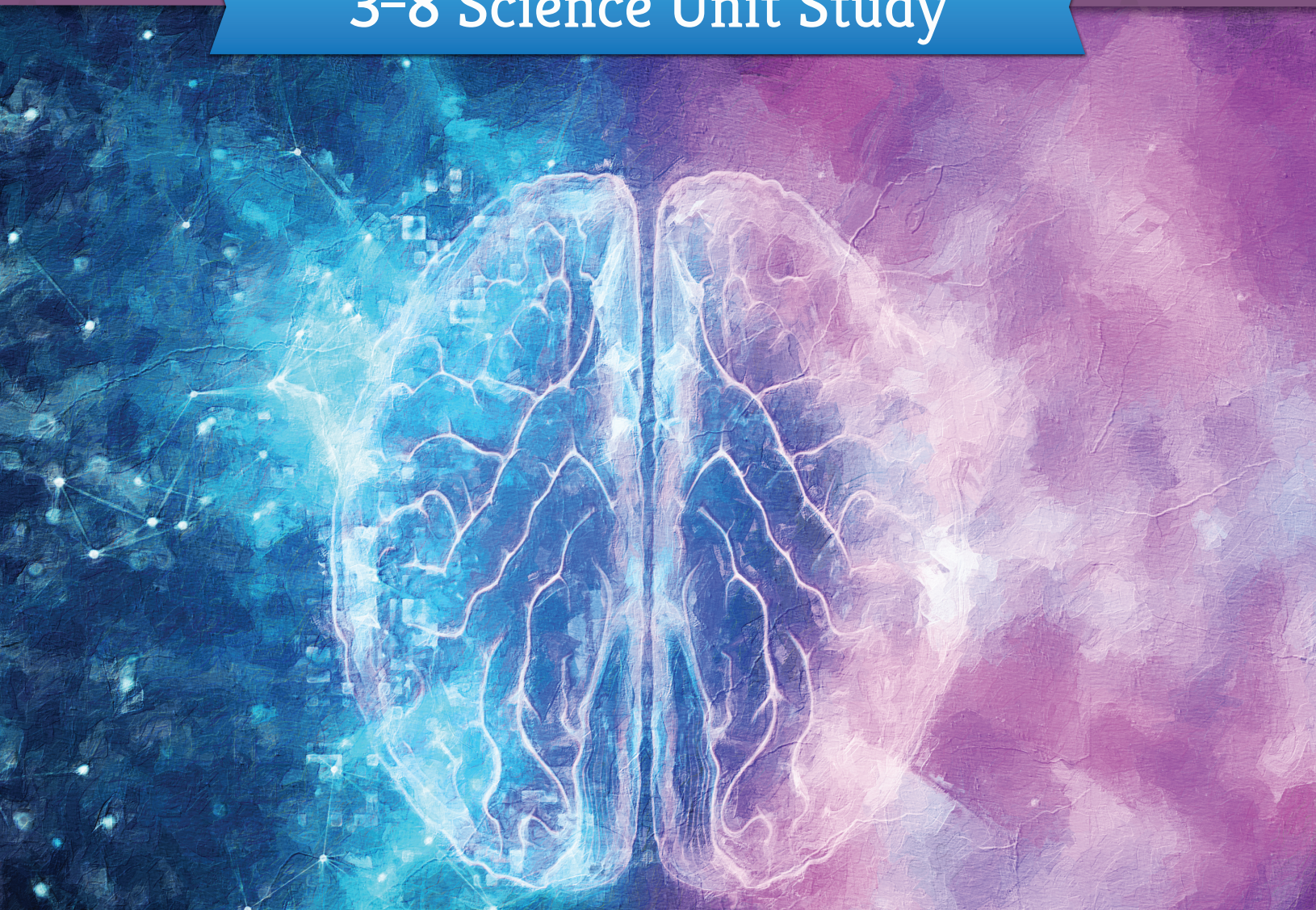
# HEALTH AND THE HUMAN MIND

## 3–8 Science Unit Study



THE GOOD AND THE BEAUTIFUL

# Health and the Human Mind

CREATED BY THE GOOD AND THE BEAUTIFUL TEAM

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# Unit Information

## Student Journal

All The Good and the Beautiful science units include activities in a student journal. Each student should have his or her own student journal, and the parent or teacher will direct the student regarding when to complete the activities in the lessons. Student journals can be purchased by going to **goodandbeautiful.com/science** and clicking on the *Health and the Human Mind* unit link.

## Science Wall

All The Good and the Beautiful science units include vocabulary words to be placed on your science wall, which is a wall or trifold presentation board in your learning area on which you can attach the vocabulary words and other images. ***Cut out the vocabulary word cards at the beginning of the unit.*** The course will indicate when to place them on the wall.

## Lesson Preparation

All The Good and the Beautiful science units include easy-to-follow lesson preparation directions at the beginning of each lesson.

## Activities

Many of The Good and the Beautiful science lessons involve hands-on activities. An adult should always closely supervise children as they participate in the activities to ensure they are following all necessary safety procedures.

## Unit Videos

Some lessons include videos that were created by The Good and the Beautiful. Have a device available that is capable of playing the videos from **goodandbeautiful.com/sciencevideos** or from the Good and Beautiful Homeschool app.

## Content for Older Children

Some lessons include extra content that is more applicable for older children (grades 7–8). Parents or teachers may choose to skip this content if instructing only younger children.

## Content for Younger Children

Some lessons include extra content that is more applicable for younger children (grades 3–6). Parents or teachers may choose to skip this content if instructing only older children.

## Versions

New discoveries are being made on an ongoing basis. This course is reviewed and revised periodically to keep information as up to date as possible. This version is the first edition of this unit.

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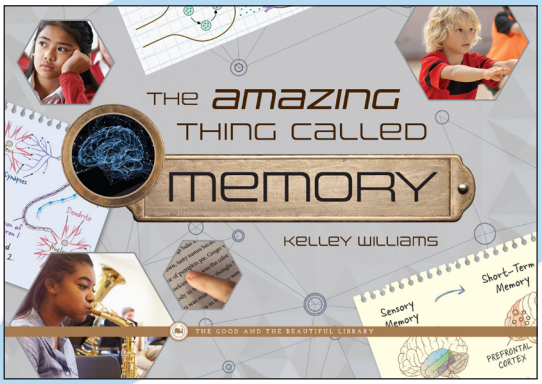
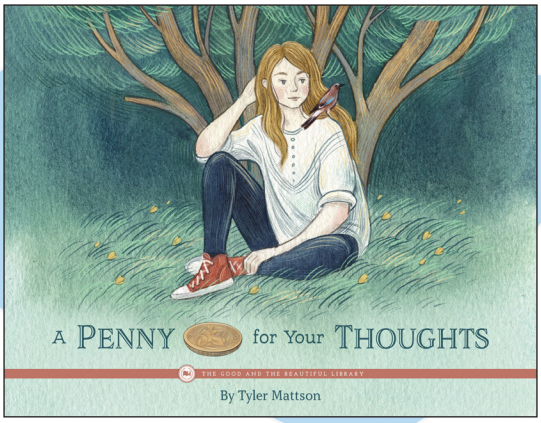
# Read-Aloud Book Pack

The books below are optional read-aloud books that complement this unit. These books can be purchased as a book pack by going to **goodandbeautiful.com/science** and clicking on the *Health and the Human Mind* unit link.




*The Amazing Thing Called Memory*
By Kelley Williams




*A Penny for Your Thoughts*
By Tyler Mattson

## CORRELATED BOOKS

The Good and the Beautiful Library has several books that correlate well with the *Health and the Human Mind* unit. It can be a wonderful experience for children to read books at their levels that are related to the subjects they are learning. The library includes both fiction and nonfiction books organized according to reading level. Find the Correlated Books by going to **goodandbeautiful.com** and clicking on the *Health and the Human Mind* unit product page.

GRADES 7–8

# Lesson Extensions

## How the Extensions Work

Each lesson has an optional lesson extension for children in grades 7–8. Complete the lesson with all the children, and then have the older children complete the self-directed lesson extension. These extensions are located in the *Grades 7–8 Student Journal*.

## Answer Key

The answer key for the lesson extensions can be found on the free Good and Beautiful Homeschool app in the science section. Visit **goodandbeautiful.com/apps** for information on accessing the app. The app can be accessed from a computer, phone, or tablet.

## Flexibility

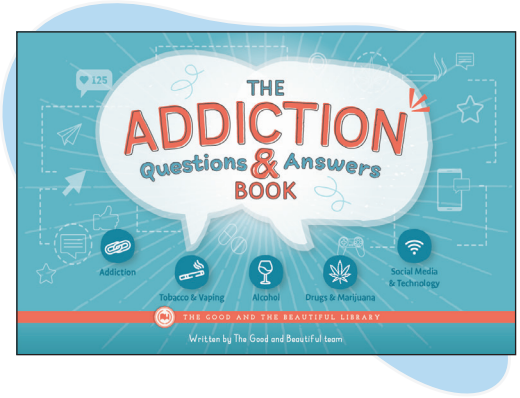
The amount of time it will take to complete each lesson extension will vary for each child. The average time is about 10–15 minutes per extension. Parents, teachers, and children may choose to omit parts of the lesson extension if desired. Encourage the children to stretch their capabilities, but also reduce work if needed.

## Taking Notes

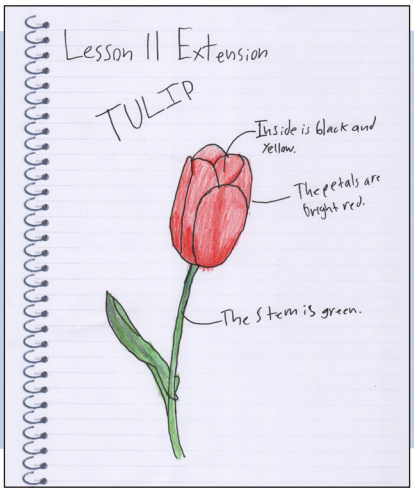
Some of the grades 7–8 lesson extensions have the children summarize the material read. Teach the children to look for key information, summarizing the most important points. Students can also add notes with their thoughts and the facts that are most interesting to them.

## Optional Grades 7–8 Reading Book

We recommend *The Addiction Questions and Answers Book* as extra reading for students in grades 7–8. This book can be purchased by going to **goodandbeautiful.com/science** and clicking on the *Health and the Human Mind* unit link. One copy per child is recommended.




*The Addiction Questions & Answers Book*
By The Good and the Beautiful Team





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# SUPPLIES NEEDED

You will need the following supplies for activities. There are no experiments in this unit.

### Lesson 1

- Dropper or spoon
- Cold water
- Feather or other soft object
- Ball
- Page protector or plastic wrap for each child
- Poster paint
- ¼ tsp water per child
- 1 straw per child
- 5 pipe cleaners per child (leave one long and cut the others in half)
- 15–20 pony beads per child

### Lesson 2

- KEEP HIDDEN FROM CHILDREN: a pile of table salt on a plate
- Crayons or colored pencils
- Scissors
- Glue stick

### Lesson 3

- Ruler

### Lesson 4

- Timer
- A cup, filled with ½ inch of water, per child
- Crayons or colored pencils, at least six different colors
- Glue stick for children in grades 3–6

### Lesson 5

- 2 small bowls
- Sugar
- Salt
- 1 spoon per child
- 1 cup of water per child
- Lemon juice
- Unsweetened cocoa
- Optional: umami-flavored food, such as tomato, soy sauce, or mushrooms

### Lesson 6

- 1 blindfold per child
- KEEP HIDDEN FROM CHILDREN: five items with distinctive odors (candle, flower, soap, popcorn, onion, etc.)
- Chocolate or other food with a distinctive taste

### Lesson 7

- Pencil
- 1 pillow per child

### Lesson 8

- KEEP HIDDEN FROM CHILDREN: 10 small items, such as toys, snacks, crayons, erasers, or buttons
- Cookie sheet
- Dish towel
- Timer
- Strongly scented object, such as a scented candle, perfume, or air freshener
- Coin

### Lesson 9

- None

### Lesson 10

- A few sensory items to touch and feel, such as pipe cleaners
- 1 small snack per child
- Something to smell, such as a candle

### Lesson 11

- 1 flower (grades 7–8 only)

### Lesson 12

- 1 piece of scrap paper per child

# Vocabulary

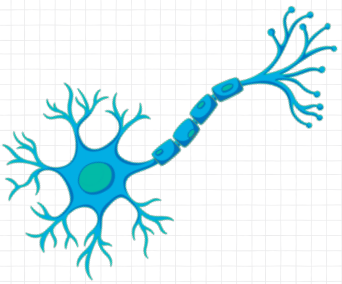
**Instructions:** Cut out the vocabulary cards in this section. Place them on your science wall when prompted to do so in the lessons. Review the vocabulary words several times during this unit and, if desired, at various times throughout the school year.

## Nervous System

the system of nerve cells and fibers that acts as the command center of the body

## Neuron

a nerve cell that transmits electrical impulses



## Brain

an organ located in the head that controls the body's functions

## Homeostasis

an organism's self-regulating state of optimal functioning

## Memory

the process of taking in information from the world around us, processing it, storing it, and later recalling that information

## Emotions

spontaneous mental reactions that sometimes produce physical effects

## Mental Health

state of physical, mental, and social well-being

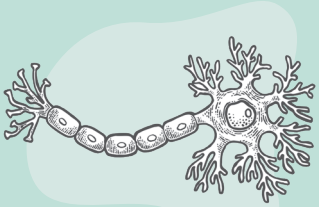
## Social Health

the ways people create healthy and positive relationships with each other

# The Human Mind and Nervous System

**Objective**

Help the children understand what the human mind is and explore the functions of the nervous system.



**Preparation:**

- ☐ Mix ½ tsp poster paint with ¼ tsp water—about a spoonful per child.

**Activity Supplies:**

- Dropper or spoon
- Cold water
- Feather or other soft object
- Ball
- Page protector or plastic wrap for each child
- Poster paint
- ¼ tsp water per child
- 1 straw per child
- 5 pipe cleaners per child (leave one long and cut the others in half)
- 15–20 pony beads per child

## ☐ Nervous System Activity

**Perform the following tasks with the children.** *Note: If desired, ask the children for their consent before touching them. For example, "Is it okay if I touch you with something soft and harmless?" or "Will you please close your eyes so I can put something safe on your arm?"*

1. **Have the children close their eyes. Using a dropper or spoon, put a drop of cold water on a child's arm. Repeat for each child. Read to the children:** What just happened? What did that feel like? How did you know that I put water on your arm when you had your eyes closed?

2. **Have the children close their eyes. Tickle a child on the back of the neck with the feather or other soft object. Repeat for each child. Read to the children:** What just happened to you? What did it feel like? What do you think I tickled your neck with? What did your body want to do when you felt the feather or the water? [brush it away, jump, etc.]

3. **Have the children open their eyes. Have a child stand in front of you. Toss the ball to the child. Repeat with each child. Read to the children:** What just happened? What did your body do when I tossed the ball to you? [arms went up to catch it]

**Read to the children:** Our bodies are amazing creations. They are constantly taking information that comes from our senses and then using that information to tell us how to react to what's going on around us. When you felt the cold water on your arm, you knew instantly that it was wet and that it was cold. You also knew that it was on your arm and not on your leg or head. Your body then made a decision about how to react—

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A few actions our bodies make are special—we can choose to blink our eyes or breathe slowly, but when we don't choose to think about those actions, they happen automatically. Both the somatic and autonomic nervous systems control these actions!

## Branching Nerves

**Have the children turn to the "Branching Nerves" page in Lesson 1 of their student journals and place a page protector or plastic wrap behind the page. Place a large drop of the previously prepared diluted paint on the head in the journal (for the brain) for each child. Have the children use a straw to blow paint down the body for a spine and along the arms and hands for branching nerves. After it is dry, have the children label the three major areas of the nervous system, using the word bank provided at the bottom of the journal page. An answer key can be found at the end of this lesson.**

### FUN FACT

The human brain can create enough energy to power a light bulb—about 23 watts.

## Neurons and Synapses Activity

**Read to the children:** There are small nerves running through your entire body. Many of them are so tiny that they can only be seen under a microscope. But did you know that you have a nerve in your body that goes from your back, all the way down your leg, to your big toe? This nerve is called the *peroneal* [pe–roe–nee–all] *nerve*.

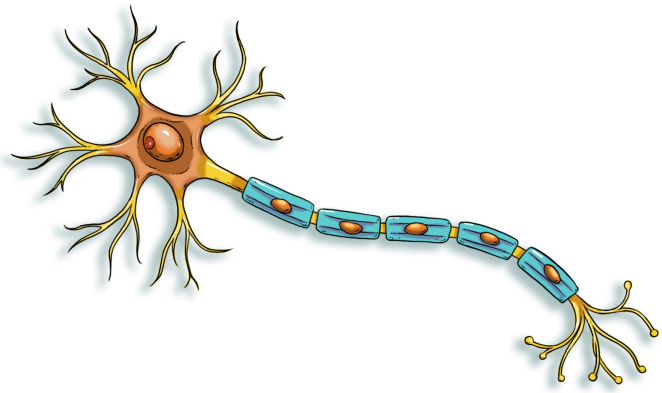
***Neurons***, or nerve cells, are the building blocks of the nervous system, and each intricately created human body has billions, if not trillions, of them. They are responsible for taking input from the world around you, sending that information to your brain through your spinal cord, and relaying orders to your muscles to react to what is happening.

Neurons need to have a special design to carry out their jobs. To help you understand how they're made, we're going to make a replica of a neuron.

**Have the children each create a neuron replica by following the directions below while you read. If you are teaching only one child, make a model yourself or have the child make two models so that the synapse can be created between two neurons.**

**Have the children coil one end of the long pipe cleaner one time around a finger for the cell body, leaving a long tail.**

**Read to the children:** The main part of the neuron, the circle part of the long pipe cleaner, is called the *cell body.* It has branches called *dendrites*, which pick up signals from the environment or from other neurons. Neurons look a little bit like a tree, don't they?



**Have the children use the four pipe cleaners you cut in half to create 5–7 dendrites by twisting one end around the top of the cell body, making them stick out like branches. They may also twist even shorter pieces around the dendrite pieces already attached to create more of a branched look.**

**Read to the children:** The short pipe cleaners represent the dendrites that send signals along the "trunk" or long axon. This is represented by the long, straight part of your large pipe cleaner.

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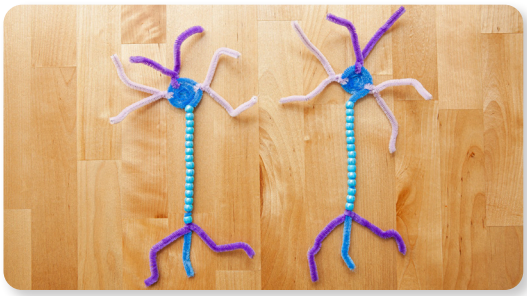
**Have the children thread the pony beads from the end of the axon up to the cell body.**

**Read to the children:** Just like the pony beads covering the pipe cleaner, the long axon of a neuron is covered by insulating structures called *myelin sheaths*. These structures help the signals travel quickly along the axon, reaching speeds of up to 100 meters (328 feet) per second.

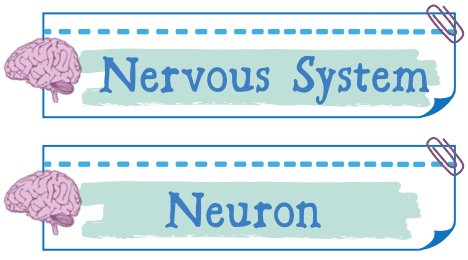
**Have the children place two models next to each other, dendrite to axon, leaving a gap as the synapse.**

**Read to the children:** When one neuron wants to "talk" to another, it sends an electrical signal packaged in chemicals across a gap called a *synapse*. When the signal reaches the "roots" of the neuron, or *axon terminals*, it gets packaged in a chemical called a *neurotransmitter*, crosses the synapse, and is received by the dendrites of the next neuron. The neuron on the other end of the synapse receives the chemical, changes it back into an electrical impulse, and passes it across another synapse to the next neuron.



## Science Wall: Vocabulary Words

**Place the vocabulary cards NERVOUS SYSTEM and NEURON on your science wall. Read and discuss the words and their definitions.**



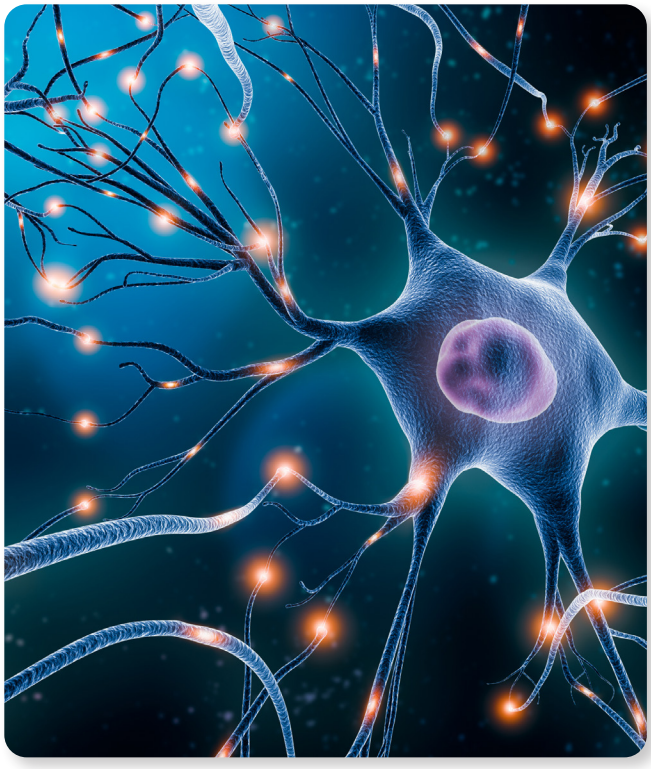

## What Is the Mind?

**Read to the children:** You might have noticed that the title of this unit is *Health and the Human Mind*. What do you think is the difference between your brain and your mind? Your brain is a physical organ in your body that controls everything you do. It can be touched. Your mind is who you are—your thoughts, feelings, personality, dreams, experiences, and your actions. It cannot be touched, but it does have the power to change the physical structure of the neurons in your brain based on what is happening in your life and how you react to it. For example, if you strive to think positively, you can set goals to improve your thoughts and habits to retrain your brain or neurons to react positively to the world around you. God has given us free will so that we can use our minds to choose how we move through life.

## Lesson 1 Extension

7–8

**Have children grades 7–8 complete the self-directed Lesson 1 extension titled "Changing Reflexes" in their student journals.**

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# Eyes and Vision

**Objective**

Help the children learn the parts of an eye, how it processes images through the brain, and the amazing versatility of sight.

**Preparation:**

- ☐ Cut out the "Types of Color Blindness" cards.

**Activity Supplies:**

- Ruler

## ☐ Optical Illusions

**Read to the children:** Our eyes are an incredible blessing. Being able to see the beauty or potential dangers around us brings us joy and safety. However, sometimes what we see can be misleading. Have you ever seen something and thought it was a certain color or object, but it turned out to be different? Let's take a look at a few examples, known as ***optical*** illusions.

**Have the children turn to the "Optical Illusions" pages in Lesson 3 of their student journals. Have the children follow the instructions for each illusion on their student journal pages.**

Why is it important to know that what we are looking at is not always accurate or real? [Sample answer: Information, such as photos or images on social media, can be manipulated or not show an accurate view of what is actually happening.]

## ☐ Amazing Eyes Video

**Have the children watch the video "Amazing Eyes" at goodandbeautiful.com/sciencevideos or on the Good and Beautiful Homeschool app. Discuss the following questions.**

1. What is one part of the eye you remember learning about in the video? What is its function? [retina: receives light and sends signals to the brain; pupil: allows the right amount of light to enter the eye; iris: works with the pupil to regulate light coming into the eye; cornea: bends and focuses light to the retina]
2. What information about the eye did you find most interesting?

## ☐ Filling in the Gaps

**Read to the children:** Our eyes allow us to take in an incredible amount of information about the world around us, from colors to textures. But even with such impressive capabilities, eyes still miss some information. For instance, because we blink roughly once every four seconds, our eyes miss a quarter of


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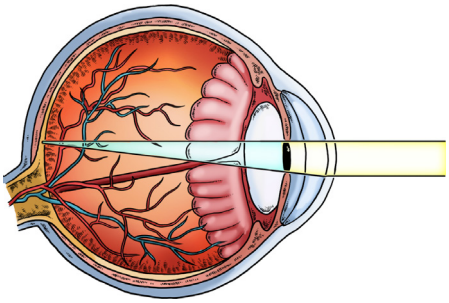
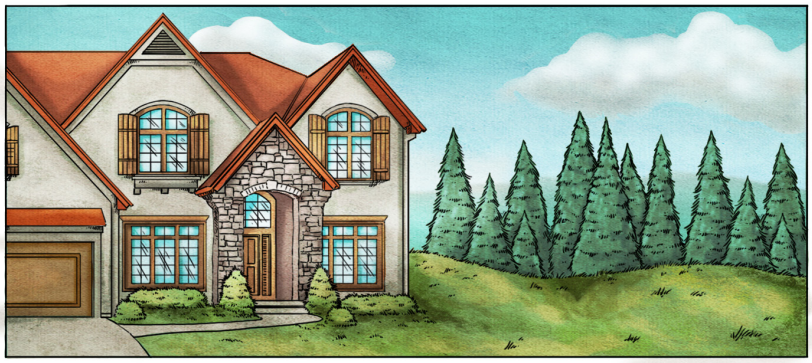
# Common Vision Problems

A





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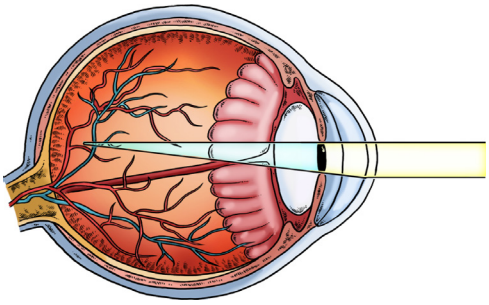

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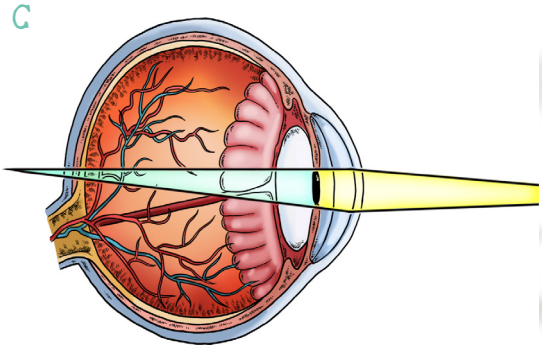

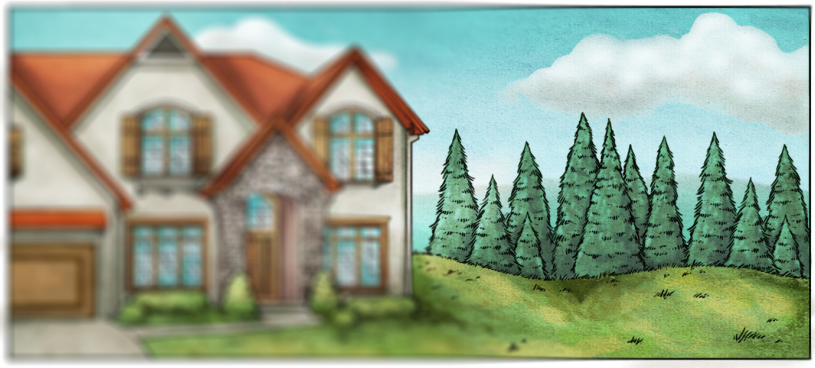

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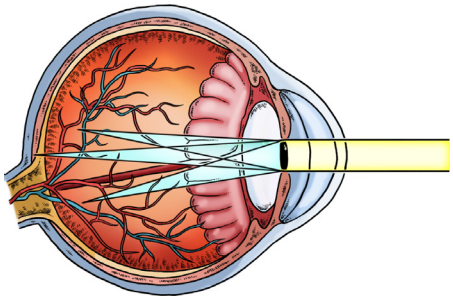

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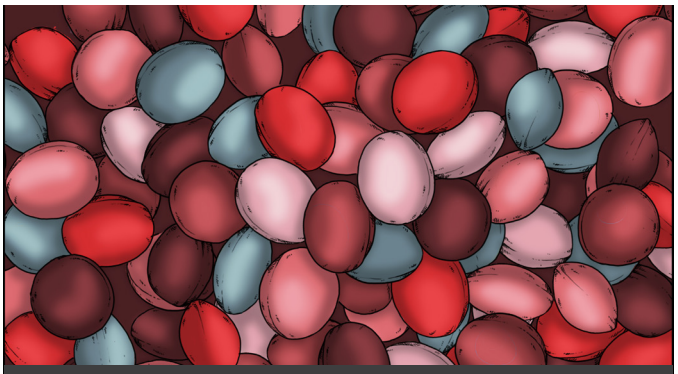
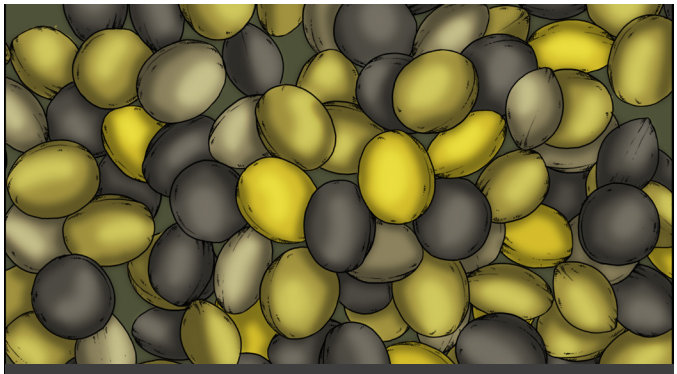
# Types of Color Blindness

NORMAL VISION



TRITANOPIA



PROTANOPIA

DEUTERANOMALY

## Type 1

With this type of vision, an individual's cones and rods, photoreceptors that detect different wavelengths of light, are functioning correctly. The individual is able to see all colors on the visible light spectrum.

## Type 2

Individuals with this type of color blindness have no blue-responsive cone cells, which results in blue-yellow color blindness. These individuals can identify reds, light blues, pinks, and lavender.

## Type 3

Individuals with this type of color blindness are not able to see almost any red. People with this type of color blindness will primarily see shades of blue and gold while reds and greens will appear the same.

## Type 4

This type of color blindness is when the green-responsive cones do not work properly. People with this type of color blindness see shades of blue, yellow, and other muted colors. This is the most common type of color blindness, and it is estimated that 1 in 12 men and 1 in 200 women are affected.

# Memory and Emotions

**Objective**

Help the children learn types of memory and emotions and how each is managed.

**Preparation:**

- ☐ Place the 10 small items listed below on the cookie sheet. Cover with a dish towel.
- ☐ Cut out the "Emotions Match Cards."

**Activity Supplies:**

- KEEP HIDDEN FROM CHILDREN: 10 small items, such as toys, snacks, crayons, erasers, or buttons
- Cookie sheet
- Dish towel
- Timer
- Strongly scented object, such as a scented candle, perfume, or air freshener
- Coin

## ☐ Optional Read Aloud

**At any point in the lesson, you may read one of the books from the optional Read-Aloud Book Pack. *The Amazing Thing Called Memory* by Kelley Williams is suggested with this lesson.**

## ☐ Memory Game

**Uncover the cookie sheet and give the children 20 seconds to look at and memorize the items on the cookie sheet. After 20 seconds cover the cookie sheet with the dish towel, have the children look away, and remove one of the items. Tell the children you removed one item. Uncover the items and have the children try to figure out which item was removed. The children can do this as a group or individually. You can then replace the item and take turns removing different items. It may be fun for the children if an adult takes a turn and tries to identify a missing item. For an extra challenge, add more than 10 items to the cookie sheet or remove more than one item at a time.**

## ☐ Memory Structures

**Read to the children:** ***Memory*** is the ability of your brain to receive, encode, store, and retrieve information. Your brain was hard at work doing all these things in our last activity! Here is another example of how a memory is formed: One cold afternoon, a young boy makes cookies with his grandma. She explains the recipe to him and lets him roll out the cookie dough, select the cookie cutters to use, and bake the cookies. Once the cookies have cooled, the boy and his grandma decorate them. Every second of this activity, the boy's brain receives loads of information from his sensory organs about the things he is seeing, smelling, hearing, touching, and tasting. His brain is turning this information into usable data that it will then store and turn into short-term and long-term memories. Days, months, or even years later, the boy may not be able to recall every detail of this day, but he may be able to

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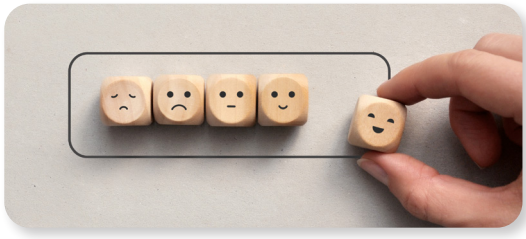
## Amnesia

**Read to the children:** One of the ways scientists are able to learn which structures in the brain are involved in what kinds of memories is by studying people who have had illnesses or head injuries that have caused *amnesia*, a condition that affects an individual's ability to remember certain things. Sometimes it can even cause the loss of knowing important things like his or her own name!

In 1986 a man doctors named "Patient R.B." suffered a stroke, which is when blood flow to the brain stops for a period of time. The stroke caused amnesia, and although Patient R.B. remembered things from years ago, he was no longer able to retain new memories after they happened. Scientists studied his brain after his death and found that the lack of oxygen during R.B.'s stroke had caused damage to a small part of his hippocampus. This discovery led scientists to study more about the role of the hippocampus and other structures that make and store memories.

## Memory Terms Matching

**Have the children turn to the "Memory Terms Matching" page in Lesson 8 of their student journals and follow the instructions to complete the page. An answer key can be found at the end of this lesson.**



## Emotions Game

**Read to the children:** Did you know that ***emotions*** are part of our health? We feel happy, sad, angry, scared, worried, calm, tired, and excited. It's okay to feel all those emotions. Sometimes, we can get "stuck" being sad or worried or angry. Or sometimes, we make poor choices because of our emotions. Part of being healthy is learning how to process and react to our emotions; learning how to deal with hard emotions, such as sadness or anger; and learning how to make good choices when we experience these emotions.

3–6

**For children grades 3–6 place the cut-out Emotions Match image cards on the table and the cut-out Emotions Match word cards stacked in the center of the table. Have the children take turns drawing an emotion word card and placing it on the image showing that emotion.**

## Healthy Choices Situations Game

**Read each situation below to the child. For each situation, flip a coin to see which choice is made; heads is the first choice, and tails is the second choice. Discuss whether that choice was a healthy way to handle that emotion or not. If not, read the other choice and discuss why that choice is better.**

1. Adam's little brother ate the last of the dessert that Adam had saved for later. Adam was angry.

   - Adam yells at his little brother.
   - Adam walks a few feet away from the situation and prays for patience and understanding to come over him when he goes back to speak to his brother.

2. Joey's mom is going away on a fun trip for a weekend with her sisters. When she leaves, Joey feels sad and jealous.

   - Joey decides to help clean up the house to surprise her when she comes home.
   - Joey spends all day thinking about how sad he is. He doesn't want to do anything.

3. Sally is frightened of tornadoes, and she hears a weather report that there may be a chance of a tornado that afternoon.
   - Sally keeps checking the sky and asking her mother over and over if she thinks there will be a tornado.
   - Sally tells her mom she is worried. She and her

mom come up with ideas to help her feel safe if there is a tornado.

4 Todd is very excited that his birthday party is tomorrow.

- Todd talks in a very loud voice all day long about what he hopes to get for his birthday.

- Todd tells his dad he is too excited for tomorrow and needs to get some energy out, so his dad takes him to the park to play basketball.

5 Janey is disappointed when her softball team loses its championship game.

- Janey takes her dog outside to play for a while to help her focus on something else.
- Janey eats a giant chocolate bar.

6 Elizabeth doesn't understand her math lesson. She misses every single problem.

- Elizabeth tells herself, "It's okay. I don't understand this right now, but I can learn how to do it."
- Elizabeth tells herself, "I'm just not good at math. I'll never figure this out."

7 Max is thrilled when his soccer team wins its big game.

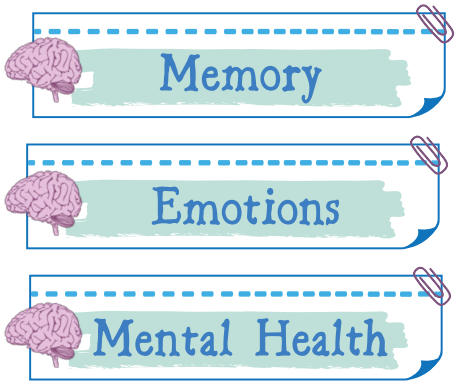
- Max brags to all of his friends, "We're the best! We're so amazing! We beat that other team so bad!"
- Max can't stop smiling, and he tells all his friends, "We played a good game against a tough team. We worked hard!"

8 Carrie hears a friend say something hurtful about another friend.

- Carrie says, "You're mean! I'm not your friend anymore!"
- Carrie tells her parents what the unkind friend said and asks for their advice.

## Science Wall: Vocabulary Words

**Place the vocabulary cards MEMORY, EMOTIONS, and MENTAL HEALTH on your science wall. Read and discuss the words and their definitions.**




## Mental Health

**Read to the children:** Just as you might have a health problem with an arm or a leg or an organ, the human mind can also be diagnosed with medical issues by a doctor who specializes in ***mental health***. There are options available to help minimize symptoms and to find solutions to the mental health challenges a lot of people face. Therapies and/or medications can help, depending on the situation. Mental health is just as important as heart, bone, lung, and muscular health and should be taken just as seriously by ensuring proper medical care is sought out and followed.

## Lesson 8 Extension

7–8

**Have children grades 7–8 complete the self-directed Lesson 8 extension titled "Memory Loss Case Study" in their student journals.**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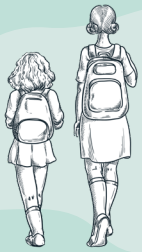
# Social Health

**Objective**

Help the children learn ways to achieve good social health and the benefits of being socially healthy.



**Preparation:**

- ☐ Cut out the "Communication Practice Cards."

**Activity Supplies:**

- None

## ☐ Social Health Video

WATCH ONLINE

**Have the children watch the video "Social Health" at goodandbeautiful.com/sciencevideos or on the Good and Beautiful Homeschool app. Discuss the questions below.**

1. What examples of poor ***social health*** did you see in the video? [bullying, loneliness, etc.]
2. Think of one goal you could set to improve your social health. [Ideas could include going to the park or playing outside more often and getting involved with a local sports team, club, or youth group.]

## ☐ Importance of Social Health

**Read to the children:** Taking care of our physical needs, such as staying safe, eating, and sleeping, is obviously important to our health. But sometimes we forget that it is just as important to take care of our social needs. We were created to work with and help one another, spend time with others around us, and form relationships that lift our spirits and bring us joy. By making friends, we strengthen not only ourselves but also others. Think of your social health goal again. Would achieving your goal strengthen yourself and others? If not, consider revising your goal.

## ☐ Science Wall: Vocabulary Words

**Place the vocabulary cards SOCIAL HEALTH, SOCIAL MEDIA, and PEER on your science wall. Read and discuss the words and their definitions.**

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## Peer

### Social Media Family Rules

**Read to the children:** ***Social media*** is an incredible technology that helps us stay connected to faraway friends and family, join groups of people with similar interests, and share ideas. However, research has shown that overuse can lead to addiction and a decrease in life satisfaction. It is important to follow the guidelines and rules our family has established for social media. Discuss any rules or guidelines your family practices.

### Communication Role Play

**Give the children the cut-out "Communication Practice Cards."**

**Read to the children:** Being able to connect with others face-to-face and avoid the damaging effects of negative peer pressure, bullying, unhealthy friendships, and social media addiction can be summarized in one word: communication. We need to be able to communicate problems, goals, interests, and fears. Today we are going to practice communicating. On each of these cards is a scenario you need to discuss. We will take turns communicating what is needed for the scenario, following the guidelines below.

1. Use simple, clear words.
2. Speak as calmly as possible in a friendly manner.
3. Ask clear questions as needed.
4. Explain the circumstances, such as what someone else said or did, what you said and did, etc.

*Note: If needed, give the children an example by first completing one of the cards yourself. The "Communication Practice Prompts" page has additional prompts for each card as ideas to start a discussion.*

### Lesson 9 Extension

7–8

**Have children grades 7–8 complete the self-directed Lesson 9 extension titled "The Impact of Advertising on Human Behavior" in their student journals.**

# Communication Practice Cards

# Communication Practice Cards

1

Some of your friends have social media accounts, but you do not. One of those friends asks you why you do not have an account. What can you say to communicate why you do not have social media?

2

There is a new family on your street. One day you notice some kids teasing one of the girls in the family. What can you say to help stand up for her? What can you say to help her feel better?

3

A longtime friend has recently begun to say things about you that are hurtful. What can you say to your friend to communicate how you are feeling? What should you do next if he or she continues to treat you unkindly?

4

You have tickets to an event in town and want one of your friends to come with you. You are nervous because you are not sure if your friend would be as excited about the event. What can you say to invite your friend and communicate how important it is to you? What can you say if he or she is not interested?

5

Your good friend has recently told you something and has asked you to keep it a secret. What your friend told you puts your friend in danger, so you suggest he or she talk to an adult. What would you say to your friend? If your friend says no, what can you say to a trusted adult to help your friend get the help he or she needs?

6

Some of your friends start talking about things they saw online that make you feel uncomfortable. What can you say to your friends to leave the conversation? You continue to have bad feelings about what you heard and decide to talk to a trusted adult but are nervous you will be in trouble. What can you say?

7

One of your friends has started talking negatively to you about other friends when they are not around. What can you say not to participate in his or her gossip and encourage him or her not to say mean things about others?

8

You are going to a movie for the first time with friends. The plan is to see a good movie, but when you arrive, some of your friends say they want to see one that you know will be inappropriate. What can you say to encourage them to stick with the original plan?

# Connecting with Nature

**Objective**

Help the children learn the benefits of connecting with nature for their mental, physical, and emotional health.

**Preparation:**

- ☐ None

**Activity Supplies:**

- 1 flower (grades 7–8 only)

*Note: This lesson will require spending at least a few minutes outdoors. Choose a day to do this lesson when you can go outdoors.*

## ☐ Countless Benefits to Time Spent Outdoors

**Read to the children:** God designed and created this beautiful world especially for us. People in times past naturally spent much of their lives outdoors in nature, but many people in the modern world spend very little time outside. Doctors and scientists are beginning to understand how important it is for our physical and mental health to spend time outdoors in God's creation. We're going to do a little activity to help us understand why nature is so important for us.

## ☐ How Does Nature Affect Our Bodies?

***Note: If weather permits, have the children complete this activity outside.*** **Have the children turn to the "Nature Helps Our Bodies" page in Lesson 11 of their student journals. Have them go through the maze and stop when they reach a number. Read the matching numbered section below. Ask the question or read the prompt at the end. After the children answer correctly, they can continue through the maze.**

1 **Read to the children:** Scientists have discovered many ways that being in nature positively affects our bodies. Being outside often offers a lot more stimulation for our senses than being indoors. Our eyes see more, our ears hear more, our noses smell more, and our bodies experience more sensations. The body adjusts to the temperature, feels the wind, and adapts to uneven surfaces like grass, dirt, and rocks. Even rainy or snowy days provide lots of stimulation for our senses if we are dressed appropriately to enjoy them. Scientists are learning that our bodies and minds need the stimulation that nature provides to be healthy. What is one way your senses are being affected right now?


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2 Nature may be especially helpful to children and adults who have a hard time focusing and paying attention. Many people report that their symptoms improve when they are outdoors. Why do you think being outside would improve someone's focus?

3 Studies have also found that spending time outdoors reduces our bodies' production of stress hormones, like adrenaline and cortisol. These chemicals can help us when we are in danger, but sometimes our bodies produce them when they aren't needed. When we are worried or upset, these chemicals can make our hearts work harder unnecessarily. Why would stress hormones be helpful when we are in danger?

4 If you feel worried or sad or angry, going outside for a while can help you calm down. Many scientists have found that families who spend more time outdoors are often happier, better behaved, and less anxious. Share a time when you felt calmer outside.

5 Nearsightedness is much more common in children today than it was when your parents and grandparents were children. Some doctors believe that is because children today spend too much of their time indoors, often looking at screens. Children who spend more time outdoors in nature are less likely to need glasses to correct nearsightedness. Why do you think looking too much at screens is bad for your eyes?

6 It's not surprising that being outside means being more physically active. Children who spend more time outdoors also spend more time walking, running, climbing, jumping, swinging, and playing. What is your favorite outdoor activity?

7 When our bodies are hurt, being around nature can help us heal faster, even if we can't be outside. A famous study of hospital patients who had surgery learned that patients who had a window looking out on leafy trees healed more quickly and needed less pain medication than patients whose windows looked out on a brick wall. Knowing about the benefits of nature, what could hospitals do to help patients heal faster?

## Nature Art Study

**Have the children turn to the "Nature Art Study" page in Lesson 11 of their student journals. Take a few minutes to talk with the children about what they see in the paintings and how the paintings make them feel.**

**Read to the children:** While being outdoors is one of the best things we can do for our physical and mental health, sometimes we can't go outside for one reason or another. When that happens, we can still get the benefits of nature! Scientists have learned that looking at pictures or artwork of nature and listening to sounds of nature can have many of the same benefits as actually being outdoors.

## Fractals in Nature

**Show the children the "Fractals in Nature" pictures located on the next page. Read to the children:** An interesting benefit of being in nature is found in seeing natural patterns called fractals. A *fractal* is a repeating, never-ending pattern. We can find fractals in nature in the spiral of a shell, the branching of lightning, or the arrangement of petals on a flower. Our brains respond to these natural patterns by calming down and reducing stress. As you look at these patterns, do you find them relaxing to look at? Which is your favorite and why? Can you guess what object in nature each of these patterns is from? [1. pine cone 2. nautilus shell 3. sunflower 4. succulent plant 5. Romanesco broccoli 6. spiral aloe]

## Forest Immersion (Optional)

**Read to the children:** Across the world people have discovered variations of forest immersion. *Forest immersion* means spending time in the woods, not necessarily hiking or exploring, but just being present in the woods, enjoying them by hearing, seeing, smelling, and touching. Some studies have shown that breathing in the chemicals released by trees can benefit our bodies.

**If possible, take the children to a wooded area and encourage them to immerse themselves in nature for a while. Talk with them about how being in the woods makes them feel.**

## Lesson 11 Extension

7–8

**Have children grades 7–8 complete the self-directed Lesson 11 extension titled "Nature Journaling" in their student journals.**

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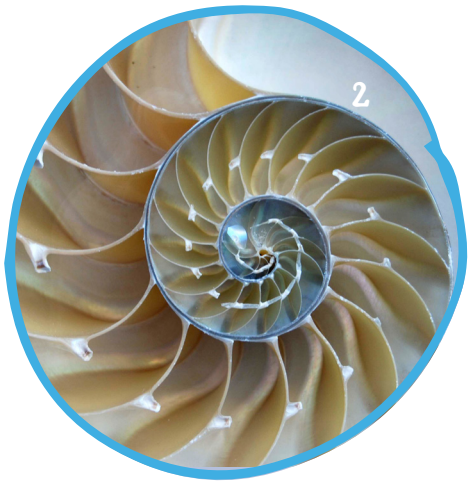
# Fractals in Nature



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# HEALTH AND THE HUMAN MIND

Grades 3-6

# STUDENT JOURNAL

This journal belongs to:

THE GOOD AND THE BEAUTIFUL

# INSTRUCTIONS

This student journal accompanies *The Good and the Beautiful Health and the Human Mind* science unit. It contains all the worksheets and journal pages that are needed to complete the unit. Each student will need his or her own copy of the science journal.

Have each student take his or her time to create high-quality work as the activities and worksheets are completed. Students may enjoy looking back on their past discoveries when they've finished.

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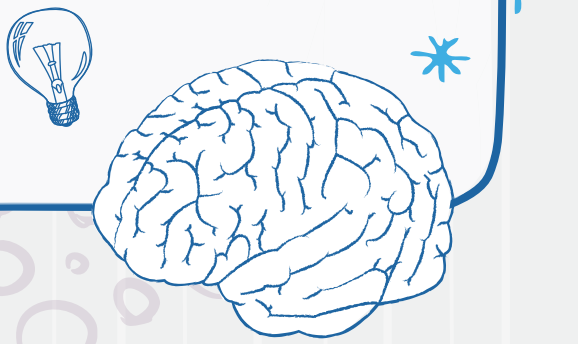

# MAKE A BRAIN INSTRUCTIONS

Cut out the two hemispheres and color the four lobes of the cerebrum (frontal lobe, parietal lobe, occipital lobe, and temporal lobe) and the cerebellum in different colors. These sections are labeled in blue. Cut along the solid lines (the lines the arrows are pointing to). Tuck the flaps under until each dashed line meets its coordinating solid line. Repeat this step for both sides of the brain. Then tape the tabs from the right side of the brain underneath the left side of the brain to connect them and form a hat-like brain. Read your wearable brain to learn about the parts and functions of your brain.

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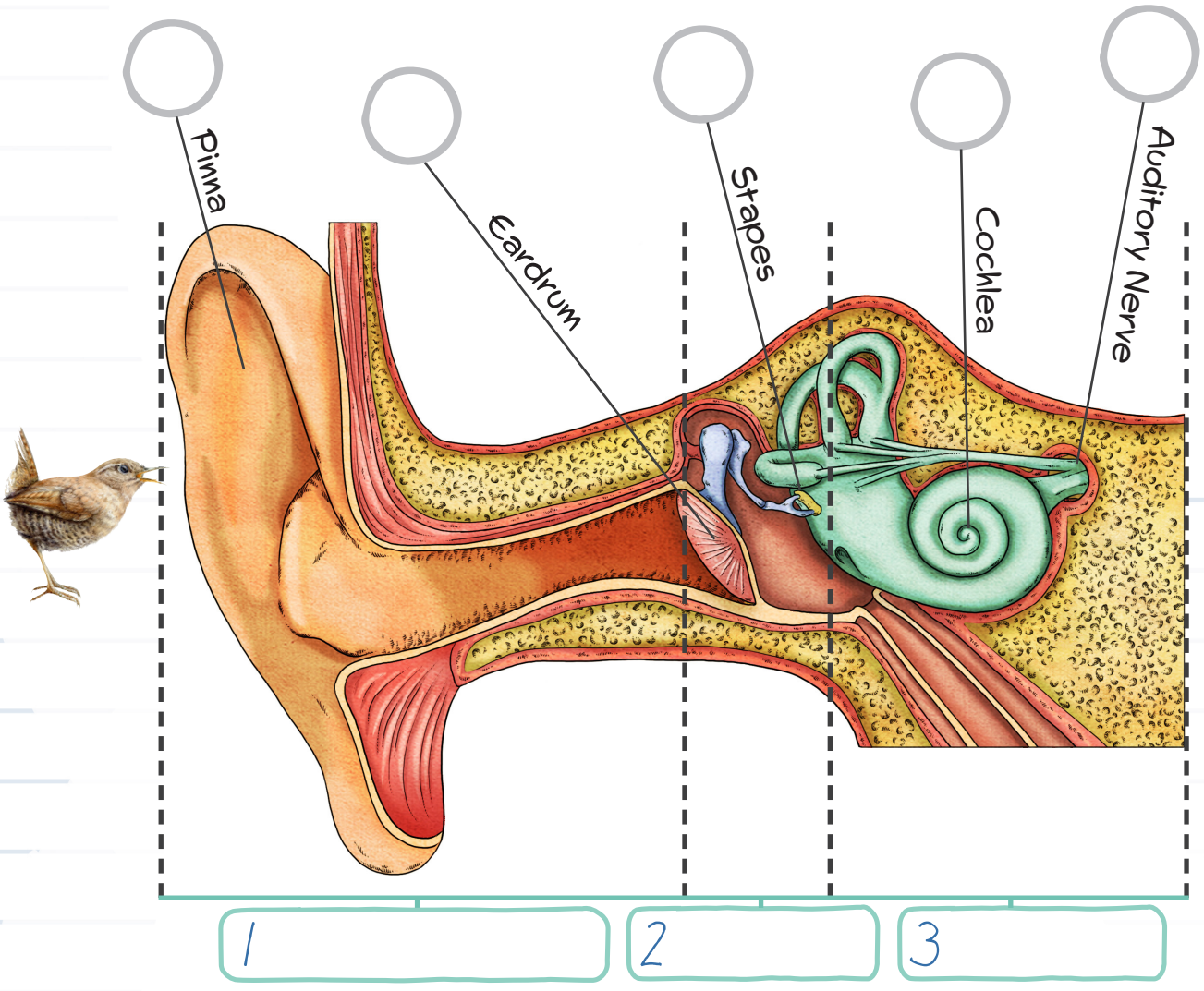
Lesson 4

# THE PROCESS OF HEARING

Using the word bank, label the sections of the ear in the correct box on the diagram below as you listen to the steps in the process of hearing. Then read the functions, one at a time, on the next page; find the part of the ear that each function refers to; and color the circle next to each part the same color as the circle next to the matching function.

## HUMAN EAR ANATOMY




### WORD BANK

middle ear  inner ear  external ear

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# MEMORY TERMS MATCHING

Draw a line from each term to its definition.

| | |
|---|---|
| Working Memory | These are memories that are stored for less than 30 seconds. This type of memory is stored in the temporal lobe of the brain. |
| Long-term Memory | The inability to remember things from one's past or to make new memories is often caused by illness or injury. |
| Sensory Memory | This type of memory storage holds what you need to remember or know how to do in the moment. It is useful when taking tests at school. |
| Amnesia | This type of memory passes from short-term memory into more permanent storage. Emotions are important for recall of these types of memories. |
| Short-term Memory | This type of memory comes from what the body is experiencing in the outside world. This kind of memory is not stored and may be moved into other memory storage or forgotten immediately. |

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# EMOTIONAL HEALTH

Draw a line from each way to improve emotional health to a specific example.

THERAPY

EXERCISE

OUTDOOR ACTIVITY

Invite a friend over to play.

Set a specific time to go to bed each night.

Eat fruits and vegetables at each meal.

Take a class on sculpting.

Talk to your parents about something difficult.

Meet with a professional and learn skills to deal with anxiety.

Go for a hike.

Take an exercise class at a local gym.

GOOD SLEEP

HEALTHY FOOD

HOBBIES

COMMUNICATION

FRIENDS



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# NATURE HELPS OUR BODIES

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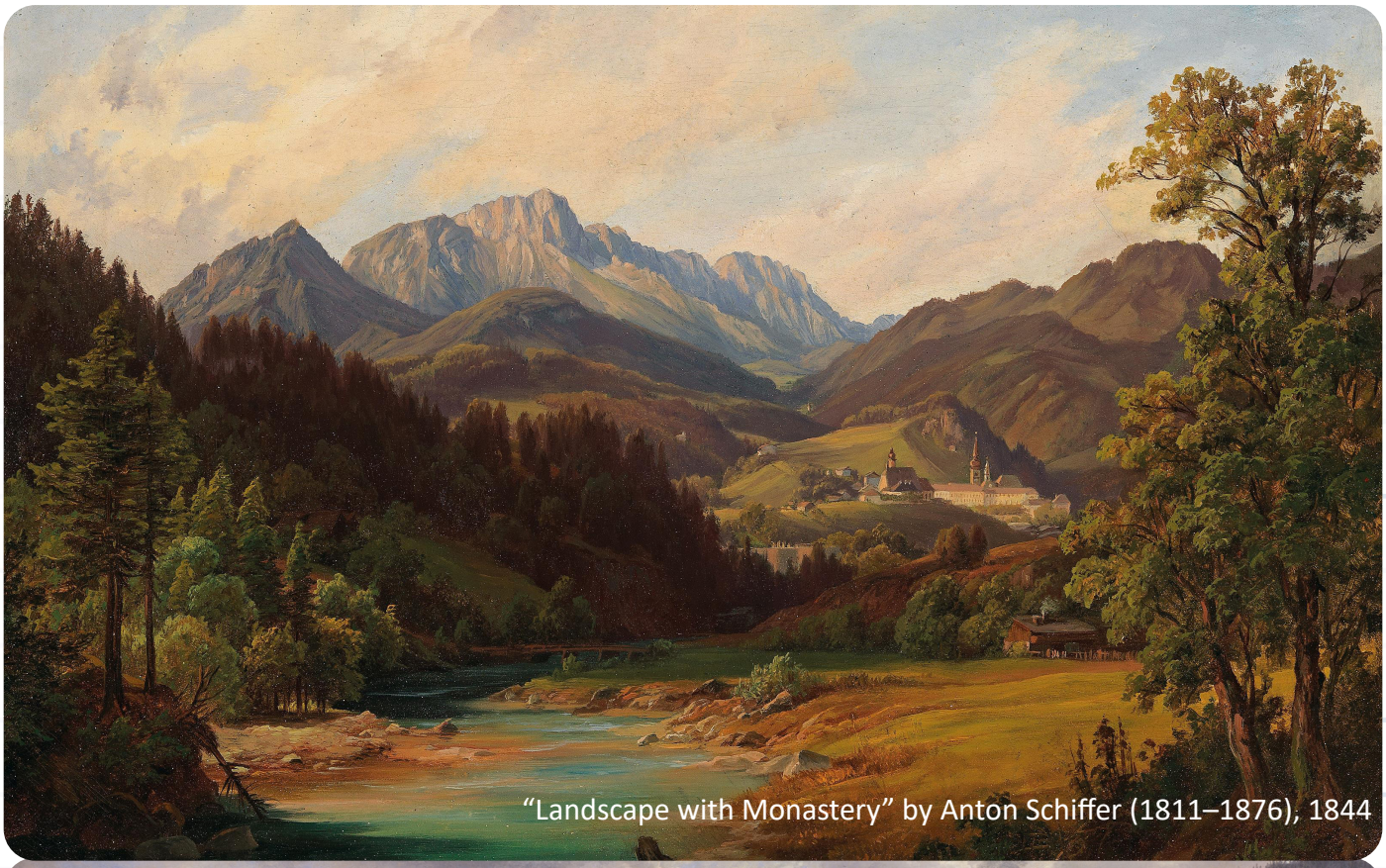
# NATURE ART STUDY



"Landscape with Monastery" by Anton Schiffer (1811–1876), 1844

"Alpine Landscape" by Johan Christian Dahl (1788–1857), 1821



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# HEALTH AND THE HUMAN MIND

Grades 7-8

# STUDENT JOURNAL

This journal belongs to:

THE GOOD AND THE BEAUTIFUL

# INSTRUCTIONS

This student journal accompanies *The Good and the Beautiful Health and the Human Mind* science unit. It contains all the worksheets and journal pages that are needed to complete the unit. Each student will need his or her own copy of the science journal.

The *Health and the Human Mind* lesson extensions are also found here. These extensions are optional for older students (grades 7–8) to complete on their own. Each extension is accompanied by lined paper so the student can keep his or her work in one place.

Have each student take his or her time to create high-quality work as the activities and worksheets are completed. Students may enjoy looking back on their past discoveries when they've finished.

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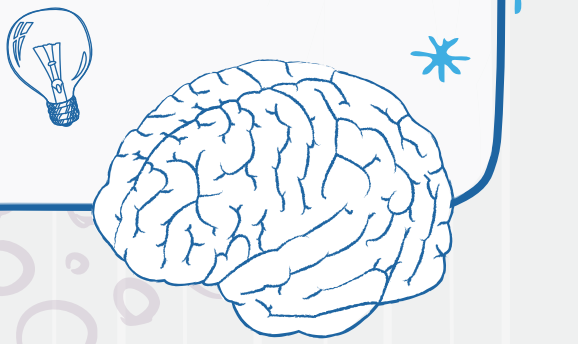
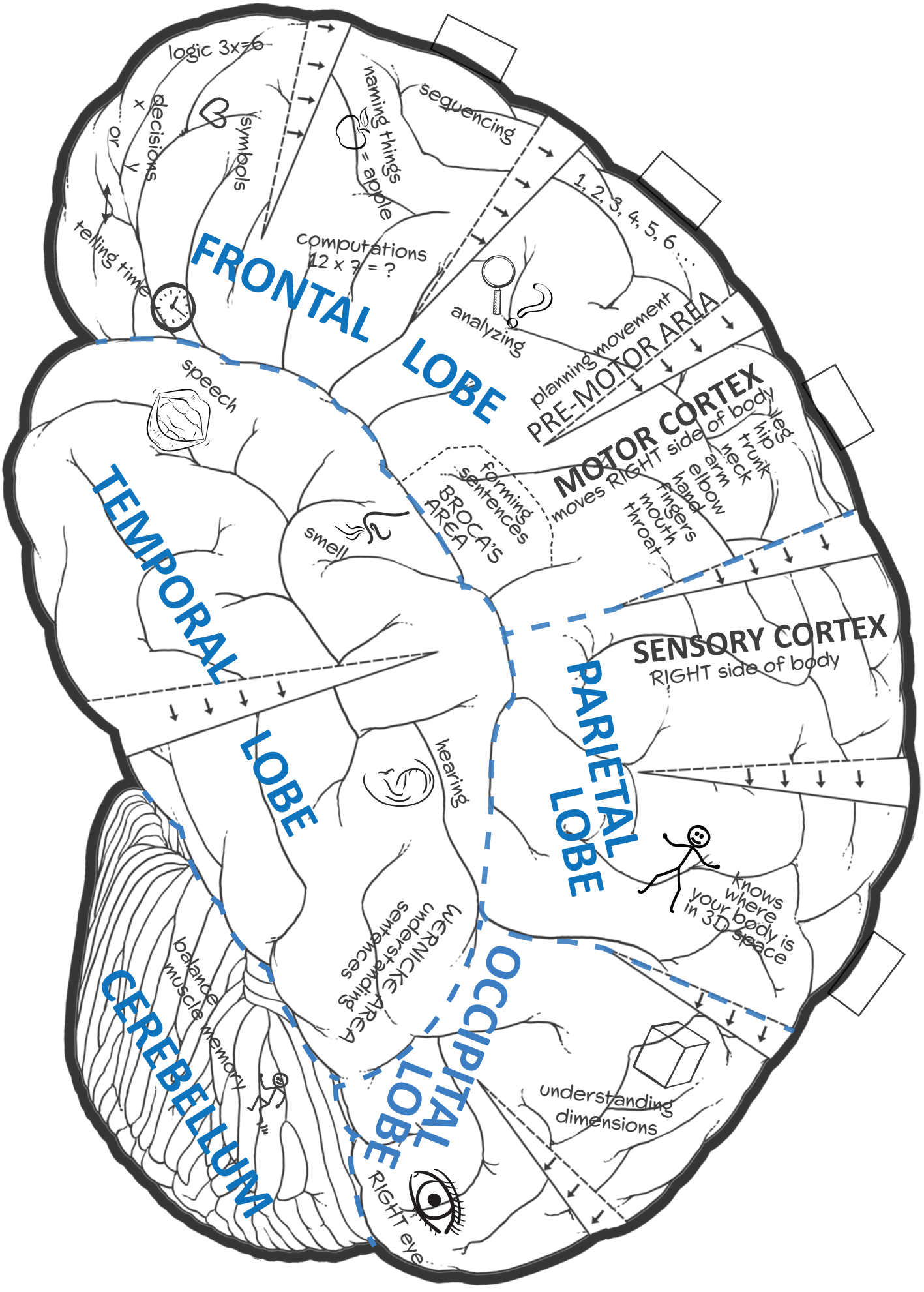
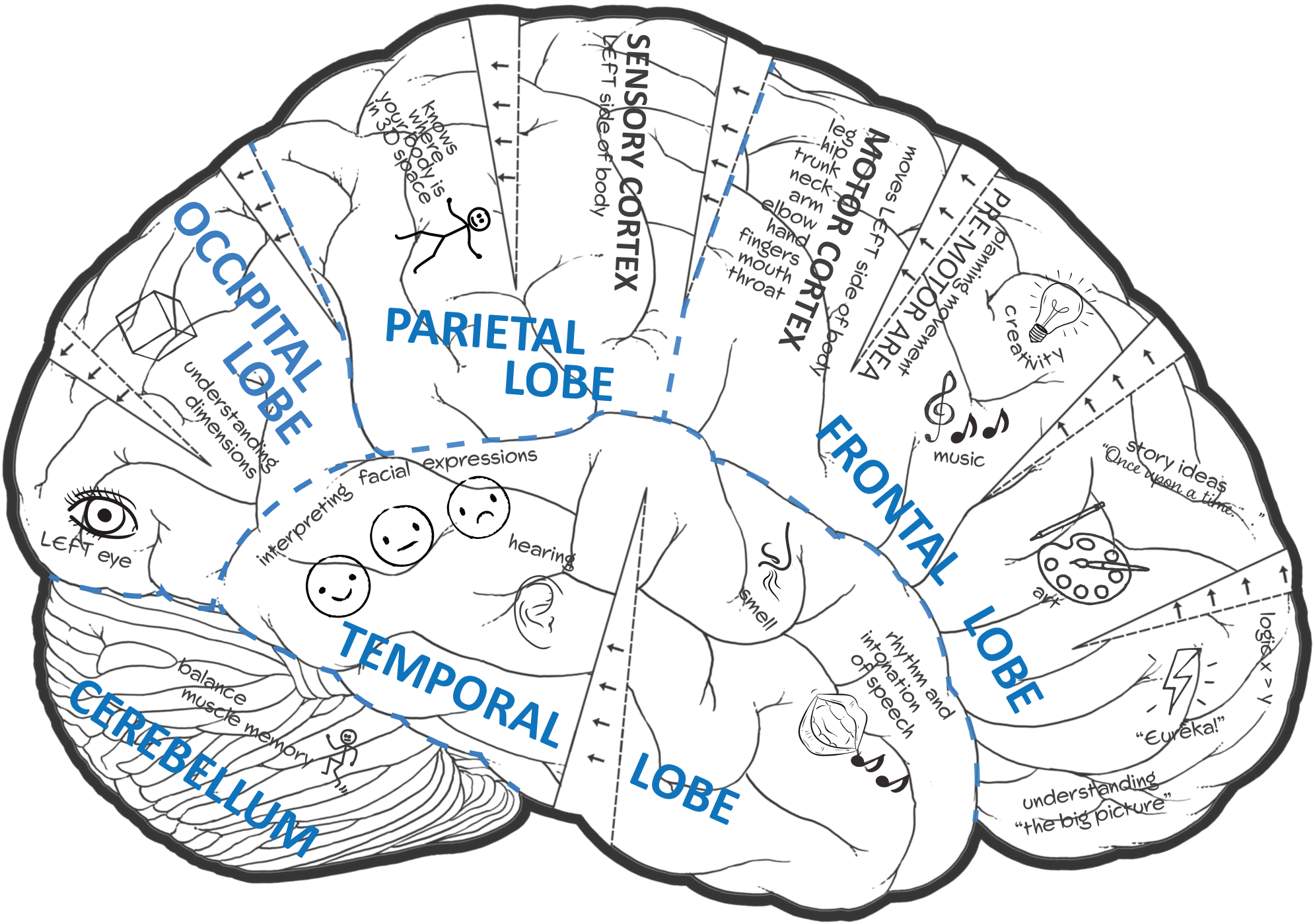



FRONTAL LOBE
logic 3x=6
decisions
x or y
symbols
telling time
naming things
= apple
sequencing
computations
12 x 7 = ?
1, 2, 3, 4, 5, 6 . . .
analyzing
planning movement
PRE-MOTOR AREA
MOTOR CORTEX
moves RIGHT side of body
leg
hip
trunk
neck
arm
elbow
hand
fingers
mouth
throat
speech
forming sentences
BROCA'S AREA
smell
TEMPORAL LOBE
SENSORY CORTEX
RIGHT side of body
PARIETAL LOBE
hearing
knows where your body is in 3D space
WERNICKE AREA
understandings sentences
OCCIPITAL LOBE
RIGHT eye
understanding dimensions
balance
muscle memory
CEREBELLUM


OCCIPITAL LOBE
understanding dimensions
LEFT eye
PARIETAL LOBE
knows where your body is in 3D space
SENSORY CORTEX
LEFT side of body
TEMPORAL LOBE
interpreting facial expressions
hearing
balance
muscle memory
CEREBELLUM
MOTOR CORTEX
leg
hip
trunk
neck
arm
elbow
hand
fingers
mouth
throat
moves LEFT side of body
PRE-MOTOR AREA
planning movement
FRONTAL LOBE
creativity
music
story ideas
"Once upon a time..."
art
smell
rhythm and intonation of speech
logic x > y
"Eureka!"
understanding "the big picture"

# EXTENSION

**Instructions:**

1. Read the information below.
2. Think about a favorite sport or physical activity you like to do. What are some ways you can protect yourself from a concussion while doing that activity? List two or three.

## Brain Injuries

A teenage girl was swimming backstroke in a pool. She got off course and ran into a sharp corner of the pool, hitting her head hard. She was diagnosed with a concussion and experienced symptoms for several months afterward.

### What Is a Concussion?

A concussion is a type of traumatic brain injury (TBI). It occurs when force is translated to the brain, causing the neurons to function abnormally. Concussions are generally caused by a direct bump, hit, or jolt to the head, either with or without the loss of consciousness. Traumatic brain injuries are most often a result of a fall, a physical hit, a vehicle accident, or a sports-related injury. The symptoms of a concussion are usually temporary and can include headaches, memory loss, dizziness, confusion, sleepiness, and nausea. While there is no specific cure for a concussion, a medical professional may prescribe rest, activity restriction, and possibly medication.

With over 3 million cases per year just in the United States alone, concussions are the most common type of traumatic brain injury. However, there are several other types of brain injuries that can lead to severe complications or even death. Read the information to the right to learn more.

### Types of Traumatic Brain Injuries

**CEREBRAL EDEMA:** Fluid pools around the brain, which increases the pressure inside the skull, reducing blood flow and starving the cells of glucose and oxygen. While swelling is the body's natural response to an injury, cerebral swelling can cut off the blood supply to the brain, which results in a lack of oxygen. Without adequate oxygen, brain cells can be damaged or die off, causing irreversible damage or even fatalities.

**DIFFUSE AXONAL INJURY:** This injury is caused by a strong shaking or rotation of the head by outside forces, such as a vehicle accident. As the brain moves back and forth inside the skull, it repeatedly collides with the inside of the skull. As a result, the brain can become bruised, nerve fibers can tear, and bleeding can occur. If a person survives a diffuse axonal injury, he or she will likely need various therapies, such as speech, physical, and occupational, although some long-term issues may remain. It is estimated that around 90% of diffuse axonal injury survivors remain unconscious. Those that do regain consciousness often remain severely impaired in many cognitive, behavioral, and physical ways.

**INTRACRANIAL HEMATOMA:** An intracranial hematoma, a bruise that causes blood to collect and pool, is most commonly caused by a blood vessel that bursts within the brain from some sort of trauma, such as a vehicle accident or fall. Symptoms may develop immediately following the injury, or it may take several weeks for them to appear. An intracranial hematoma can potentially be life-threatening and usually requires immediate treatment, such as surgery, to remove the blood that has pooled inside the skull.

### *Facts*

- In 2018 approximately 15% of all US high school students sustained one or more concussions as a result of sports and recreation.
- Statistics show that males are much more likely to suffer from a TBI than females.
- 50,000 adults and children die in the United States each year due to brain injuries.
- More than 5 million people in the US live with a disability related to a TBI.

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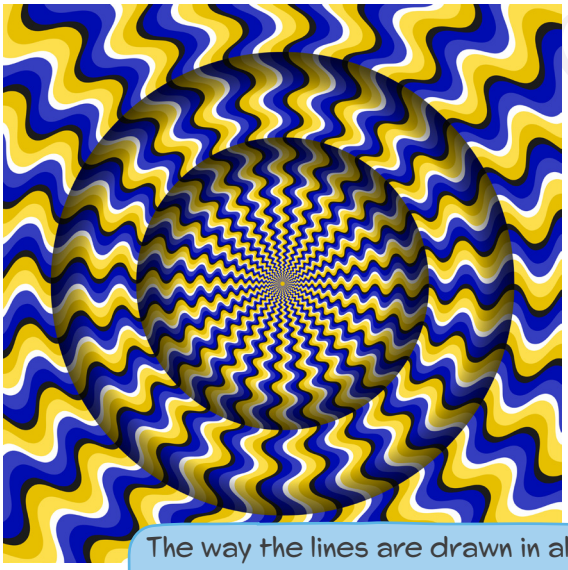
# OPTICAL ILLUSIONS

**3** Stare at the center of the circle and watch as the circles move!

Circle the direction you see the center circle going.

Circle the direction you see the middle circle going.



The way the lines are drawn in alternating patterns and divided into circles tricks our brains into thinking that the image is in motion.

**4** Look at the cube and answer the questions below.

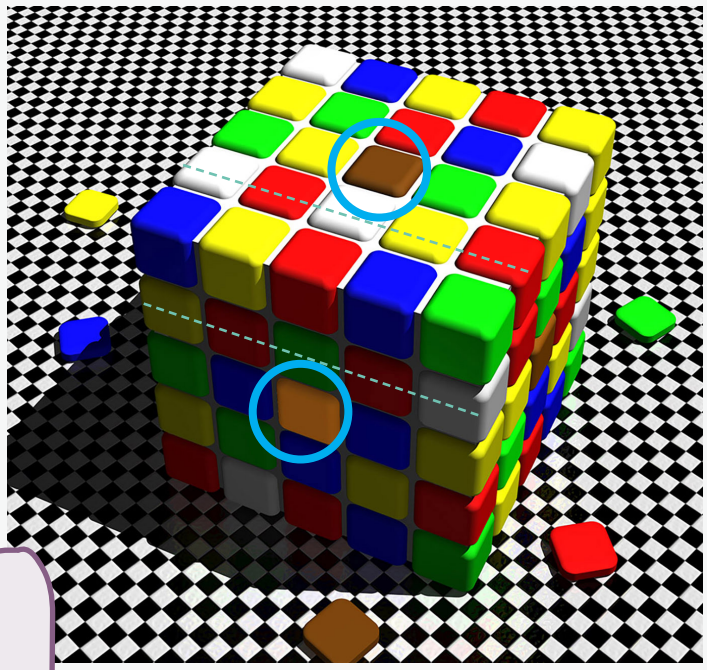
- Are the two circled squares the same color?

  YES NO

- Use two fingers to cover the section inside the dashed lines. Then stare at the two colors.

- Are they the same color now?

  YES NO



The reason this illusion works is because our eyes take information from what is surrounding the object we are looking at.



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# EXTENSION

**Instructions:**

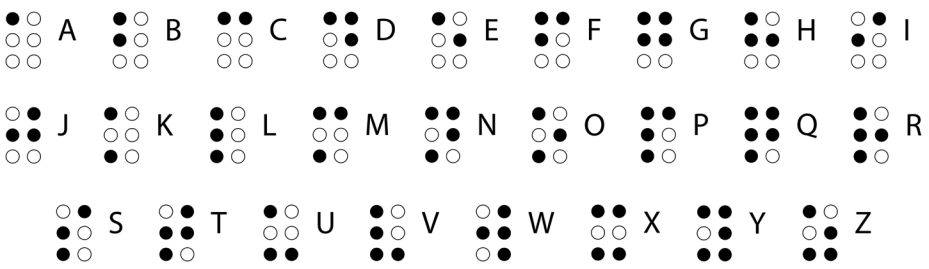
1. Read the information below.
2. Use the Braille alphabet to write, just like the dots below, a short message to a parent or friend. Show that person the key pictured in this extension so he or she can read your message!

## Adapting to Blindness

Imagine waking every morning, opening your eyes, and still seeing the darkness of sleep. Instead of seeing morning light filtering through the window, you can only feel its warmth on your skin. This is the world of someone with total blindness. Roughly 15–20% of people with eye disorders live in a completely dark world. Far more experience low vision that can be aided by glasses, contacts, or surgery. Total blindness cannot be aided by these tools, but there are many other tools and resources that make it possible for those without sight to succeed in the world around them.

**Braille Alphabet:** One helpful tool that benefits people with low vision is the Braille alphabet, which was invented by Louis Braille in 1824. A system of raised dots that are read with the fingers rather than the eyes, Braille is a specialized code that can be used in multiple languages. Six raised dots in two parallel columns with three dots in each column comprise Braille cells. With these six dots, sixty-four different combinations are possible, representing letters of the alphabet, numbers, complete words, and even punctuation.

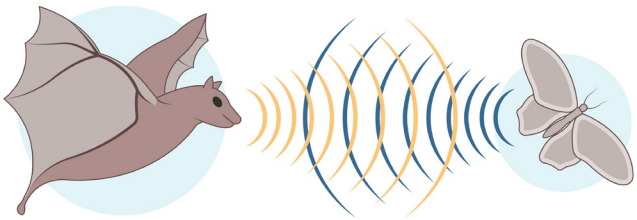
In addition to reading, Braille also enables those who are blind to write. When writing, a person uses a slate that contains evenly spaced depressions for the dots. The writer uses a stylus to push dots into the paper. Braille can also be produced on an electronic machine called a Braille writer.




Less than 1% of the world's literature is published in Braille, but modern technology has enabled blind people to take any book, have someone scan the pages into a computer, use software to translate the document into Braille, and print it with a special Braille printer.

**Heightened Senses:** A visually impaired person relies on other senses to navigate the world. Have you ever noticed that many pedestrian crossings have audio cues, such as beeping or repeating the word "walk," to help blind people cross the street? Familiar routes often have other familiar sounds. By mentally keeping track of these sound landmarks, a person can take a regular route with confidence.

**Echolocation:** Some blind people have even been able to learn to use their sense of hearing to echolocate. When people use echolocation, they make clicking sounds with their tongues, and, with practice, they can learn to hear that clicking sound bouncing back from the objects around them. Amazingly, the brain is able to adapt areas that normally process visual cues from the eyes and use those areas to interpret echoes from the clicking!



These are just a few examples of the many tools and adaptations that blind people are able to use to live a fulfilling life. Others include guide animals and voice technology. With these tools and the amazing ability of our brains to adapt, those with low vision or blindness can thrive in the world around them.

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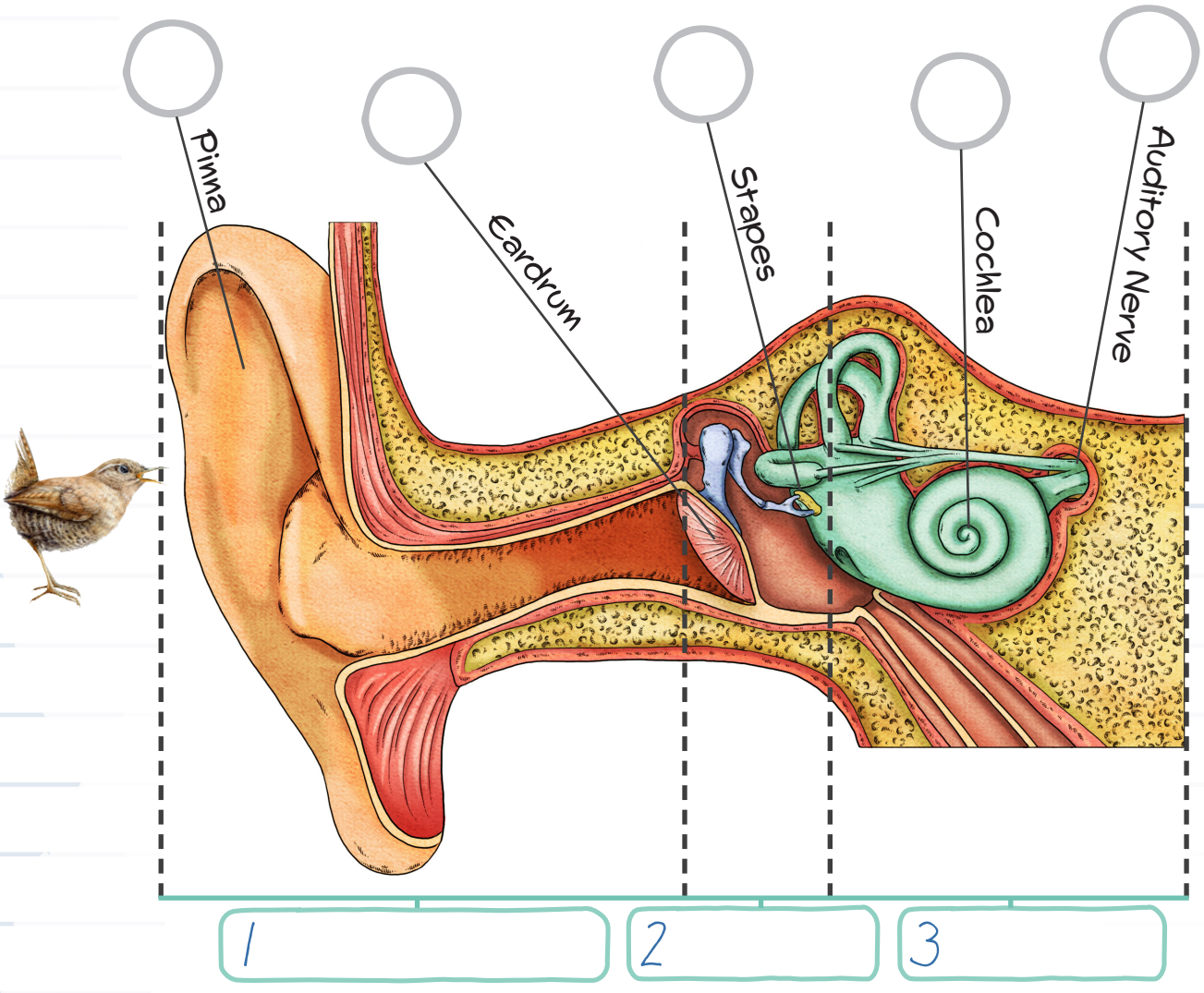
Lesson 4

# THE PROCESS OF HEARING

Using the word bank, label the sections of the ear on the diagram below as you listen to the steps in the process of hearing. Then read the functions, one at a time, on the next page; find the part of the ear that each function refers to; and color the circle next to each part the same color as the circle next to the matching function.

## HUMAN EAR ANATOMY




### WORD BANK

middle ear  inner ear  external ear

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# EXTENSION

**Instructions:**

1. Read the information below.
2. Write a paragraph describing several smells for which you are especially grateful.

## Anosmia

Our sense of smell is something we often take for granted. We appreciate it when we smell fresh-baked bread or spring flowers, but we may pinch our noses closed to avoid an unpleasant smell like burnt food or sour milk. We may not always appreciate our sense of smell, but without it, the world around us and the food we eat would be very different. People who develop a condition called *anosmia* [uh–naaz–mee–uh] lose their sense of smell, sometimes permanently.

**Congenital Anosmia:** If the olfactory system doesn't develop correctly in the womb, a baby might be born with *congenital anosmia*. This condition is relatively rare; most people who experience a loss of smell develop it because of an illness or injury. Some people might have tumors in their noses that obstruct their sense of smell, but other conditions affect how the brain's olfactory center processes information.

**Traumatic Brain Injury:** A head injury can also cause a person to lose his or her ability to smell. In fact, it is estimated that up to 30% of people who suffer a traumatic brain injury may experience this. The olfactory nerves, which are located behind the eyes, can be damaged by a head injury, either by the blow itself or by internal bleeding. The more severe the brain injury, the more severe the anosmia is likely to be. Because our sense of taste is so closely linked to our sense of smell, people with this condition usually also suffer from an inability to taste. They may only be able to detect salty, bitter, sweet, sour, and umami, the tastes detected by the taste buds in the mouth and tongue, and not all the subtle differences in taste that are detected by the olfactory system.

**Virus:** Some viruses can cause temporary or permanent loss of smell. One example is the SARS-CoV-2 virus. A common symptom is a loss of smell that generally persists for a few months. Other viruses, like the common cold, also disrupt our sense of smell. One reason is because of the mucus that fills the nasal cavity. Other viruses cause the olfactory nerve cells to release protective antibodies that change how these cells function. The immune response disrupts the cells' ability to transmit smell information to the brain, and the olfactory cells may take a long time to recover.

**Other Sources of Anosmia:** Alzheimer's disease, some types of cancer, diabetes, and Parkinson's disease are a few additional conditions that can cause temporary or permanent anosmia.

Whatever the cause, anosmia provides unique challenges for people who develop it. They may lose their appetites or add too much sugar or salt to their food in an attempt to make it taste better. They may also experience depression as they miss their lost sense. Additionally, because the sense of smell is closely related to memories, some people report having trouble recalling some smell-related memories.

As with any other lost sense, there are potential treatments, such as medicine and surgery, as well as the potential for our brain to adapt. With continual increases in technology, additional help may be available to those who face the challenge of anosmia.

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Lesson 7

# BRAIN STEM CRACK-THE-CODE

Use the code to solve the questions below.

| | | |
|---|---|---|
| A | B | C |
| D | E | F |
| G | H | I |

| | | |
|---|---|---|
| J | K | L |
| M | N | O |
| P | Q | R |

S T U V W X Y Z

**1** What connects your brain to your spinal cord?

_____ _____ _____ _____ _____ _____ _____ _____ _____

**2** The brain stem is divided into how many parts?

_____ _____ _____ _____ _____

**3** The brain stem is responsible for the body's most _____ _____ _____ _____ _____ functions.

_____ _____ _____ _____ _____

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Lesson 8

# MEMORY TERMS MATCHING

Draw a line from each term to its definition.

| | |
|---|---|
| Working Memory | These are memories that are stored for less than 30 seconds. This type of memory is stored in the temporal lobe of the brain. |
| Long-term Memory | The inability to remember things from one's past or to make new memories is often caused by illness or injury. |
| Sensory Memory | This type of memory storage holds what you need to remember or know how to do in the moment. It is useful when taking tests at school. |
| Amnesia | This type of memory passes from short-term memory into more permanent storage. Emotions are important for recall of these types of memories. |
| Short-term Memory | This type of memory comes from what the body is experiencing in the outside world. This kind of memory is not stored and may be moved into other memory storage or forgotten immediately. |

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# EXTENSION

**Instructions:**

1. Read the information below.
2. Imagine you are Ruth's daughter. Write a paragraph about your experience taking care of Ruth.

## Memory Loss Case Study

Ruth is a widowed grandmother in her late 70s. Her children notice she is having trouble remembering things, and more concerning, she is making mistakes in her daily life that could be dangerous, such as trying to put an electric skillet onto the stove instead of plugging it into the wall. Ruth's family talks to her about moving in with her daughter, and she agrees. Ruth is sad to lose some of her independence, but she is becoming more and more confused.

In her daughter's home, Ruth begins to experience changes in her personality. Always a loving and kind woman, she begins to be impatient, angry, and irritable. She is sometimes unkind and even uses swear words at times, something she would never have done before. Her family needs to lock the house at night so Ruth doesn't get lost. Often, she doesn't recognize familiar people, even her own daughter.

As Ruth continues to decline physically, her daughter provides her with a wheelchair, helps her to eat, and does her best to make sure her mother is comfortable in the final stages of her wonderful life. Ruth is an incredible mother, and her daughter feels grateful to have a chance to help her in return.

### Alzheimer's Disease

Ruth suffers from a brain disorder called *Alzheimer's disease*. This disease is caused by an abnormal build-up of proteins in and around brain cells. These proteins disrupt how the brain functions and interfere with neurotransmitter chemicals sending messages between brain cells. Eventually, the brain even begins to shrink.

There are many facilities dedicated to providing people with Alzheimer's disease and other memory loss a safe environment and the care they need. These facilities have extra security, like cameras and digital locks, to help keep those who live there safe. They may also have features such as curved walls, which reduce feelings of disorientation, and memory boxes outside each person's room or apartment. These boxes contain small personal items that help the residents remember which room belongs to them. Muted paint colors and soft lighting also help individuals with memory loss feel calm.

### Staying Active—Physically and Mentally—May Help

Although there is nothing that will completely prevent Alzheimer's disease, some studies indicate that eating a diet rich in plant-based foods and maintaining a healthy weight with regular physical activity may help. Scientists also recommend keeping your mind sharp with activities like puzzles, learning a musical instrument or foreign language, trying new activities, and keeping an active social life.

Although scientists don't know why some people develop Alzheimer's disease, these are considered risk factors:

- Advanced age
- Family history of the disease
- Previous head injury
- Cardiovascular disease

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# NATURE HELPS OUR BODIES

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EXTENSION

**Instructions:**

1. Read the information below.
2. Choose a flower to observe close up. Set a timer for five minutes. In your science journal, write and draw every detail you notice. You may use colored pencils or watercolors to add to your journal if desired.

# Nature Journaling

"Journaling is the single most powerful tool to supercharge your observation, memory, and connection with nature. It is the critical foundational habit of being a naturalist and scientist."
*—John Muir Laws*

How many times have you said to yourself, "I want to remember this moment forever?" Sometimes special moments stay with us, but other times we forget experiences that were once meaningful to us. Studies have shown that humans process only a small percentage of the things we experience through our senses, and we remember even less. However, the process of journaling is enough to imprint these important moments into your memory.

Naturalists, scientists, and writers in all areas of study use journals to keep track of what they have seen, studied, and considered throughout their work. Observing and journaling what you notice will enable you to pause and look more closely at what you're discovering. You don't need to be good at drawing or even at writing to keep a journal. Rough sketches and short phrases jotted down as you explore are effective enough to open up a world of possibility and discovery.

John Muir Laws is a wildlife biologist, an artist, and an explorer of the natural world around him. If you were ever to meet him while on an outdoor adventure, you would most likely see him with a notebook in hand, drawing pictures of everything he encounters. He uses nature journaling to enhance his curiosity, creativity, and ability to observe whatever is in front of him. Laws adheres to the idea that journaling will help you discover that there is an infinite amount of wonder and beauty in things that we tend just to walk past every day. He has said, "The journal is not about the picture. It's about paying deeper attention."

Spending time in the natural world is a simple way to reconnect with nature and can do wonders for our overall health and mental well-being. One of the biggest benefits of nature journaling is that it requires us to slow down. Even if it's just for a few moments, taking the time to observe and appreciate the wondrous world our Creator has given us is enough to help us re-center our thoughts and allow us to feel refreshed, refocused, and ready to take on the rest of the day.

### Tips for Nature Journaling

- Nature journals don't have to be fancy. You can simply staple a few pieces of printer paper together.
- Try drawing at least some of the things you see. Drawing improves your observational skills.
- If you want, you can use colored pencils or watercolors to add some color to your journal illustrations.
- Try using statements like "I notice . . . ," "I wonder . . . ," or "It reminds me of . . . ."
- Your journal is a record of your learning and experiences with the natural world around you. It doesn't have to be perfect.
- You don't need to share your journal with anyone.
- Don't feel as if you have to write in your nature journal every day. Just spending time in nature each day can revitalize your mind and spirit.

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# HEALTHY HABITS WORKSHEET

Answer the questions about healthy habits, preventative care, and enjoying some activities in moderation by filling in the blanks with the words in the word bank at the bottom of the page.

You should visit the dentist every _____ .

Electronics are best enjoyed in _____ .

A _____ is a good addition to a healthy diet.

A _____ is something a person does often and in a regular and repeated way.

Visiting a doctor or health care professional for an _____ once a year is a good preventative measure.

_____ is the ability to regulate one's emotions, thoughts, and behavior in the face of temptations and impulses.

Healthy Habits

## WORD BANK

vitamin | moderation | six months | exam | habit | self-discipline



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# EXTRA NOTES

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# A Penny for Your Thoughts

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By Tyler Mattson

It was the first day of choir camp, and Tilly felt weird. Her toes couldn't stop tapping, her stomach was twisting in knots, and her cheeks were growing warmer by the minute.

As she sat eating her breakfast, her mother quickly noticed something was off.

"What's wrong, Tilly?" Mom asked.

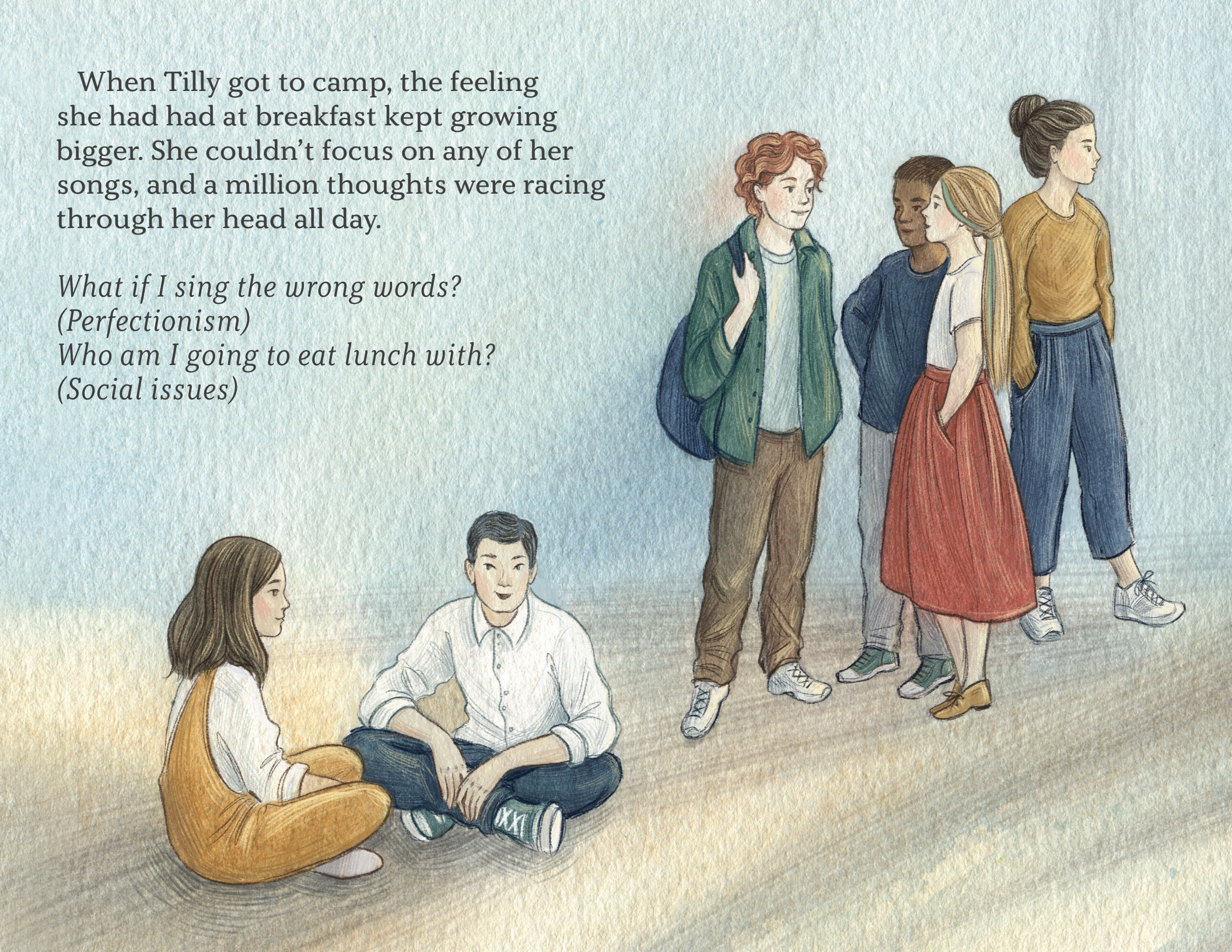
Tilly sighed, "Nothing."

"Are you sure, honey? You've barely touched your waffles."

"I'm not really hungry," Tilly said quietly.

When Tilly got to camp, the feeling she had had at breakfast kept growing bigger. She couldn't focus on any of her songs, and a million thoughts were racing through her head all day.

*What if I sing the wrong words? (Perfectionism)*
*Who am I going to eat lunch with? (Social issues)*



*She's a much better singer than I am.*
*(Self-esteem)*
*I hope they don't ask me to sing a solo.*
*(Pressure to please others)*
*What if I don't fit in?*
*(Overthinking)*

By the end of the day, Tilly was exhausted. Choir camp was completely stressful, and she did not want to go back.

Relieved to be home, Tilly took off her shoes, placed her music by the piano, and headed for her bedroom.

"How was the first day, honey?" Mom called from the kitchen.

"It was fine," Tilly said as she made her way upstairs.

When she was finally in the privacy of her own room, Tilly dropped to the bed and started to cry. She cried tears of sadness, frustration, and fear. She wanted to be excited about choir, make friends, have fun, and sing songs, but she really didn't think those things were possible. Tilly felt totally defeated.

After a few minutes of crying, she heard a soft knock on the door. Her mom came into her room and sat down on the bed next to her. She gave Tilly a tight hug then reached into her pocket and pulled out a shiny, new penny.

"A penny for your thoughts?" she asked.

Again, Tilly started to cry.

"I just can't do it, Mom," she said. "Choir camp is so different this year."

Tilly sniffled and wiped her tears.

"I know, Tilly," Mom replied. "Let's talk about it. Why don't you tell me what happened today?"

Perfectionism, overthinking, low self-esteem, and pressure to please others—Tilly experiences all these thoughts during her first day at choir camp. She wonders if she should even go to camp at all. However, with the help of her mom, Tilly decides to make some goals so she can work through the stress she's experiencing. It's hard at first, but Tilly learns just how powerful her mind can be.

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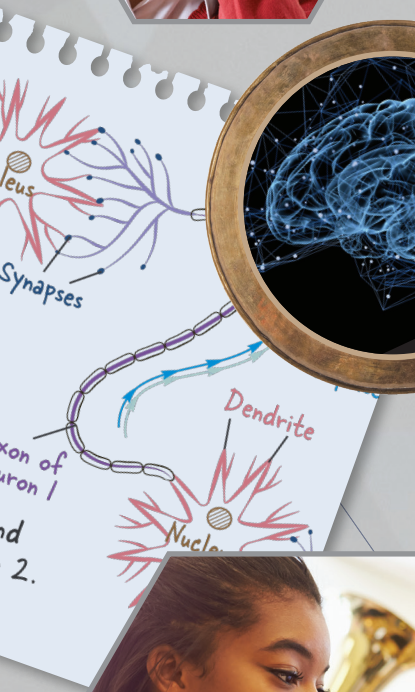
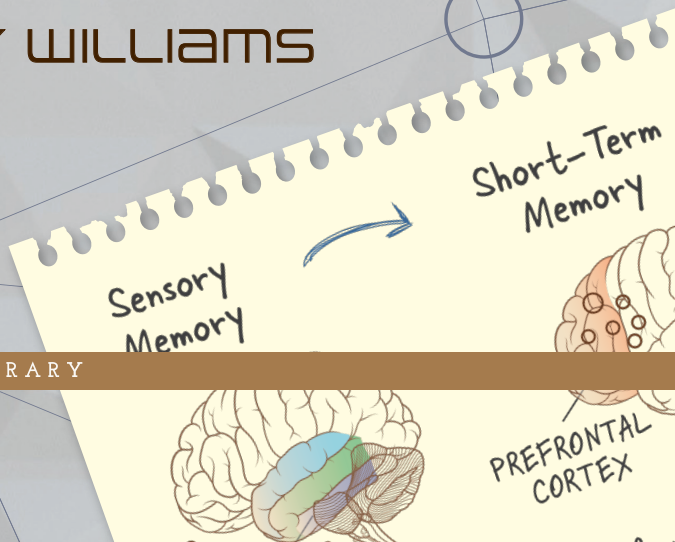
# THE *amazing* THING CALLED MEMORY



KELLEY WILLIAMS

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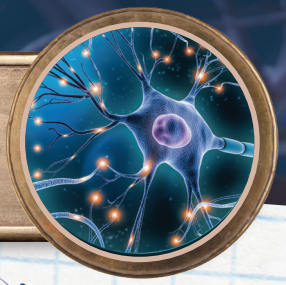
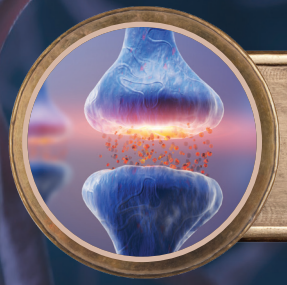
# BRAIN ANATOMY

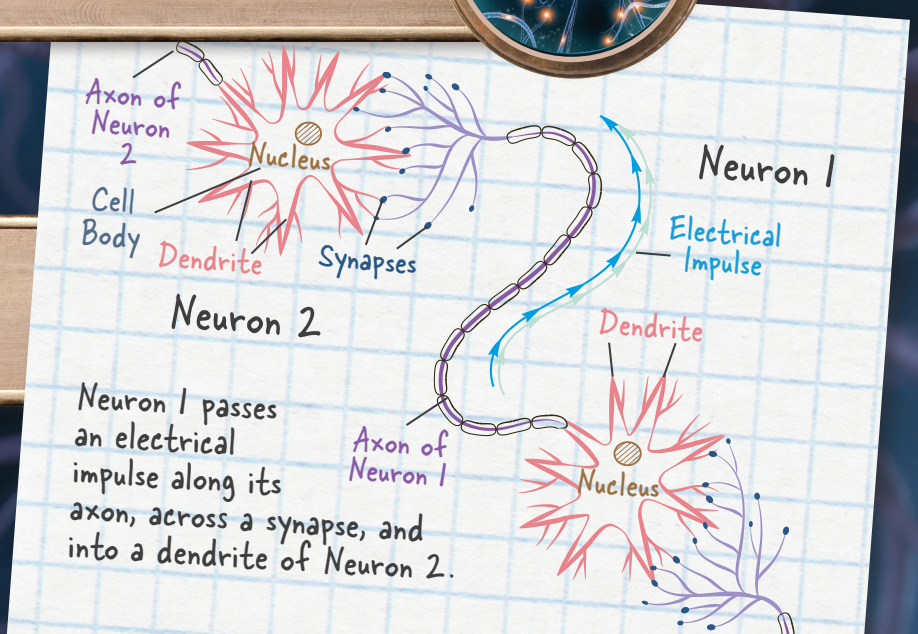
**Neurons** are the cells in your body that pass electrical impulses between each other across a gap called a **synapse**. These impulses are packaged in a chemical called a **neurotransmitter** and move from the end of one neuron, called the **axon**, through the synapse, and into a **dendrite** of the next neuron. In this way, neurons act as messengers from your brain to other parts of your body.

**NEURON:** the basic unit of the human body's nervous system; carries electrical impulses around the body





**SYNAPSE:** a tiny junction, across which one neuron passes electrical impulses to another neuron



"THE TRUE ART OF MEMORY IS THE ART OF ATTENTION."

**SAMUEL JOHNSON**
BRITISH AUTHOR AND POET

Let's head back to the farm and see what happens to the information our bodies take in about our environment. As you walk around, your senses are overwhelmed with scents, sounds, and sights. The enticing aroma of deep-fried apple pies wafts on the breeze while the sounds of cows bellowing and children playing in the corn maze reach your ears. You can see and smell the sheep, goats, and alpacas in their pens and hear the snorting of pigs.

**SENSORY MEMORY:** raw environmental data coming in from our senses; stored for just a few milliseconds in the temporal lobe or other parts of the brain

# SENSORY MEMORY

# TYPES OF LONG-TERM MEMORY

## IMPLICIT MEMORY

Implicit memories are your unconscious memory—the things you know how to do without thinking about them. There are many types of implicit memories. Two of them are *procedural learning* and *classical conditioning*.

### Procedural Learning

- Riding a bike
- Brushing your teeth
- Tying your shoes

### Classical Conditioning (Learned Response)

- Fear of falling off the monkey bars because you've fallen off before
- Salivating when you smell your favorite food because you know how good it tastes
- Happiness when you hear holiday music

## MEMORY RETRIEVAL:

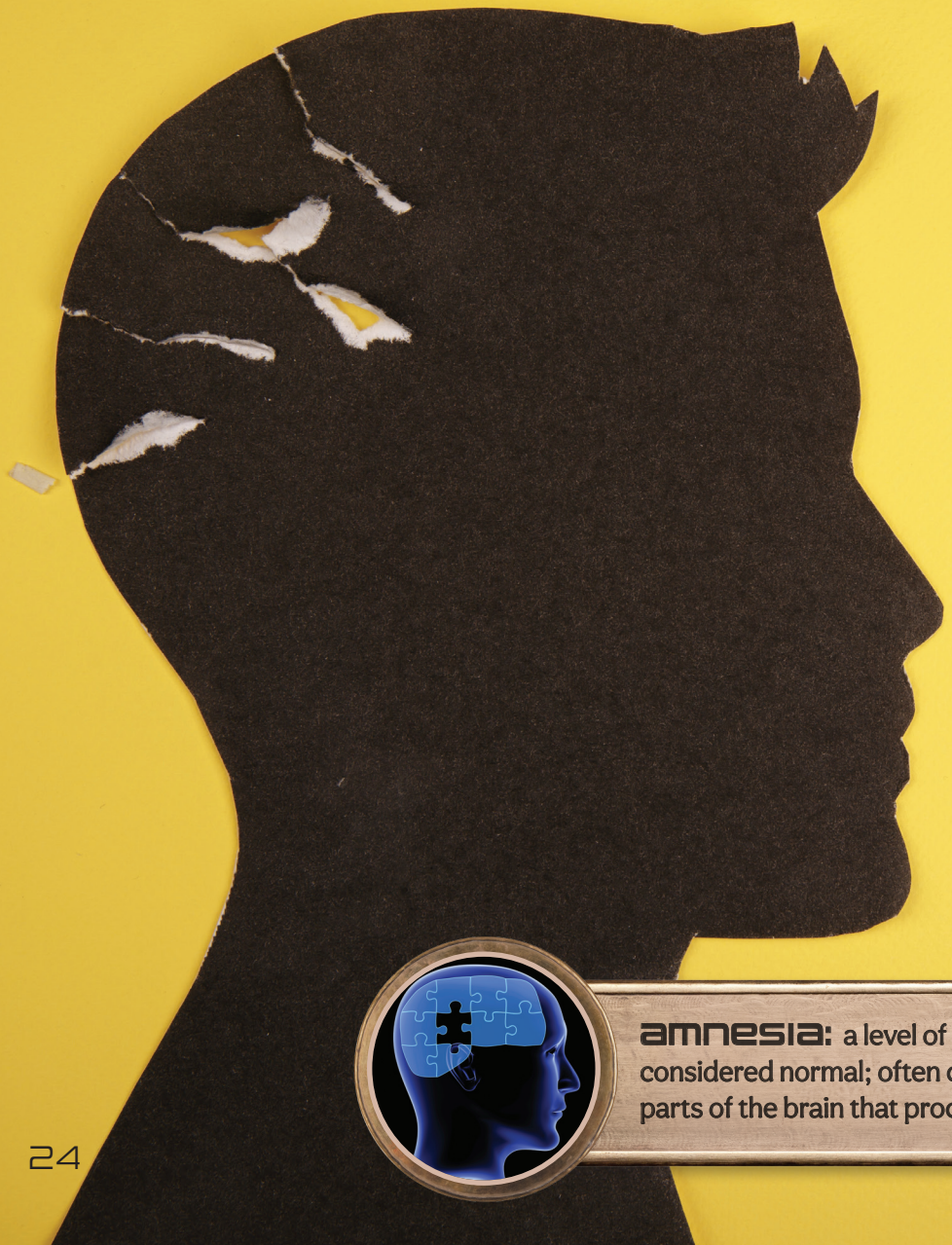
Memory retrieval happens when we remember information that has been encoded and stored in our brains in the past. Usually, the same area in our brains is activated that was used when we formed the memory in the first place.

### 3. Memory Relearning

When you remind yourself of information you used to know, this is memory relearning.

Example: failing the test and having to study the information again, or "refreshing your memory"

Which method would you use to remember and tell your friend about the pigs?



# amnesia

Everyone experiences normal forgetting, but there are extreme cases of memory loss that affect some people. Amnesia is a fascinating condition that can have severe and long-lasting effects on people's lives.

## TYPES OF AMNESIA

**Retrograde**: cannot recall events that happened before the onset of amnesia

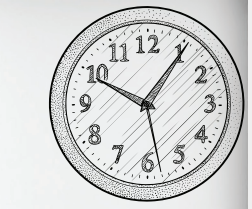
**Anterograde**: cannot form new memories of events that happen after the onset of amnesia

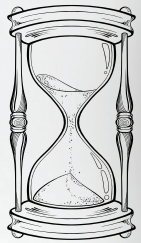
**Infantile**: cannot recall events from early childhood



**amnesia:** a level of memory loss beyond what's considered normal; often caused by damage to the parts of the brain that process memories

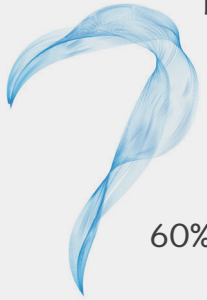
# AMAZING FACTS ABOUT MEMORY





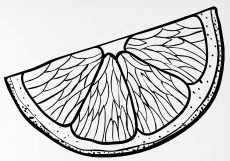
## DÉJÀ VU

If you've ever had the sudden feeling that you've been in a place or experienced something before when you actually haven't, that's a phenomenon called *déjà vu*. Scientists aren't sure why this happens to about 60% of people.



## THE POWER OF SCENT

More than any of our other senses, the memories of certain smells connected to emotional events are resistant to decay and interference. This is called olfactory memory, and you've probably experienced it before!



# THE *amazing* THING CALLED MEMORY

How do we recognize faces we've seen before or remember what we wore yesterday? *The Amazing Thing Called Memory* answers these questions and more as it explores brain function anatomy, fascinating facts, and case studies of individuals with memory challenges.

## Procedural Learning

- Riding a bike
- Brushing your teeth
- Tying your shoes

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# THE ADDICTION Questions & Answers BOOK

Addiction

Tobacco & Vaping

Alcohol

Drugs & Marijuana

Social Media & Technology

THE GOOD AND THE BEAUTIFUL LIBRARY

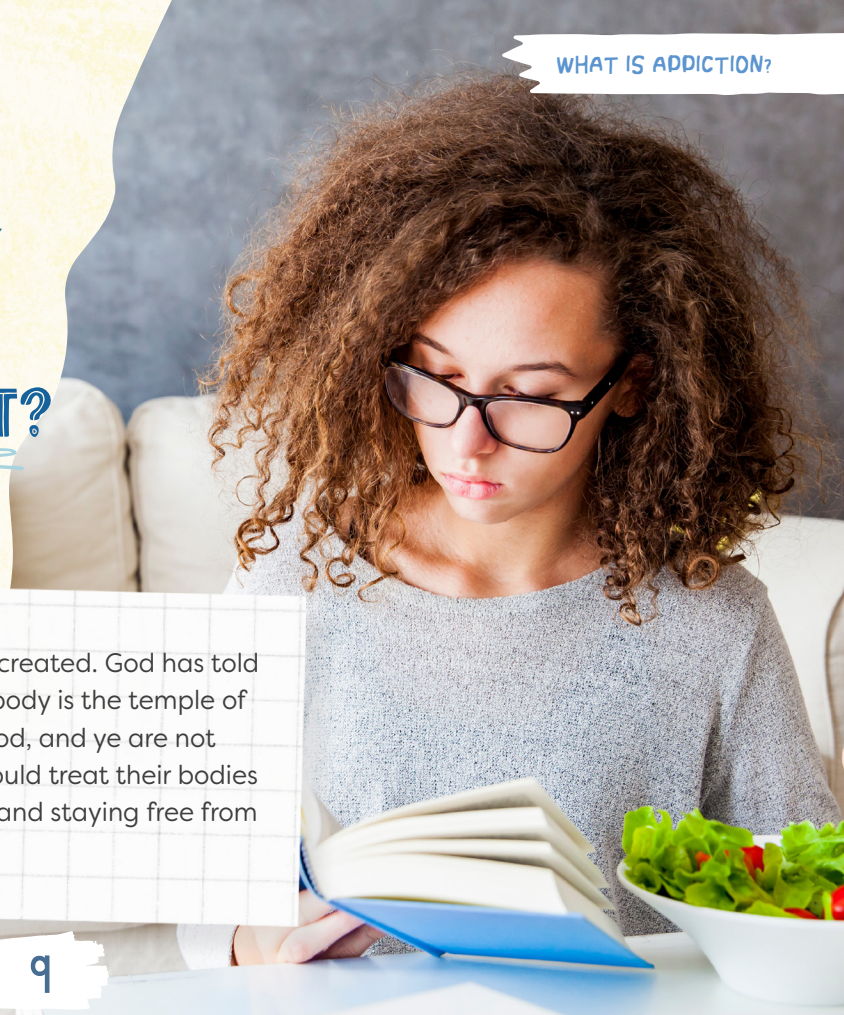
Written by The Good and the Beautiful Team

# Q: ISN'T ADDICTION JUST ABOUT DRUGS?

A: Besides illegal and prescription drugs, a person can unfortunately become addicted to other things like alcohol, pornography, tobacco, social media, video games, or gambling.

People with addiction crave these substances and activities, surrendering control of their judgment and many times their actions, which can lead to dangerous behaviors that can damage relationships and can hurt themselves and others.

# Q: WHY IS KEEPING ONE'S BODY HEALTHY AND FREE FROM ADDICTION IMPORTANT?



A: Each and every human body was divinely created. God has told us in the Bible, ". . . know ye not that your body is the temple of the Holy Ghost which is in you, which ye have of God, and ye are not your own?" (1 Corinthians 6:19) People can and should treat their bodies with care and respect by making healthy choices and staying free from addiction.

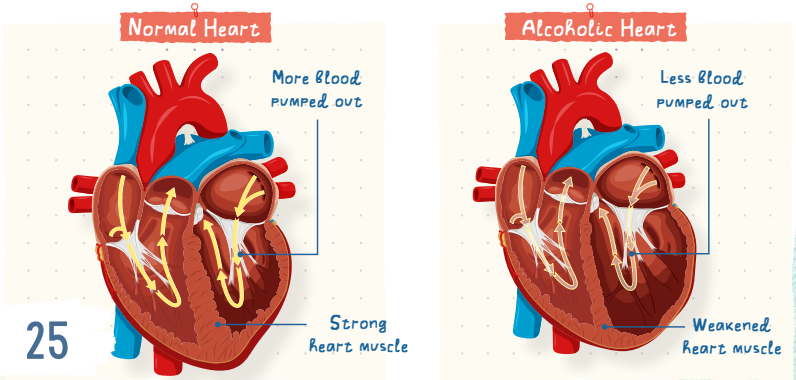
# Q: WHAT MAKES TOBACCO ADDICTIVE?

**A:** All forms of tobacco contain a chemical called *nicotine*. **Nicotine** is a stimulant drug that speeds up the body's systems, including information that travels between the brain and the rest of the body. It is responsible for producing the effects in the brain that create strong cravings for more nicotine.

# Q: WHAT PARTS OF THE BODY ARE AFFECTED BY ALCOHOL USE AND OVERUSE?

A: Alcohol affects almost every part of the body. The liver is greatly impacted by alcohol use because it breaks down and filters out alcohol. Any amount of alcohol can cause the destruction of liver cells, which inhibits liver functions. Over time, the liver will not be able to filter the blood, leaving dangerous levels of toxins in the body.

Alcohol also impacts the heart by causing the muscles to stretch and loosen, which can lead to strokes, heart attacks, and other issues. High alcohol use can also hurt the pancreas and the immune system and is linked to several kinds of cancer. Alcohol can affect the normal development of bones and impact hormones. It has also been shown to increase depression, anxiety, low self-esteem, and even suicidal thoughts.



# Q: WHAT IS THE DIFFERENCE BETWEEN OVER-THE-COUNTER (OTC) AND PRESCRIPTION DRUGS, ALSO KNOWN AS MEDICINES?

A: **Over-the-counter (OTC) drugs** are medicines that can be bought at a pharmacy, grocery store, or convenience store without a doctor's prescription. While a doctor might recommend an OTC drug, a person can also self-treat symptoms with these medicines. Examples of OTC drugs include painkillers, such as acetaminophen and ibuprofen, allergy medicine, and cough syrup. Prescription drugs are medicines that can be obtained only through a licensed medical professional, such as a doctor, nurse practitioner, or physician's assistant. These drugs are usually stronger than OTC drugs and are more highly regulated by the US Food and Drug Administration (FDA). A pharmacist dispenses prescription drugs at licensed pharmacies. When used correctly and as instructed, these drugs are helpful. When used incorrectly, they can lead to addiction, harm, or even death.

## Q: Many people say social media is a good way to connect with people. How can it be unhealthy?

**A:** Like most other modern technology, social media can be a very convenient and helpful tool when it's used correctly. However, if someone spends a lot more time on social media than on anything else—like school or work, hobbies, or real-life relationships—that can indicate that he or she may have an unhealthy relationship with that type of technology.

# THE ADDICTION Questions & Answers BOOK

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