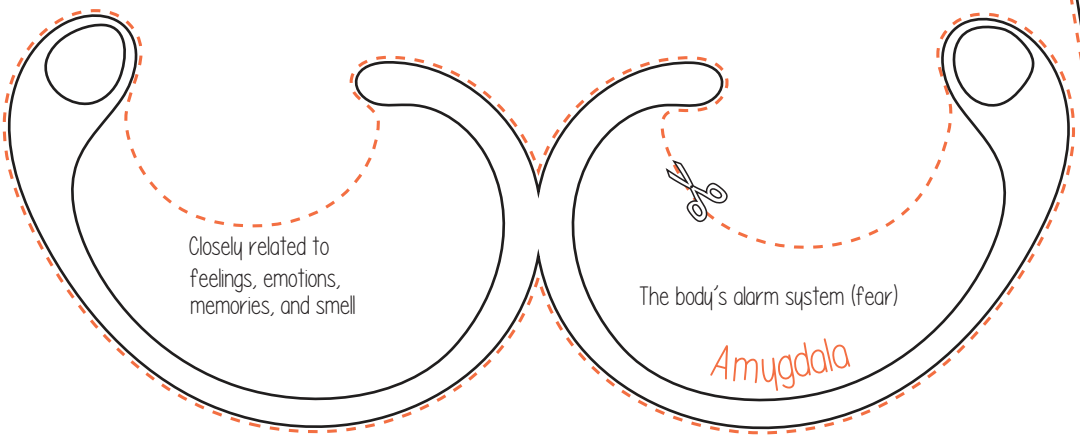
BRAIN REGIONS AND FUNCTIONS



BRAIN REGION'S FUNCTION CARDS







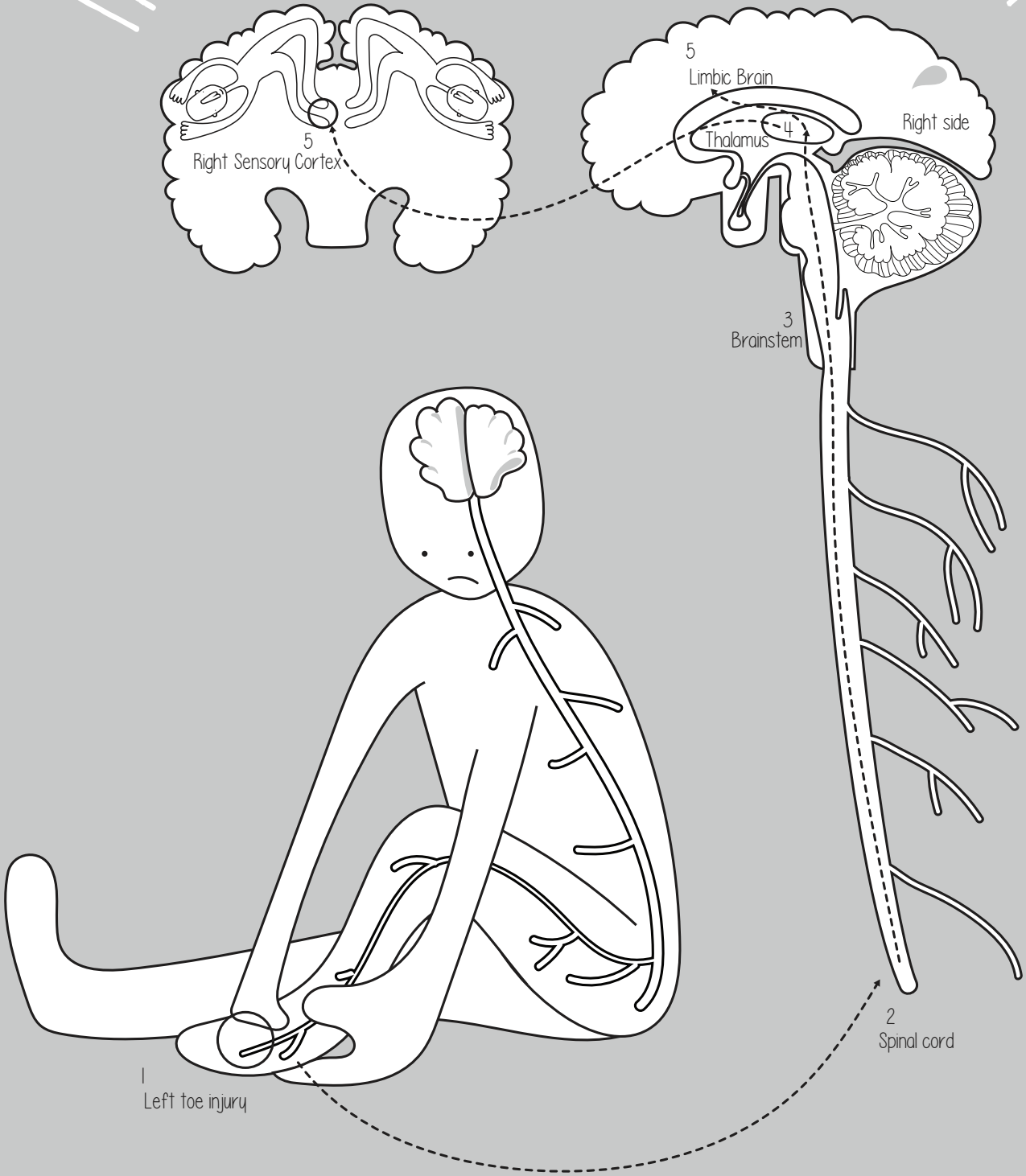
LETS MAKE SOME CONNECTIONS

04. Make a path

Now your child has a nervous system model that is 3D. It is time to create some connections within the system. On the next pages you will find some cards. Use these cards with the model and ask your child to indicate the part(s) of the brain that are activated when interacting with what is on each card. Keep in mind that the right side of the brain controls the left side of the body and vice-versa.

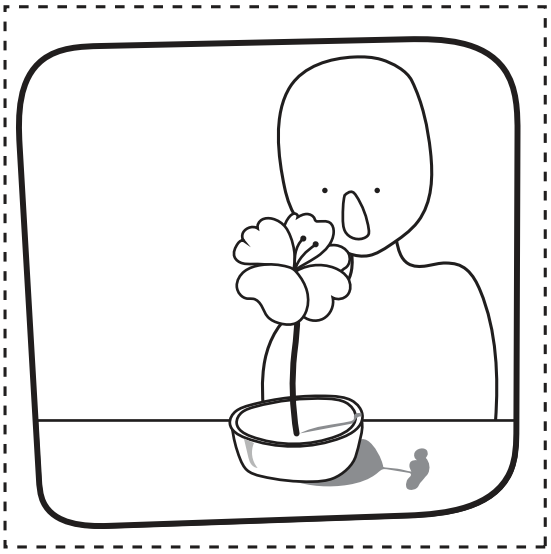
EXAMPLE

THE "HURTING-TOES" PATHWAY

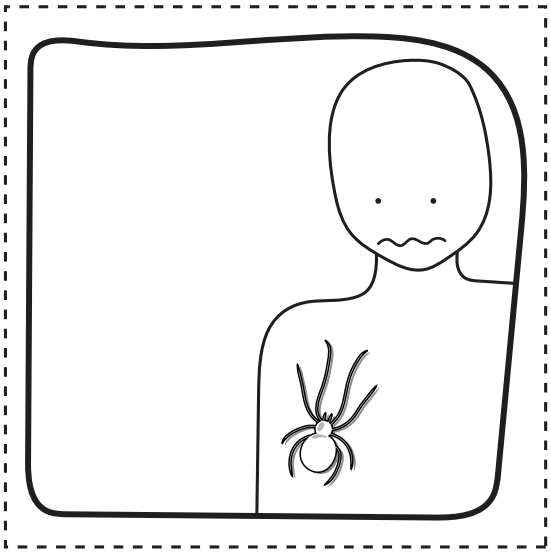


scissors and one colored pencil.

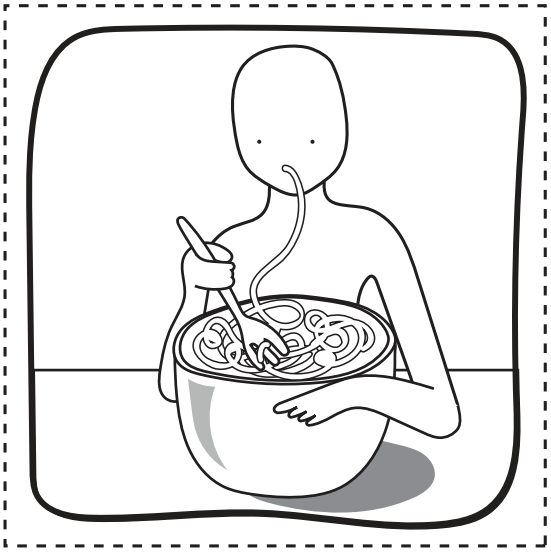
Color one item in the picture which is important for each act mentioned below.
Cut out the cards and then indicate the connections within the brain.



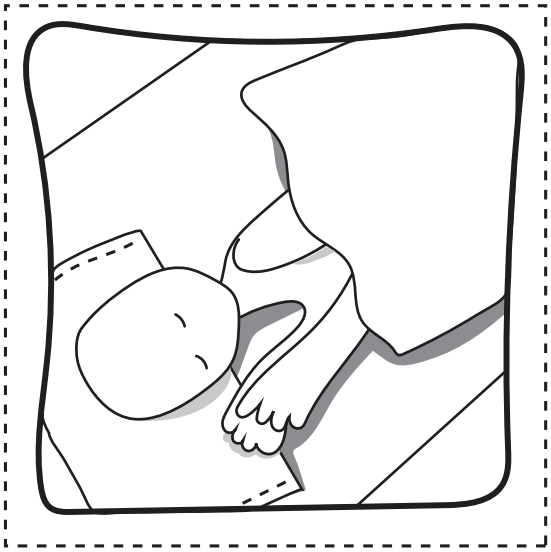
Smelling a flower



A spider crawling on you



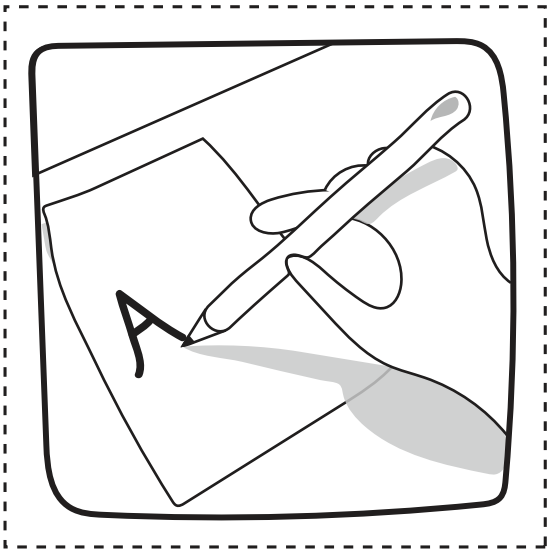
Eating food



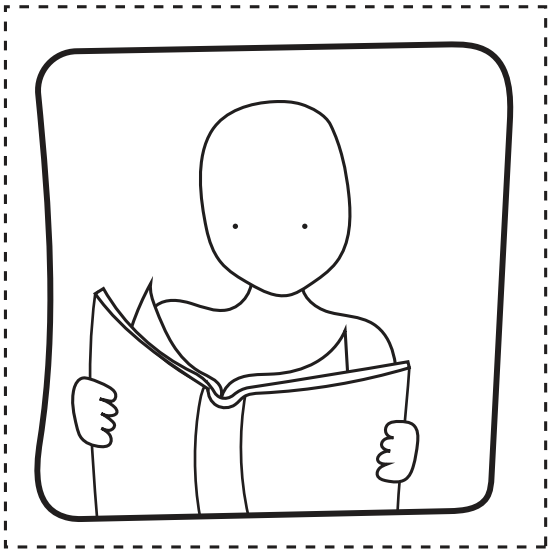
Sleeping

scissors and one colored pencil.

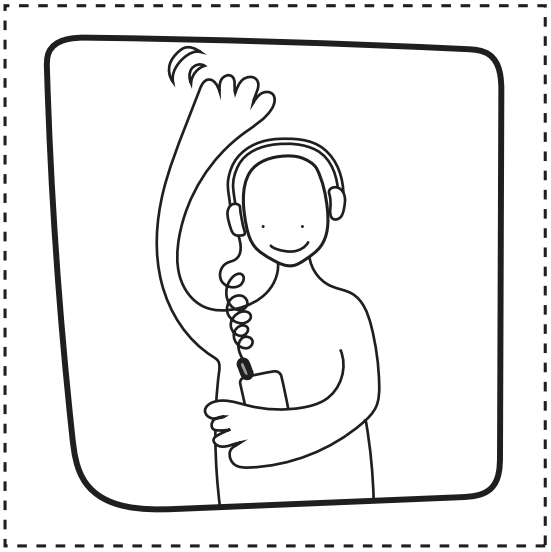
Color one item in the picture which is important for each act mentioned below.
Cut out the cards and then indicate the connections within the brain.



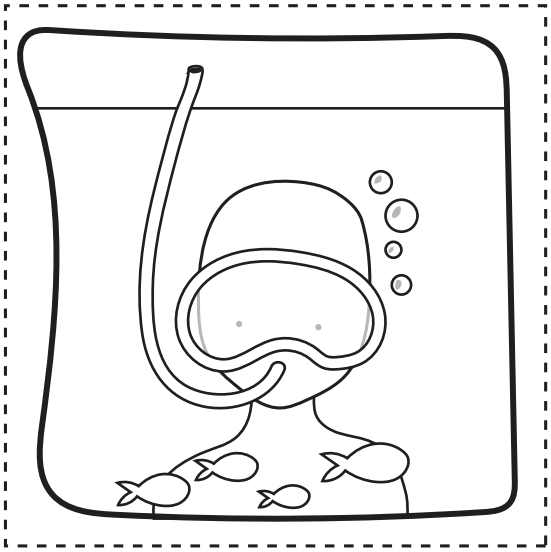
Writing



Reading



Listening to music



Swimming

DIFFERENT BRAINS MAKE DIFFERENT PEOPLE!

04. The brain makes you uniquely you!

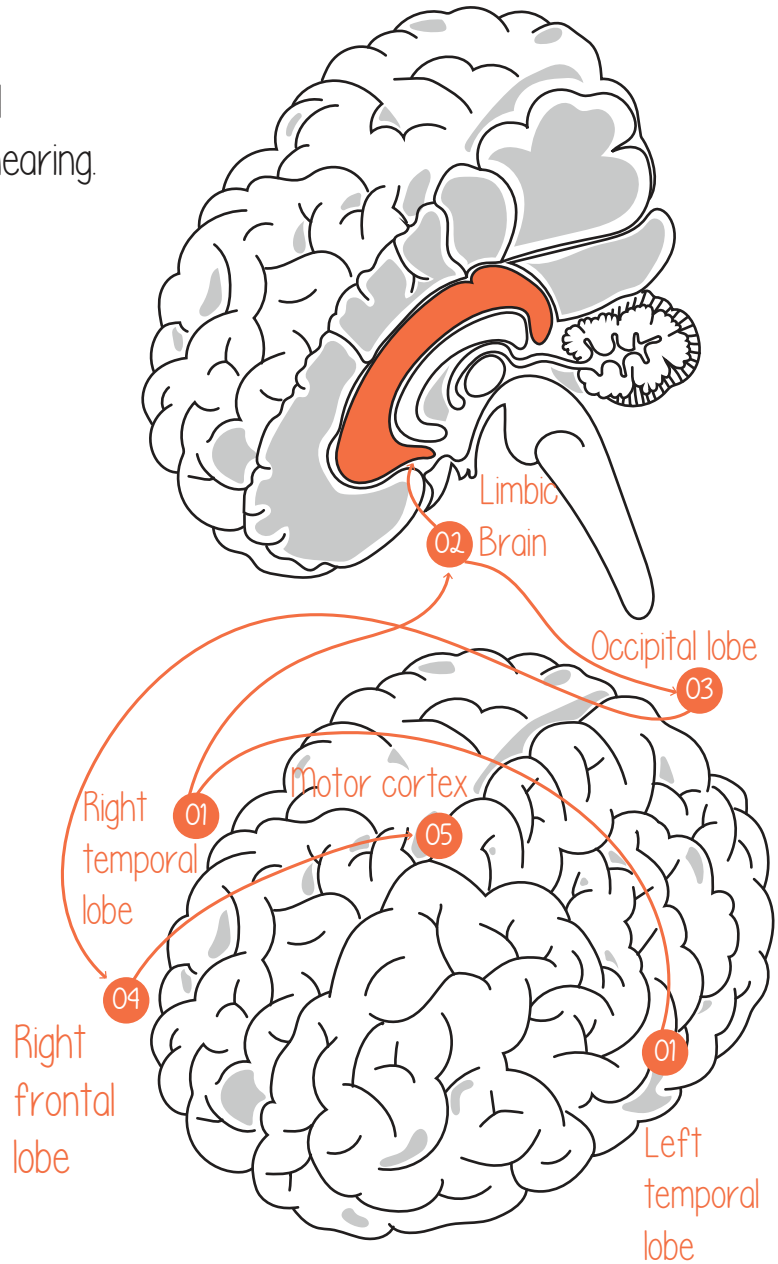
Play your child's favorite song
and listen to it together - as many times
as you would like to! Then, turn it off and
each of you draw what you remember hearing.

Do the drawing part of this exercise
separately as brain neurons mirror the
behaviors of others.

There is no wrong or right way to
complete this exercise.
Enjoy your time and try to make visual
connections to the music.

When you are finished, set aside
your drawings for the next phase.

Do not look at one another's drawings!



ACTIVATED MAP OF THE BRAIN

P

music, pencil, colored pencils

Close your eyes, listen to the music, and let your creative brain help you to draw what you hear!

P

music, pencil, colored pencils

Close your eyes, listen to the music, and let your creative brain help you to draw what you hear!

EVERYONE HAS DIFFERENT THOUGHTS AND PERCEPTIONS

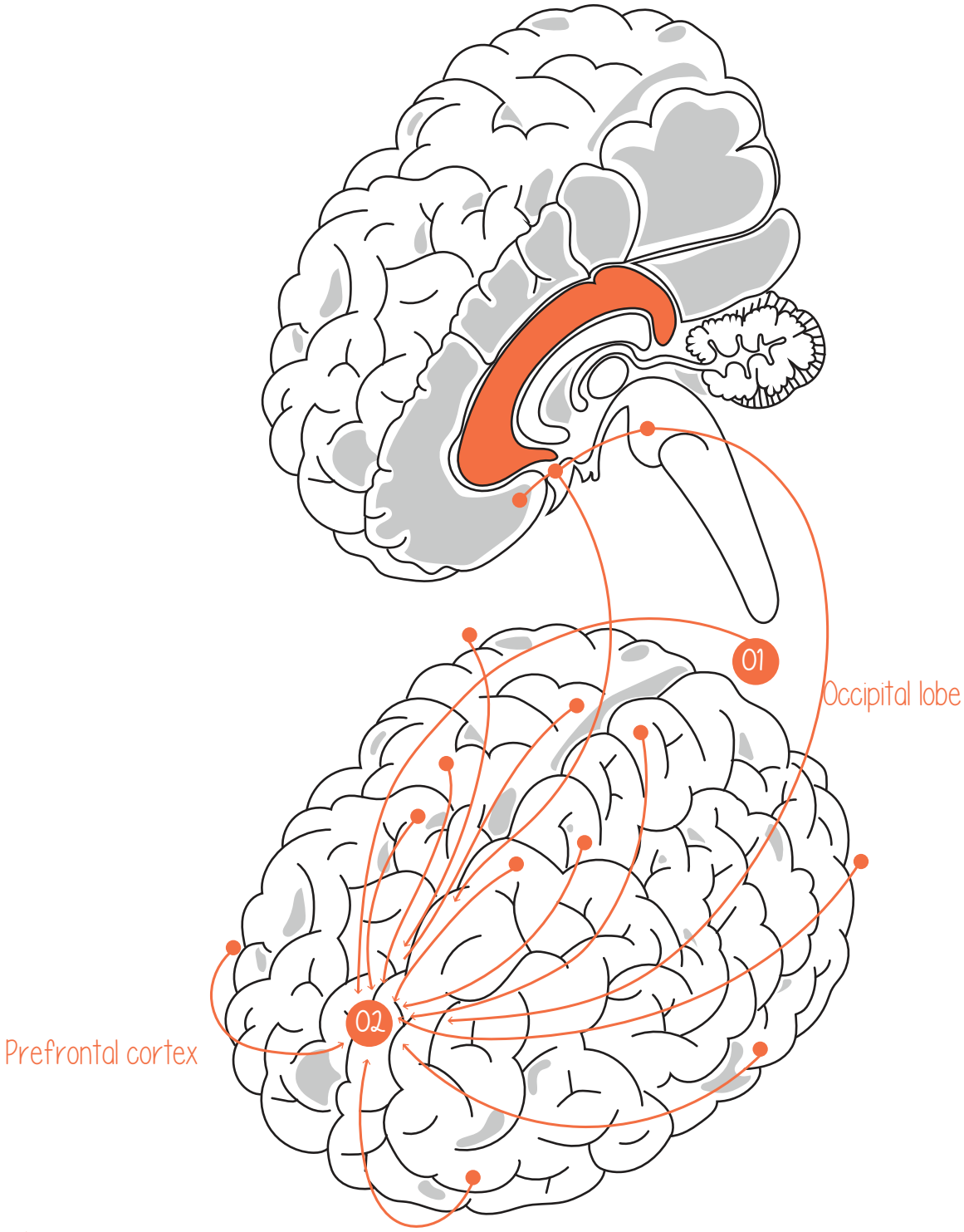
05. Celebrate our differences!

When everyone has finished drawing, reveal your work to one another, placing the drawings side-by-side. You have created two different images because you are two different people. You will notice in your own daily lives that people make different decisions all the time - not just when they are drawing, of course...

This comparison activity helps your child to appreciate that different people have different mindsets, different ways of seeing the world.
Also, doing the activity activates many different parts of your child's brain.

The following pages contain some more activities for two or more people.

When you finish these, compare your results once again and discuss the different thoughts you each had and decisions you each made during the activity.



ACTIVATED MAP OF THE BRAIN

"Cognitive control and value-based decision-making tasks appear to depend on different brain regions within the prefrontal cortex,"

www.healthland.time.com

Jan Glascher

P

Pencil
Your favorite animal

Pencil
Your favorite animal

Pencil
Your favorite sport

Pencil
Your favorite sport

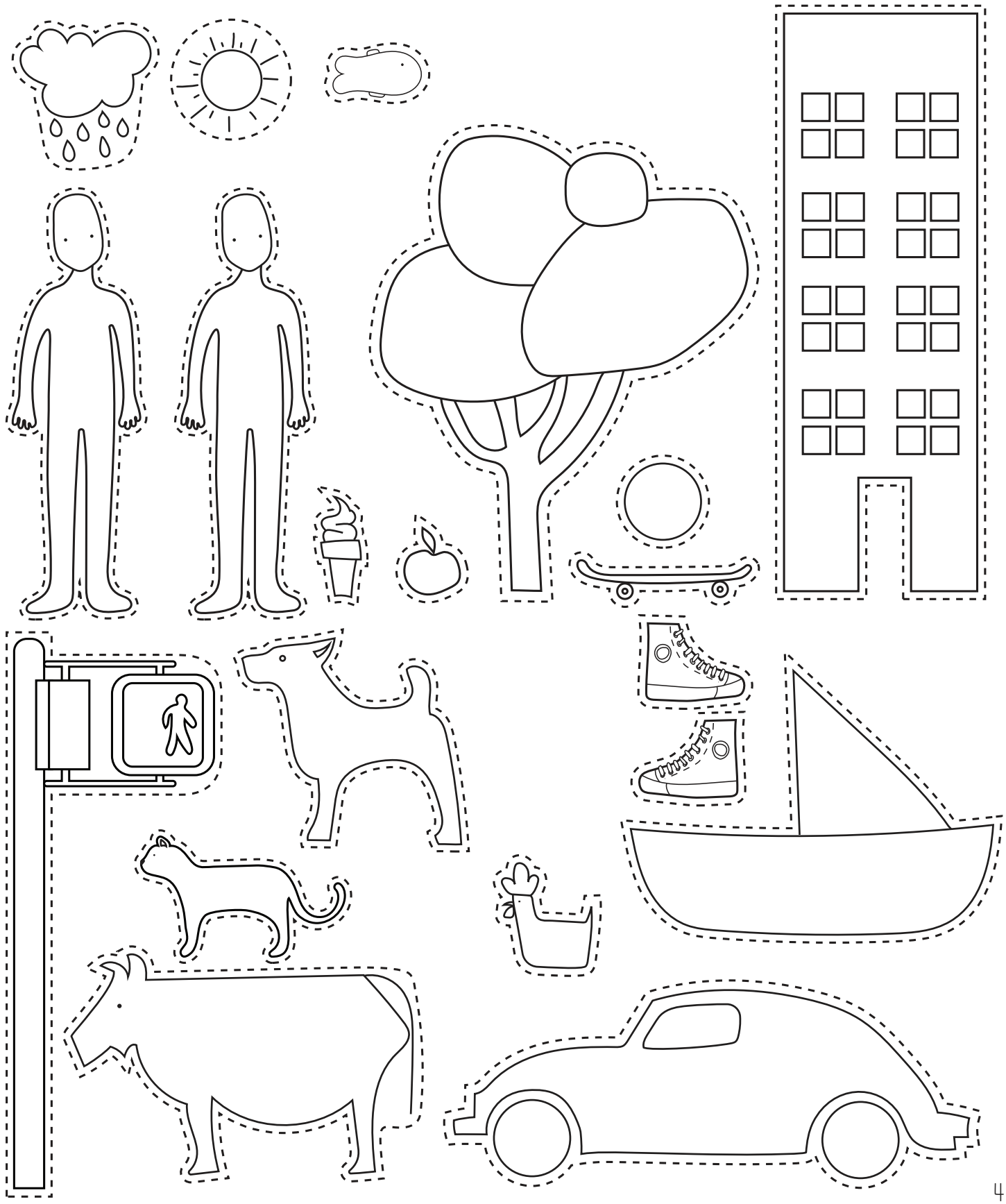
Pencil
Your favorite game

Pencil
Your favorite game

P

scissors, colored pencils, scrap paper

Cut out the pieces below and then use five of them to help you create and narrate a story. Name your story.



P

pencil, colored pencil

Draw your favorite memory of a summer day

GROW YOUR BRAIN EACH DAY

06. Challenges create new connections

Throughout our lives, each daily challenge increases our brain's neuroplasticity. You and your child have already experienced this process just by interacting with this book! Basically, each repetition of a challenge activates neurons between different parts of the brain.

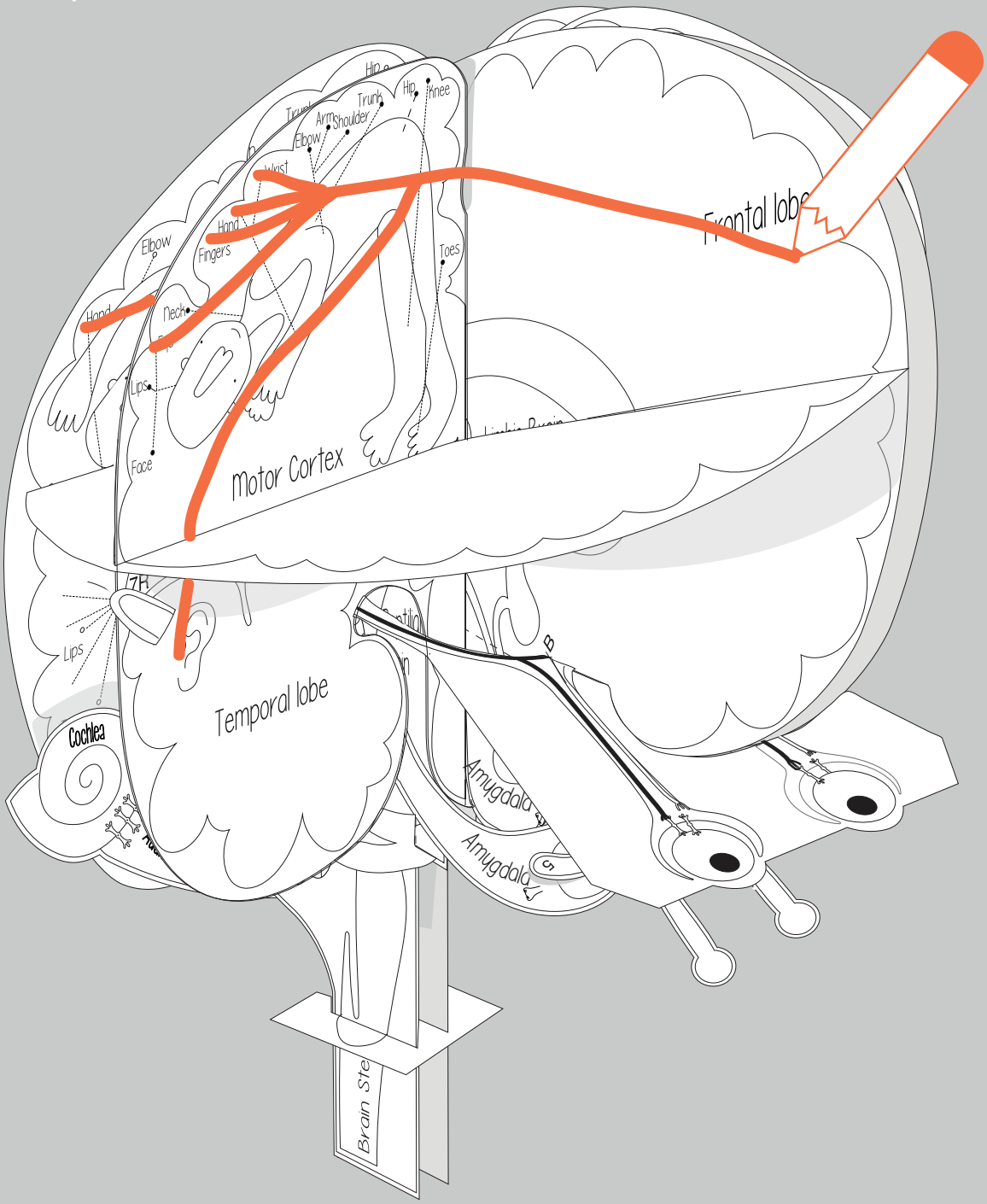
Lets return to our 3D brain model.

Using your model, you can record the connections you make in your brain as you might record memories in a diary. Each day, when you do something that challenges you, think about which parts of your brain are being activated. Add the connections to your 3D model with color marker.
For example, practicing the piano would mean drawing a line between your motor cortex, your temporal lobes, frontal lobe, occipital lobe, and sensory cortex.

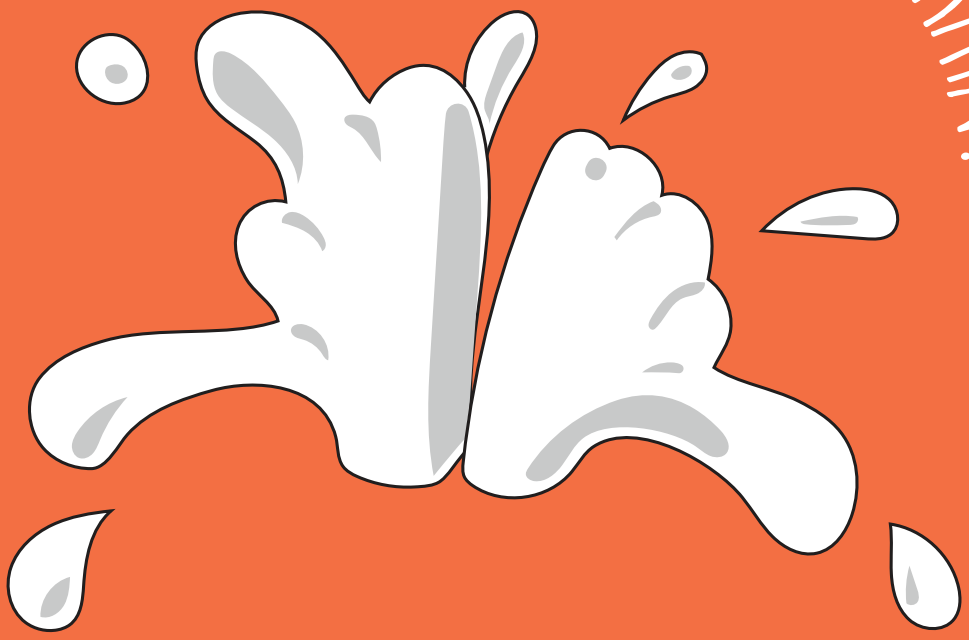
When you repeat a challenge, draw the same type of line on top of the previous one.
The bolder strips that emerge will represent stronger connections being cultivated between different neurons.
After a while, you will see how your brain grows each day!

EXAMPLE

PRACTICING THE PIANO



FUN CHALLENGES TO GROW YOUR BRAIN!



BOTH HANDS DOODLE

Challenge 1:

The first page:
Ask your kid to draw circles all over the page. Have her or him complete half of each circle with the right hand and the other half with the left.
Use a different color with each hand. When finished, take a short break before moving on to the following page.

The second page:
Now, ask the child to repeat the exercise, but to change the left half of each circle to a half triangle. The right hand should draw a half circle and the left hand should draw a half triangle.

This exercise engages the brain in ways that are similar to what happens in musicians' brains when they are playing music!

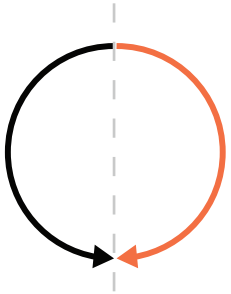
Remember that there is no right or wrong way to do this. Enjoy the challenge of coordinating both halves of your brain!

Try repeating this exercise with your child every morning, experimenting with different shape and color combinations.

P

two different colored pencils

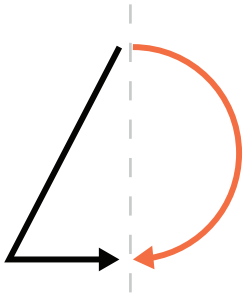
Use your right hand to draw the right side of each circle.
Use your left hand to draw the left side of each circle.
Use a different color with each hand.



P

two different colored pencils

Repeat the exercise from the previous page, but draw a half triangle on the left side instead of a half circle.



HAND-EYE COORDINATION

Challenge 2:

One of the first exercises presented to students in design school is blind contour drawing Students are asked to draw any object by watching it, without watching their papers while drawing. Let's try this activity with your kids! Ask the child not to remove the pencil from the paper during the activity. If the pencil is accidently lifted, have the child continue from about where he or she left off, without looking at the paper. Have the child first spend about five minutes deciding on what to draw and how to draw it. Then, give her or him about another five minutes to complete the drawing.

This exercise produces an image with information travelling directly from brain to hand without any revisions made during the drawing process.
This is technique was first introduced by Kimon Nicolaides in "The Natural Way to Draw" (1941).

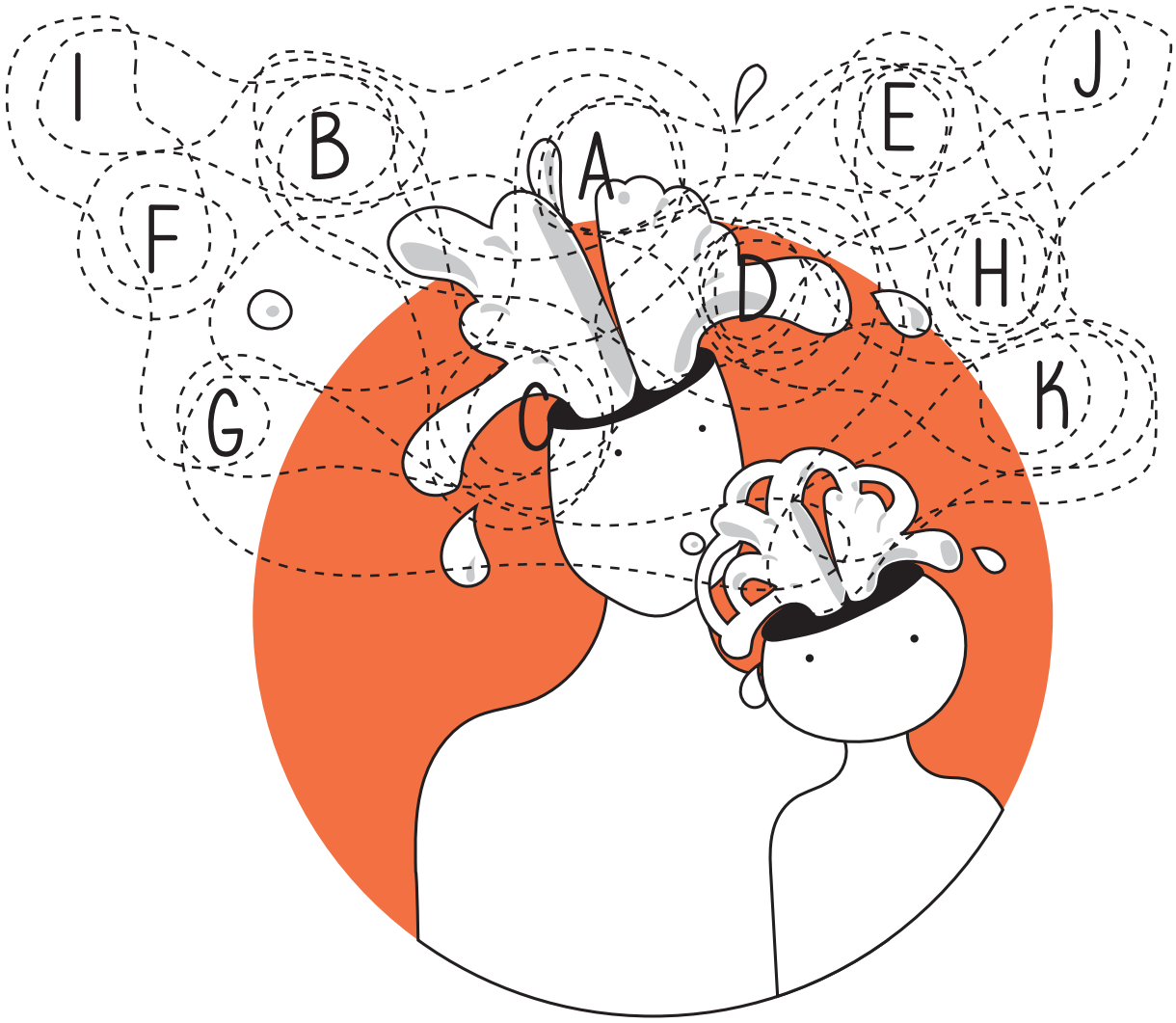
For better results, tape the page to a table top to keep it stationary during the activity.

P

pencil, tape

CONGRATULATIONS

You and your child have taken a step towards becoming system thinkers!
As you can see, the brain, the most complicated system in the body, works through a network of interconnections. Similarly, other processes in the world operate on a systemic level. Stay tuned as we explore more of these in other System Thinking playbooks...



SPECIAL THANKS

This book would not have been possible without Patricia Moore, Ayse Birsel, Leyla Acaroglu, and Stan Rickel. With the inspiration - and in some cases, direct advice - they provided, I started to develop this series of playbooks after completing my masters degree in Industrial Design at the Rochester Institute of Technology. "Meet Your Brain" is the first playbook in this series. I hope that you have enjoyed it!

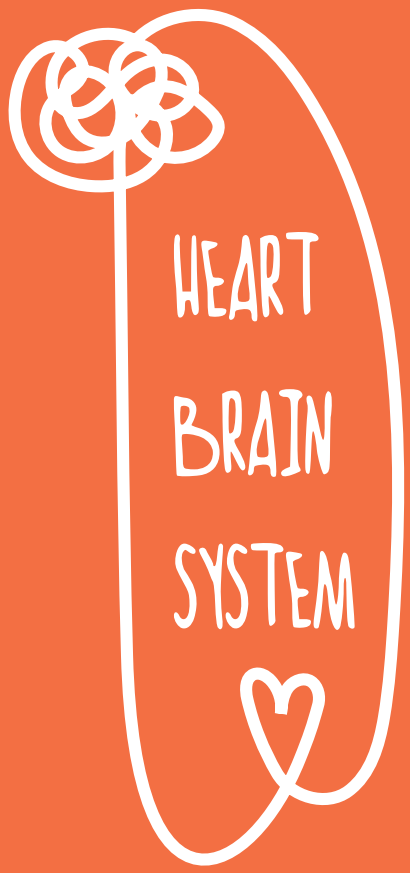
PATRICIA MOORE

AYSE BIRSEL

LEYLA ACAROGLU

STAN RICKEL

SEND US A PHOTOGRAPH OF YOUR COMPLETED BRAIN!



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