Hello Adventurer!

Welcome to Adventure 1 - The Five Senses.

In this workbook, you will learn about Ancient Greece and your body's five senses. There will be information to read, activities to complete, and quizzes to take when you are ready to challenge yourself! Take your time along the way - spend as much or as little time as you like on each activity, and do not forget to use additional resources to learn more about the topics you are interested in. Good luck, and have fun!

Great to have you along on this journey through the Five Senses.

Get ready for an epic quest!

Καλώς Ορίσατε

(Kalos Orisate)*

That means "Welcome!" in Greek.

***Say it like this: "kah-los oh-ree-sot-tay."**

*Syllables in bold are the strongest.

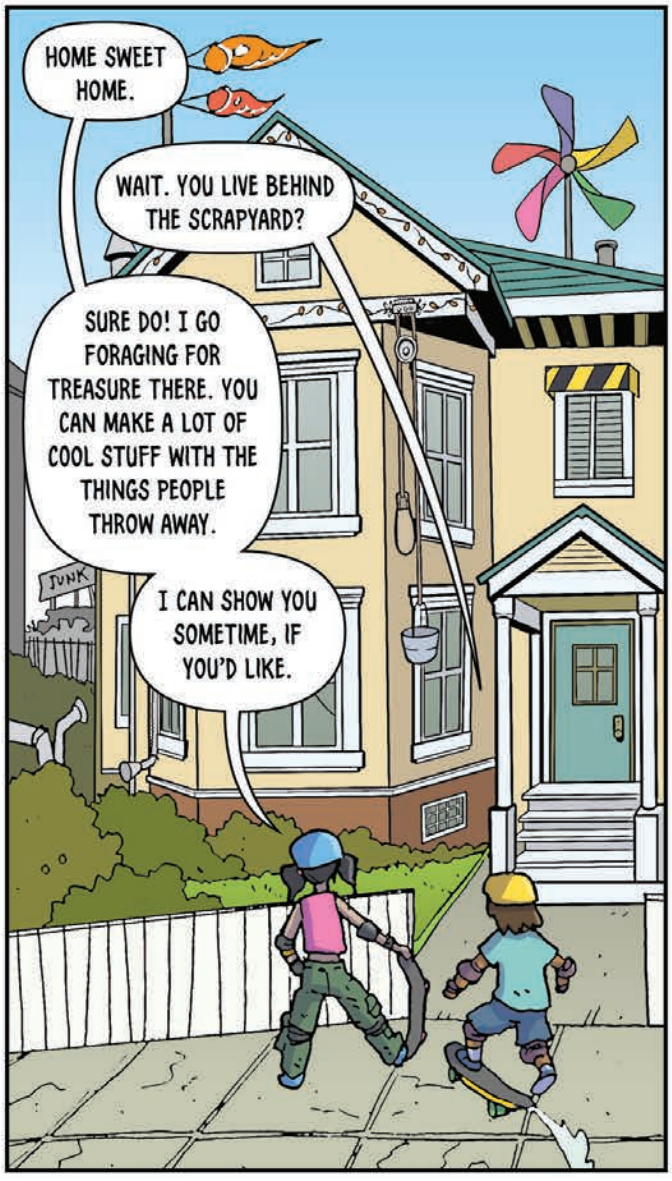
Through
this portal
the adventure begins

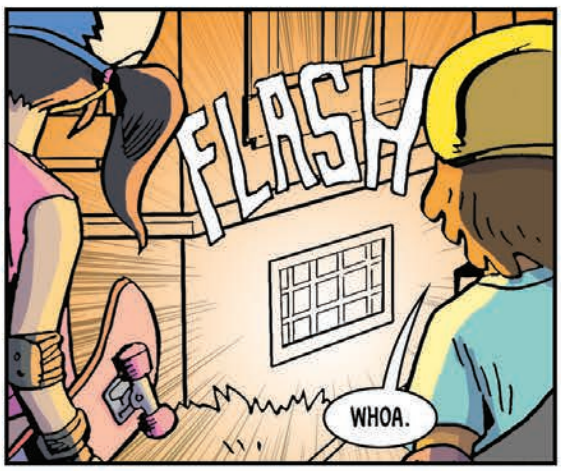
Time Skaters Adventure 1...


THAT DISASTER WAS AWESOME, PINKY!
THAT INDY WASN'T TOO SHABBY, EITHER.
HEY! WANNA TRY OUT THE NEW RAILS?
SURE! I'VE BEEN PRACTICING MY NOSE GRIND...
HUH?
I'VE NEVER SEEN A WATCH LIKE THAT BEFORE.
UH, STOKELY? I'VE...GOT TO RUN.
HEY! WAIT!
CAN I RIDE BACK WITH YOU? I LIVE NEARBY...
BUT, WELL, BUT, I....
OKAY.

FANGS OF PHILOSOPHY

THE SEVENTH SENSE: PART 1






OH NO! DR. B.!
DR. WHO?
WHAT'S GOING ON, PINKY?
AND WHAT IS ALL THIS WEIRD STUFF?
I'LL SHOW YOU. BUT REMEMBER, EVERYTHING YOU SEE HERE... TOP. SECRET.
LUCKY FOR YOU, I HAPPEN TO BE THE BEST SECRET KEEPER IN THE WORLD.
IN THAT CASE, WELCOME...
TO MY SECRET UNDERGROUND BASE OF OPERATIONS! THE SKELEHUB!
THIS...
IS THE COOLEST THING I'VE EVER SEEN.

Learning Calendar

Part 1
Know Your History

Gather the adventure equipment you'll need from around the house - find the checklist on pages 26 and 27!

Locate Greece on a world map using a globe, an atlas, or an online map (e.g., https://upload.wikimedia.org/wikipedia/commons/0/0a/World_map_2004_CIA_large_2m.jpg).

Read the comic **Fangs of Philosophy** - find it at the beginning of this Adventure Guide!

Travel to Ancient Greece and *Know Your History*.

Challenge yourself to *Know Your Olympics*.

Recite *Regarding Rhetoric*.

Explore *Making Maps*.

Celebrate *Games like the Ancient Greek!*

Crack the *Ancient Greece Crossword*.

Dig into *Ancient Greek History Challenge*.

Part 2
Know Your Five Senses

Read *Know Your Five Senses*.

Get *Scent-imental!*

Witness *Wonderful Sound Waves*.

Detect *Secret Messaging.*

React to Refraction.

Investigate: *Are You a Super Taster?*

Experience *Receptor Collector*.

Play *Five Senses Scavenger Hunt & Sensational Mystery Activity*.

Uncover the *Five Senses Word Search*.

Make *Sense of the Five Senses*.

Part **3**

Know Your Appetite

Read *Know Your Appetite*.

Read the recipes on the following pages. Make a shopping list, purchase ingredients, and get your kitchen ready!

Make *Koftas with Yogurt Sauce* and *Classic Greek Salad*.

Share your dishes with your family. Discuss *Thoughts for Young Chefs* around the table!

Part **4**

Show What You Know!

Wrap up knowledge with *Who NOSE How it Goes.*

Check Out *Further Reading* for more opportunities to learn.

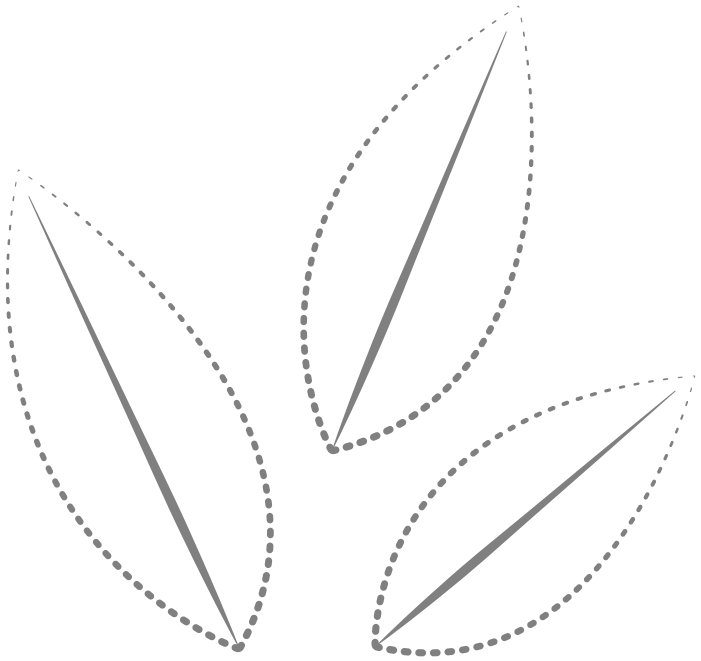
Celebrate Games

Like the Ancient Greeks

Pretend you and your friends are enacting a real-life Olympic games and celebrate! Victorious athletes of the Olympic games could expect to be crowned with a wreath made up of sacred olives, olive leaves and twigs.

Olive trees were considered sacred to Ancient Greeks as they played an important role in daily life. Olive oil and parts of the olive tree were used in greek medicine, personal hygiene, cooking and diet, trade, and even transport by sea.

Make a crown of your own to honor your Olympic games winner!



Materials:

- **Scissors**
- **Tape**
- **Green, brown, and black construction paper (8.5 x 11 inches)**
- **Aluminum foil**
- **A marker**
- **Glue**

Directions:

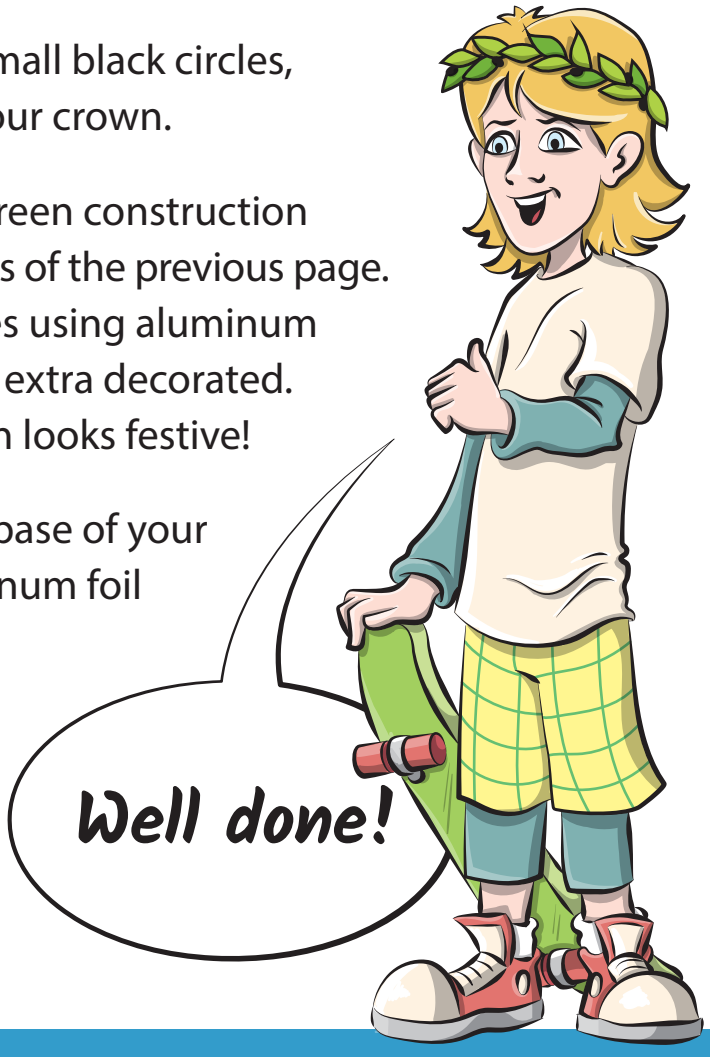
1. Use your scissors to cut two brown pieces of paper into a long rectangular line (about 1 inch thick). Afterwards, tape the two together and have an adult help you fit the circle around your entire head. This will be the base of your crown- it is okay if it seems a little long!

2. Then use scissors again to cut out small black circles, these will represent the olives on your crown.

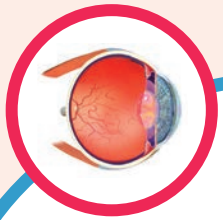
3. Cut out olive leaves by using your green construction paper and marker to copy the shapes of the previous page. Cut out a few green olive leaf shapes using aluminum foil - this will make your crown look extra decorated. Make plenty of leaves so your crown looks festive!

4. Glue your cut leaf and olives to the base of your crown, leaving the olives and aluminum foil leaves as the finishing touches.

5. Once the glue is dry, you are ready to celebrate like the Greeks. Use extra materials to help others celebrate too.

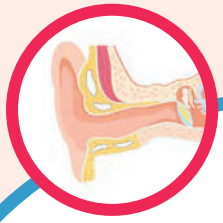


Your sensory receptors and brain, explained:



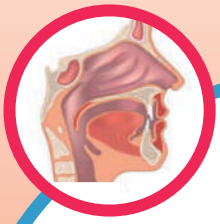
SEE

Sensory receptors inside each of your eyes process information on the retina and send signals to the somatosensory cortex of the brain.



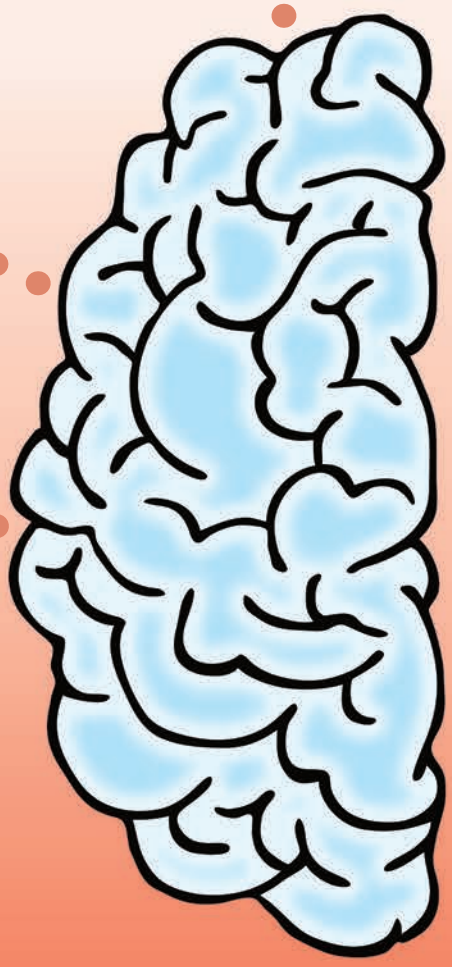
HEAR

Sound waves are sensed through your ears using your ear canal, eardrum, tiny bones, and the cochlea. The cochlea contains sensory receptors on its hairs and transmits messages to the auditory cortex of the brain.



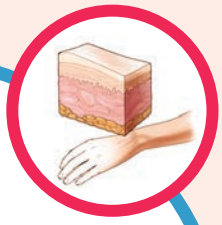
SMELL

Tiny hair-like neurons inside of your nose containing odor receptors receive floating odor molecules and match messages to the olfactory cortex of the brain.



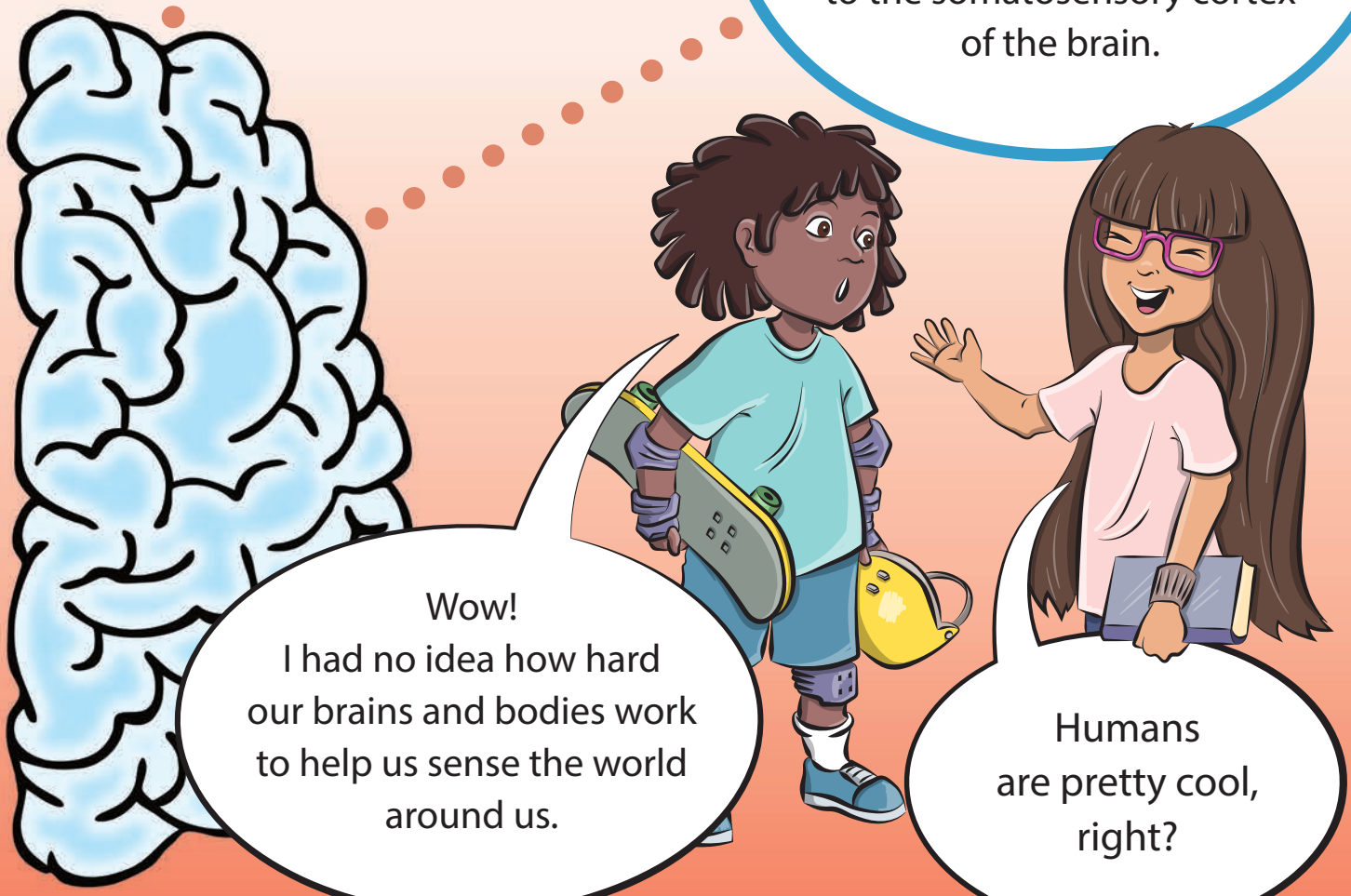
TASTE

Taste buds present on your tongue contain sensory receptors which work together with neurotransmitters and peptides to communicate to the gustatory cortex.



TOUCH

Pressure, temperature, and vibration sensed by receptors in your skin provide information to the somatosensory cortex of the brain.



Tune in to HEARING!

Here's an EAR-ful

Sound waves enter your ear and make your eardrum vibrate. This vibration moves three tiny bones in the middle part of your ear, which causes the fluid inside your inner ear to move. The moving fluid sends signals along a special nerve all the way to your brain.

Eardrum

is a thin membrane that vibrates when sound waves hit it.

Outer Ear

is called the auricle. It's the part of the ear that you see. Its shape helps collect sound waves from the air. Sound waves then travel through the ear canal, hit the eardrum, and make it vibrate.

*Say it like this:

Cochlea - "**koke-lee-uh**"

Malleus - "**mal-ee-us**"

Eustachian - "**you-stay-shun**"

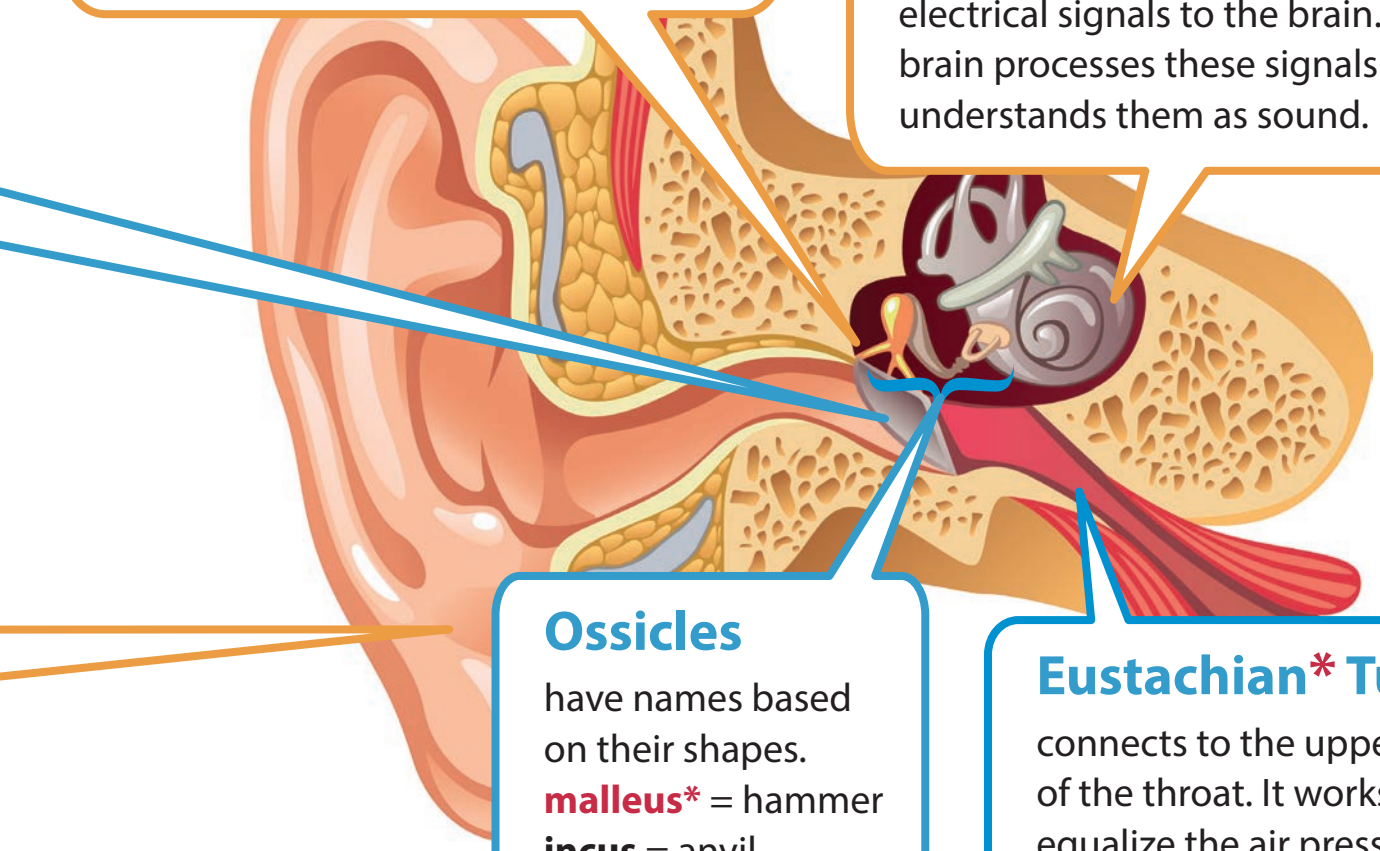
Ear wax helps to fight infection and keep dirt and insects from getting deep inside your ear.

Middle Ear

has three tiny bones, called ossicles. They're the malleus, the incus, and the stapes. When the eardrum vibrates, it causes the ossicles to move like small levers. Their movement amplifies the original vibration.

Inner Ear

has a fluid-filled structure called the **cochlea**.* It looks like a snail shell and has rows of hair cells on the inside. Vibrations from the middle ear create waves in the cochlea's fluid, wiggle the hair cells, and send electrical signals to the brain. The brain processes these signals and understands them as sound.



Ossicles

have names based on their shapes.
malleus* = hammer
incus = anvil
stapes = stirrup

Eustachian* Tube

connects to the upper part of the throat. It works to equalize the air pressure on both sides of the eardrum.

My Favorite Sounds

Nature Sounds: .....

Home Sounds: .....

Music Sounds: .....

School Sounds: .....

Wonderful Sound Waves

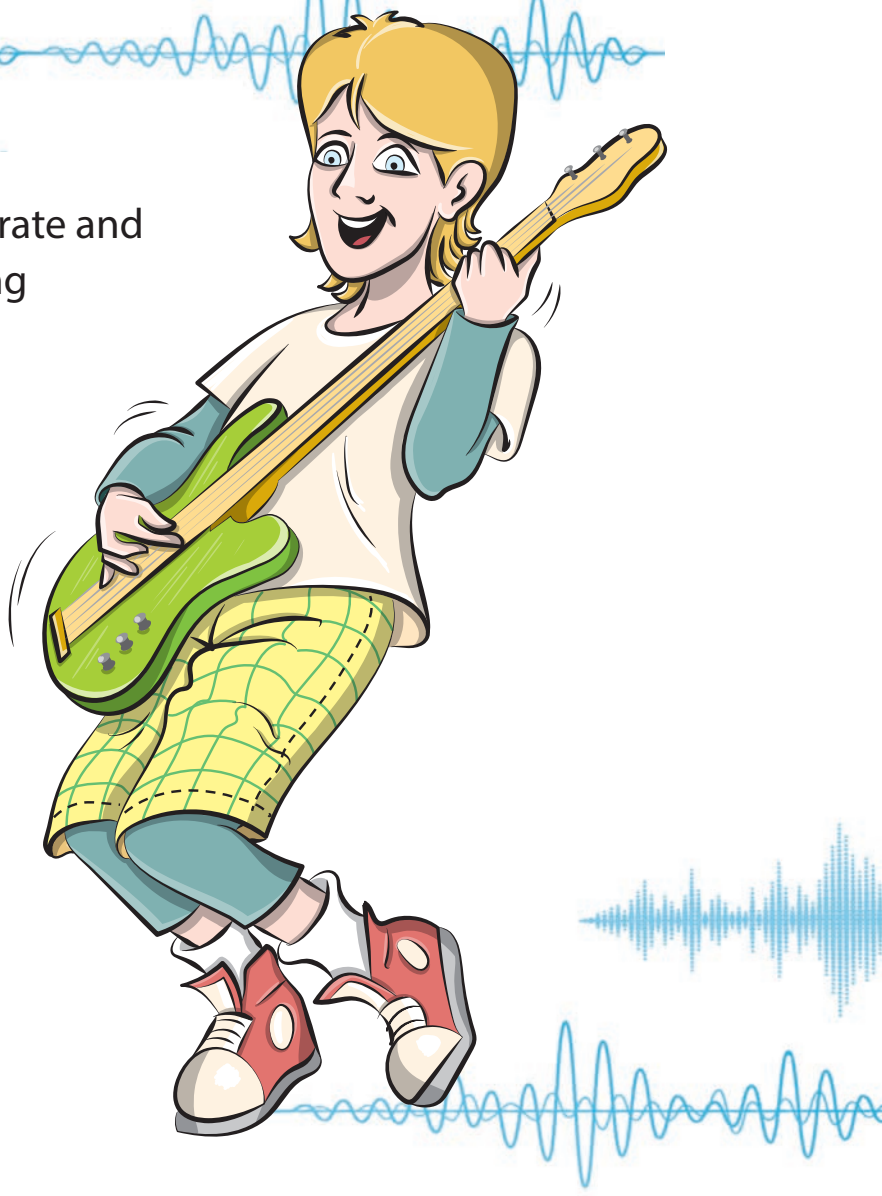
In Ancient Greece, many believed that the movement of the sun, the moon, and the planets created sound. This idea was called **"The Music of the Spheres"**.

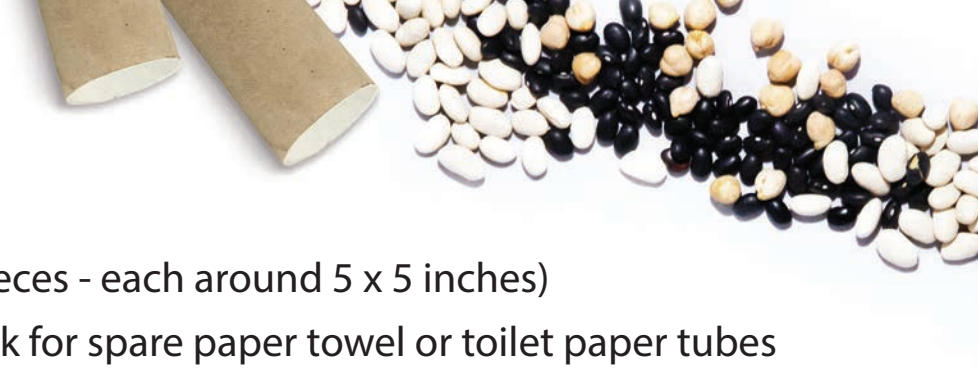
Although this was just a theory, the idea led philosophers such as Pythagoras and Plato to study sound waves and rhythm as mathematical relationships.

When objects are in motion, they vibrate and produce sound waves, many following patterns we find in nature.

Pluck a guitar string and you can see the vibrations that create sound. When different lengths and thicknesses of the string are vibrating, you can hear different tones.

Most sound is invisible to your eye. That's when your sense of hearing takes over, collects sound waves, and signals your brain for interpretation.





Materials:

- **1 paper towel** (cut into 2 pieces - each around 5 x 5 inches)
- **2 cardboard cylinders** - look for spare paper towel or toilet paper tubes
- **Some dried beans** (any you have on hand - look for lentils, pinto beans, black beans, or garbanzo beans; you can even compare the sounds of each for more fun!)
- **2 rubber bands**

***Note: You can also substitute the cardboard cylinders, paper towel, and rubber bands with a spare jar or container for ease.**

To explore sound waves and rhythm patterns, we will start by making a **Wonderful Waves shaker** using the materials above. You can begin by placing a square of paper towel over one opening of your cardboard tube (secure with 1 rubber band). Next, place a small handful of your dried beans into the cardboard tube through the second opening. Now place the second paper towel over the second opening, using a second rubberband to secure the shaker. Great job - you've made your own Wonderful Waves shaker!

***Psst - Pinched for time?**
Just place the beans inside of a jar or plastic container.

Now, let's use your new Wonderful Waves shaker to explore sound waves and rhythm patterns.

Wonderful Sound Waves

Directions:

1. Find a quiet area and take a minute to place your hand over your heart or your fingers on the side of your neck where you can feel the pulse of your heart. Focus your attention on the beat.
2. Hold the shaker with only two fingers and try to replicate the rhythm of your heartbeat.
3. Now try again but hold the shaker using your entire hands.

- What do you notice about the different tones?
- Which version of the rhythm is most like the sound of a heartbeat?
- Can you think of any other sounds and rhythms in nature that you can replicate using the shaker?

Your shaker is an actual percussion instrument. Listen to some music and try to play along with the song.

CREATED WITH LOVE

BY THE

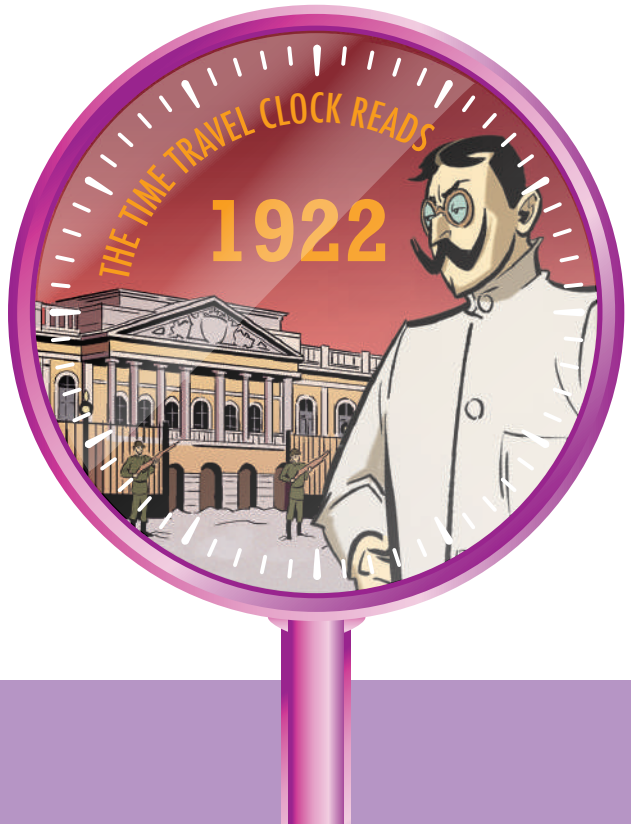
KNOW YOURSELF TEAM

Hello Adventurer!

Welcome to Adventure 2 - The Skeletal System.

In this workbook, you will learn about Russia in the early and mid-20th Century and your body's Skeletal System There will be information to read, activities to complete, and quizzes to take when you are ready to challenge yourself! Take your time along the way - spend as much or as little time as you like on each activity, and do not forget to use additional resources to learn more about the topics you are interested in.

Good luck, and have fun!



Get ready for a bone-chilling adventure!

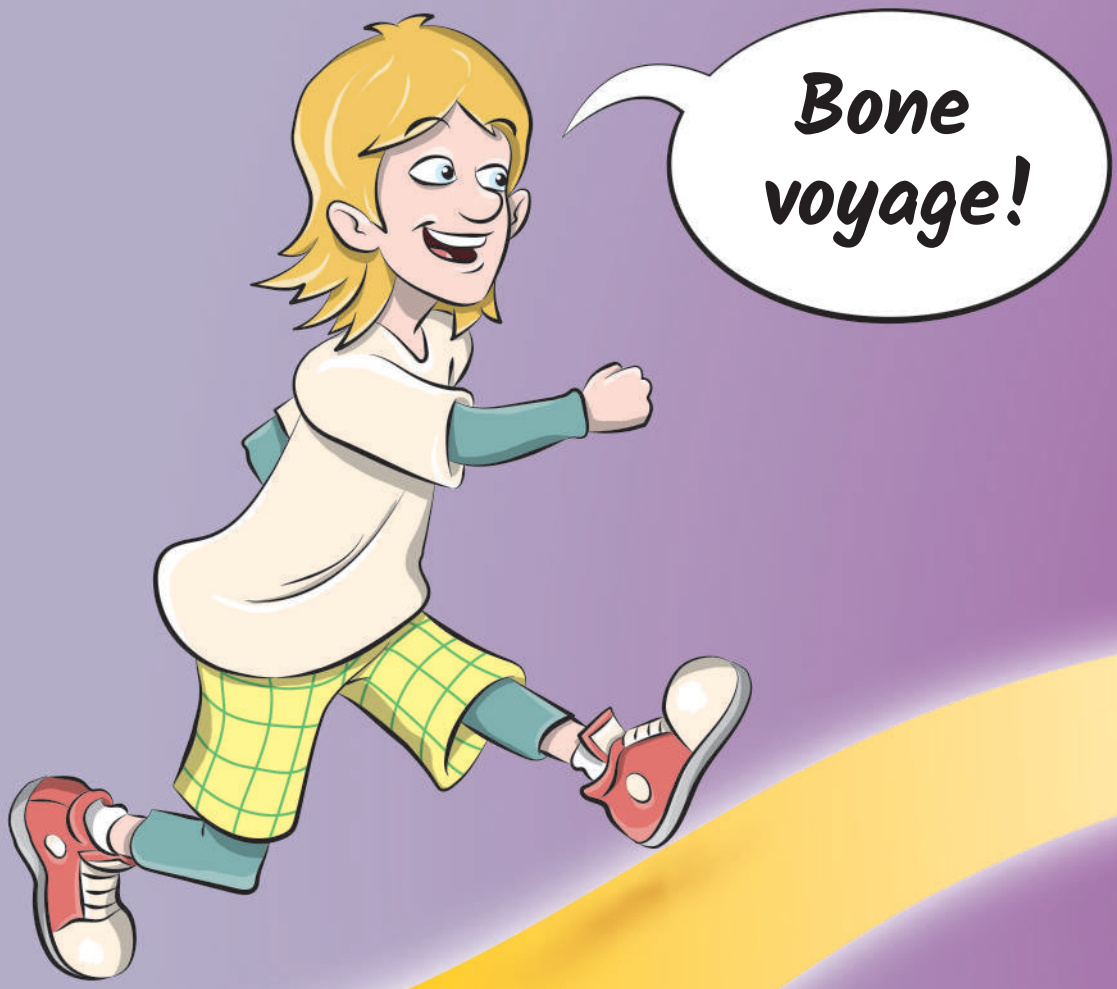
Добро пожаловать!

(Dobro Pozhalovat)*

That means "Welcome!" in Russian.

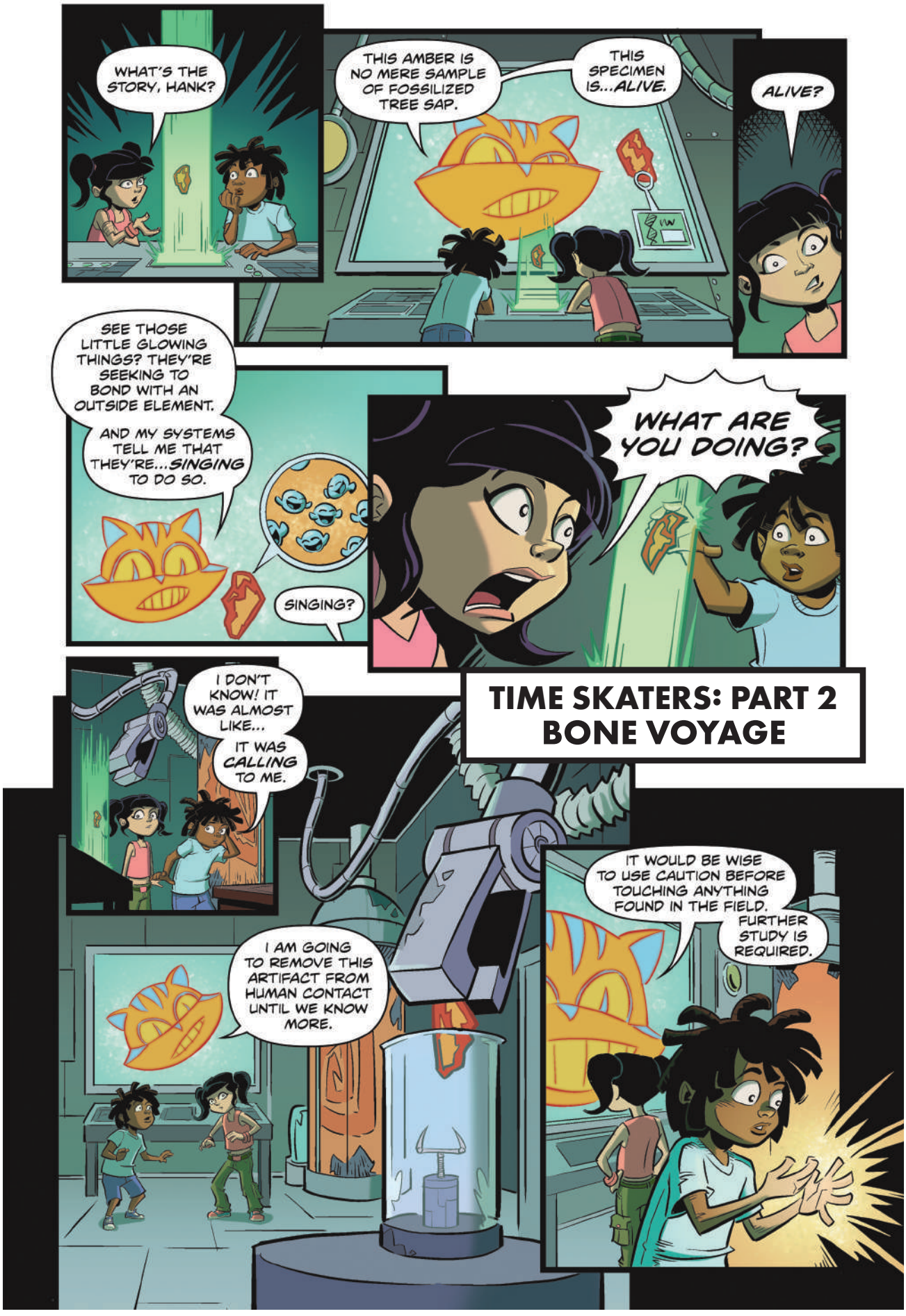
***Say it like this:** "doh-**bro** – pas-**zha**-low-vat."

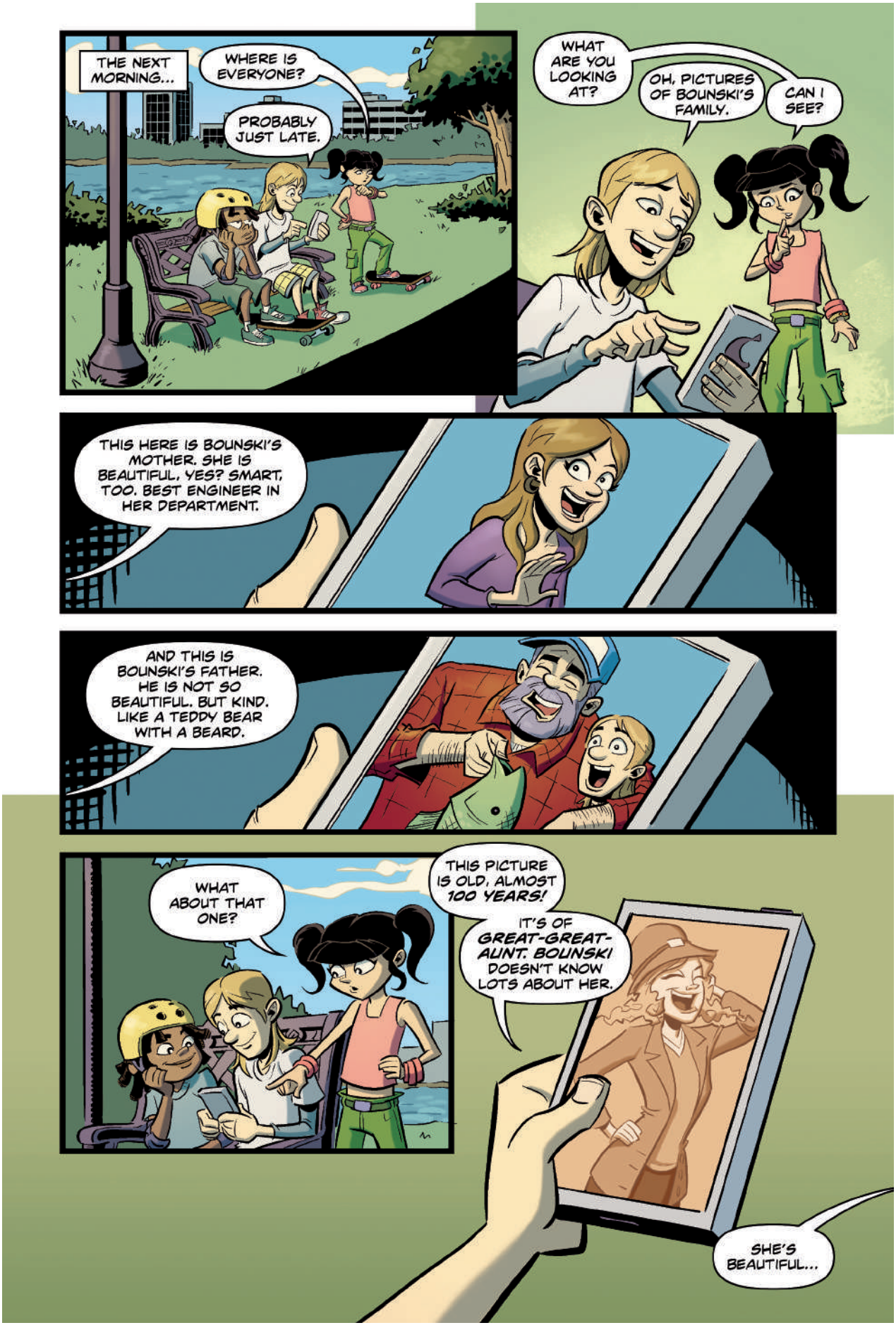
*Syllables in bold are the strongest.



This portal will lead you to…

Time Skaters Adventure 2


WHAT'S THE STORY, HANK?
THIS AMBER IS NO MERE SAMPLE OF FOSSILIZED TREE SAP.
THIS SPECIMEN IS...ALIVE.
ALIVE?
SEE THOSE LITTLE GLOWING THINGS? THEY'RE SEEKING TO BOND WITH AN OUTSIDE ELEMENT.
AND MY SYSTEMS TELL ME THAT THEY'RE...SINGING TO DO SO.
SINGING?
WHAT ARE YOU DOING?
TIME SKATERS: PART 2
BONE VOYAGE
I DON'T KNOW! IT WAS ALMOST LIKE...
IT WAS CALLING TO ME.
I AM GOING TO REMOVE THIS ARTIFACT FROM HUMAN CONTACT UNTIL WE KNOW MORE.
IT WOULD BE WISE TO USE CAUTION BEFORE TOUCHING ANYTHING FOUND IN THE FIELD.
FURTHER STUDY IS REQUIRED.


THE NEXT MORNING...
WHERE IS EVERYONE?
PROBABLY JUST LATE.
WHAT ARE YOU LOOKING AT?
OH, PICTURES OF BOUNSKI'S FAMILY.
CAN I SEE?
THIS HERE IS BOUNSKI'S MOTHER. SHE IS BEAUTIFUL, YES? SMART, TOO. BEST ENGINEER IN HER DEPARTMENT.
AND THIS IS BOUNSKI'S FATHER. HE IS NOT SO BEAUTIFUL. BUT KIND. LIKE A TEDDY BEAR WITH A BEARD.
WHAT ABOUT THAT ONE?
THIS PICTURE IS OLD, ALMOST 100 YEARS!
IT'S OF GREAT-GREAT-AUNT. BOUNSKI DOESN'T KNOW LOTS ABOUT HER.
SHE'S BEAUTIFUL...


PINKY! DO YOU READ ME?
I'M BUSY, HANK...
YOU'RE BUSY? WHAT A RELIEF.
IT'S NOT LIKE OUR DEAR FRIEND DR. B. IS LOST IN THE SPACE/TIME CONTINUUM OR ANYTHING!!
SHH!!
SO THIS IS THE HANK BOUNSKI HEAR ABOUT?
HOW DID YOU...
STOKELY!!
IT IS NOT HIS FAULT, PINKY. STOKELY CANNOT KEEP SECRETS.
BUT DON'T WORRY, BOUNSKI WILL NOT TELL ANYONE.
ONE BIG HAPPY FAMILY, GREAT. NOW GET MOVING.
THIS IS A JOB FOR AT LEAST TWO PEOPLE.
SORRY.
STOKELY. ARE YOU READY?
MY MOM, SHE'S MAKING MEATBALL SANDWICHES AND BROWNIES. OH BROWNIES.
I HAVE TO GO.
WHAT'S HIS PROBLEM?
GET BACK TO THE LAB!
DO YOU HAVE ANY PLANS FOR THE NEXT FEW HOURS?

Learning Calendar

Part 1
Know Your History

Gather the adventure equipment you'll need from around the house - find the checklist on pages 22 and 23!

Locate Russia on a world map using a globe, an atlas, or an online map (like this one: https://knowyourself.com/maps)

Read the comic **Time Skaters: Part 2 - Bone Voyage**. Find it at the beginning of this Adventure Guide!

Read about Russia in *Know Your History*.

Study the masters in *Know Your Art*.

Binge on books with *Know Your Novelists*.

Fabricating *like Fabergé*.

Soar among the stars in *Space Racing*.

Write *like a Russian*.

Complete *20th Century Russia Crossword*.

Test all *Tsar Knowledge!*

Part 2
Know Your Skeletal System

Study the skeleton in *Know Your Skeletal System*.

Pull yourself together in *A Bone to Pick*.

Dance your way through *A Bony Twist!*

Estimated hours 6 hours of fun

Think *on your feet!*
Get that *Posture en Pointe*.

Detangle the *Skeletal System Word Search*.

Answer a *Skele-ton of Information*.

Part 3
Know Your Appetite

Estimated hours 2 hours of fun

Read *Know Your Appetite*.

Read the recipes on the following pages. Make a shopping list, purchase ingredients, and get your kitchen ready!

Make *Russian Potato Salad with Dill* and *Sushkis*.

Share your dishes with your family. Discuss *Thoughts for Young Chefs* around the table!

Part 4
Show What You Know!

Estimated hours 2 hours of fun

Rush In *and Bone Up.*

Check out *Further Reading* for more opportunities to learn.

Know Your Art

Look at all of these dolls! They are called Russian nesting dolls, or **matryosh-ka***, if you happen to speak Russian.

matryoshka

***Say it like this: "**ma-tree-**osh**-ka**".**

*Syllables in bold are the strongest.

If you look closely, you'll notice something interesting about these hand-painted wooden dolls:

they fit inside of each other!

Inside of each doll is a smaller version of the same doll, and inside of that one is an even smaller one. This onion-like characteristic has led people to think that the dolls represent the many layers of Russian personality.

Know Your Art

Get creative with colors.

Turn back to the skeletons on the previous page. Look closely at the bones.

Do all of the bones look alike? Can you find some that are similar to each other in appearance? Let's see how bones are grouped according to what they have in common!

Long Bones

include the bones of your arms, legs, fingers, and toes. These bones are slightly curved, which helps them to absorb shock. Their strong shafts are made of compact bone. The inside of the wider ends have spongy bone that is covered with compact bone.

Arms • Legs • Fingers • Toes

Short Bones

are almost entirely made from spongy bone and sealed with a layer of compact bone. They are found in your wrists, ankles, and kneecaps.

Wrist Bones • Ankles • Kneecaps

Flat Bones

do not go up and down like long and short bones do. Your skull, ribs, sternum, hips, and shoulder blades are all flat bones. These flat plates of spongy bone are covered with compact bone.

Skull • Ribs • Sternum • Hips • Shoulder Blades

Irregular Bones

include facial bones such as the jawbone, the vertebrae that make up your spine, and the tiny bones (ossicles) in your ear.

Facial Bones • Spine • Ossicles in the Ear

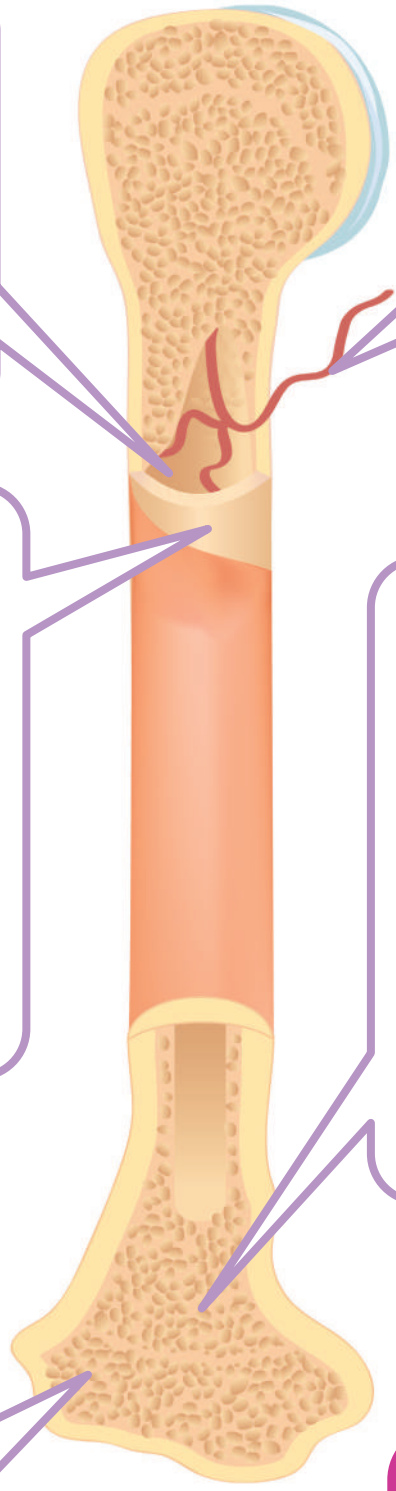
Let's look at what makes up a long bone, shown here. Almost all bones include spongy bone, compact bone, and both red and yellow marrow.

Medullary* Cavity

runs down the middle of the long bone. In children, it's packed with red marrow. In adults, the medullary cavity becomes filled with fat (yellow marrow).

Nutrient Artery

runs the length of the medullary cavity. This artery is the main blood supply to the bone and helps it to stay healthy.



Compact Bone

is also known as cortical bone. Compact bone is the hard bony surface that you see when you look at skeletons. Compact bone is the heaviest type of bone and supports the weight of the body.

Spongy Bone

is also known as cancelous bone. It's really a network of many bony fibers that provide the bone with support. Spongy bone reminds us of a real sponge, with the sponge being the bony fibers and the air pockets being red or yellow marrow.

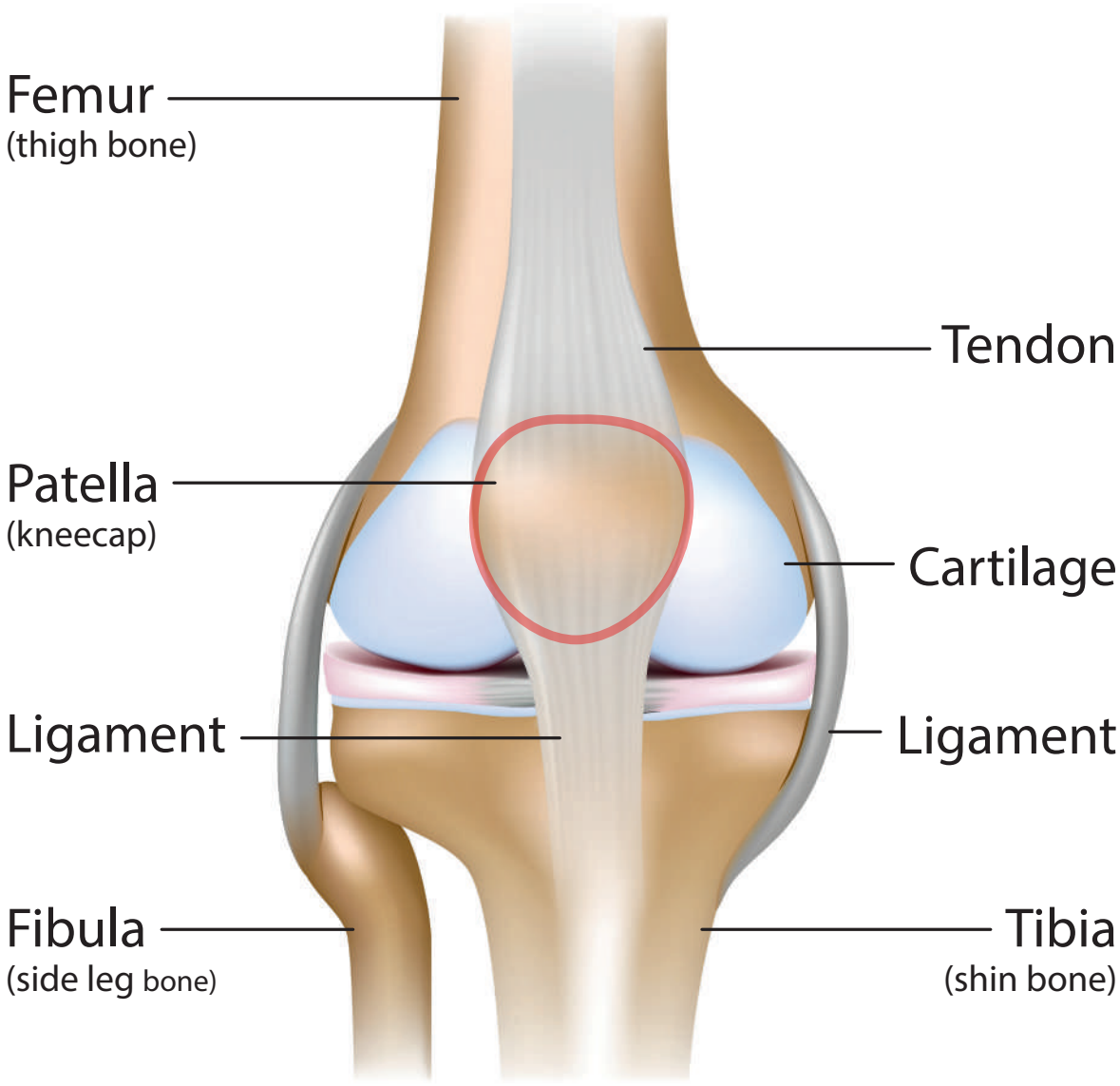
Red Marrow

is found within spongy bone and in the medullary cavity in children's bones. Both red and white blood cells are made in the red marrow.

*Say it like this: "**meh**-dull-lary"

Keeping it all Together!

Your bones need connective tissue like ligaments, tendons, and cartilage to help them move. These connective tissues join bone to bone and muscle to bone so you can move your body. Let's look at the diagram below to see the connective tissue inside your knee.



The smallest bone in your body is located in your middle ear. It's called the stapes.* Say it like this: "**STAY**-peas".

Cartilage

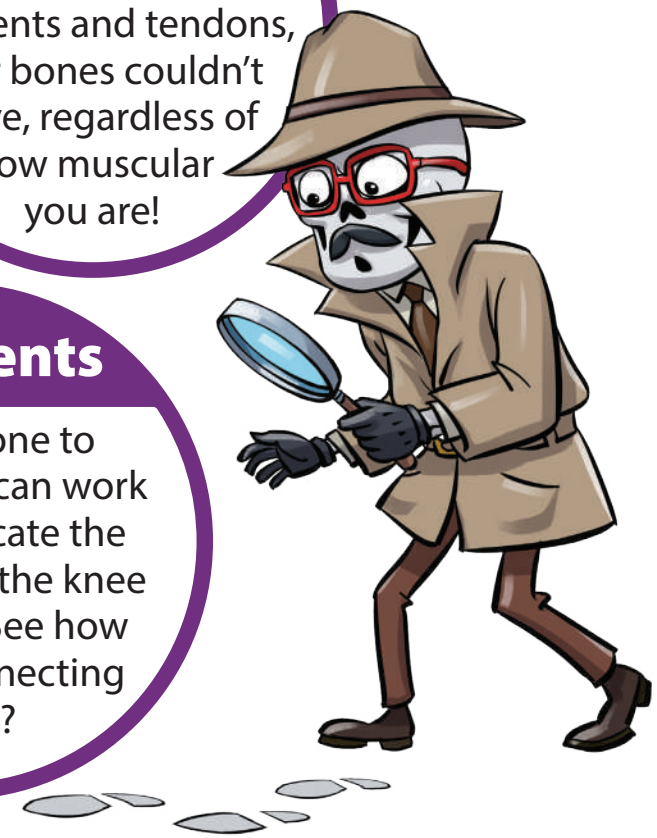
is stiff connective tissue that's not as hard as bone. Your nose and outer ear are made of cartilage. Cartilage is also between some bones, such as the meniscus between your femur and tibia.

Tendons

connect bone to muscle. Without ligaments and tendons, your bones couldn't move, regardless of how muscular you are!

Ligaments

connect bone to bone so they can work together. Locate the ligaments on the knee illustration. See how they are connecting bones?



BE A LABEL DETECTIVE!

Your bones need more than calcium to be strong. They need Vitamin D, too! Vitamin D helps your bones use calcium from foods like cheese, almonds, and yogurt. If you eat foods high in calcium and Vitamin D, plus add in bone-strengthening activities, you can build strong bones now and help prevent bone fractures when you're older.

Now, try out your detective skills!

Lots of foods have calcium, but Vitamin D is harder to find.

Take a look at the labels of foods that you eat. How many foods have Vitamin D? How many foods have calcium? Write their names in the appropriate areas.

VITAMIN D	CALCIUM

A Bony Twist!

Get ready for A Bony Twist on listening to some of your favorite music!

Materials:

- **White paper**
- **Markers**
- **Your completed skeleton from "A Bone to Pick"**
- **Music**

This is a fun game you can play with one other person or add more people for more fun. To play, you will need to first create some signs with bones names. Use the skeleton you built in the previous activity "***A Bone to Pick***" for reference.

Directions:

PREPARING YOUR BONE SIGNS

1. Take your paper and markers out onto a flat surface. Place your skeleton nearby or assistance.

2. To design your signs, you will need to write in large, uppercase writing that can be read from a distance. Write either a bone or group of bones onto each piece of paper. Reference your skeleton if you need help remembering the name of a bone or bone group.

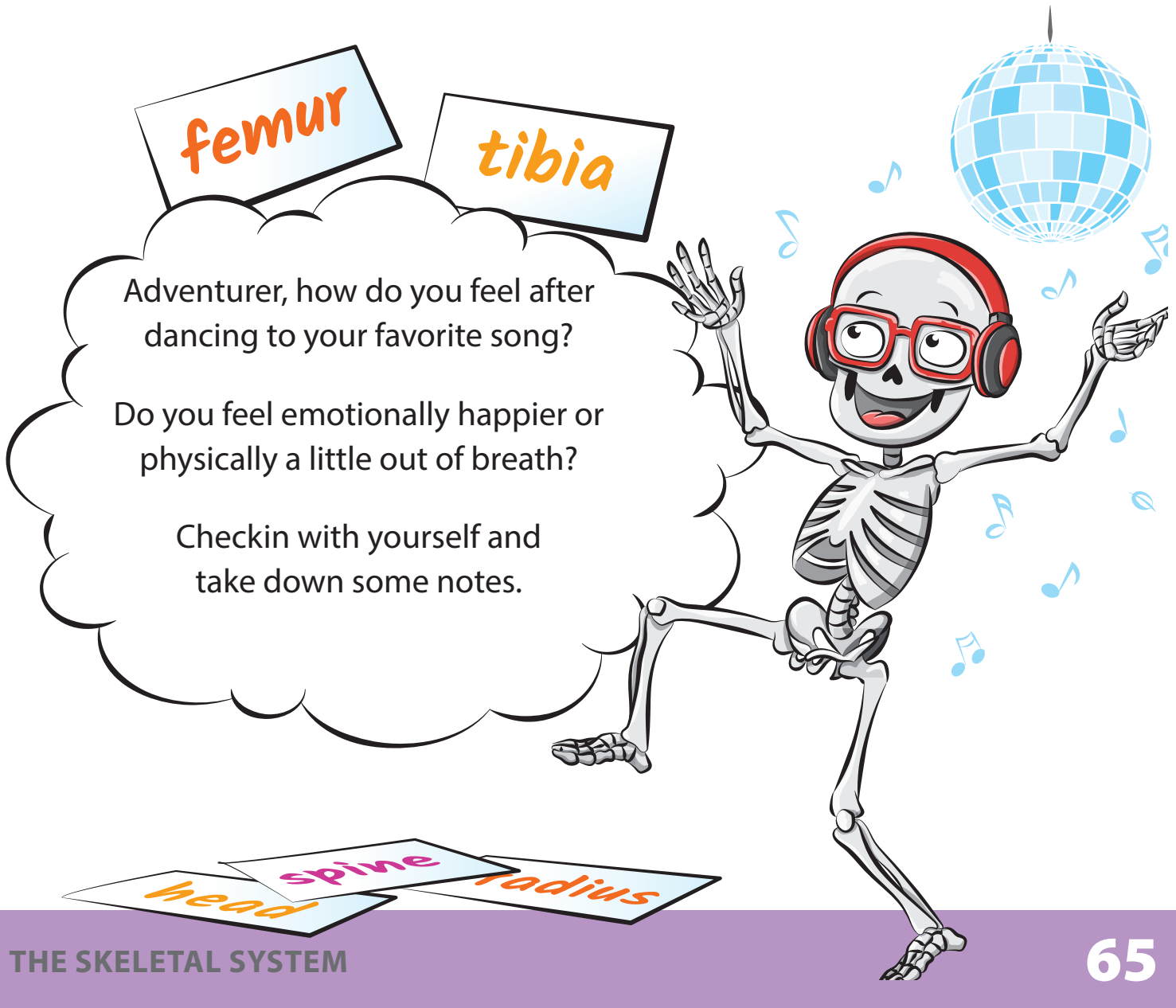
3. Make as many or as few signs as you like!

4. Once your signs are complete, grab your favorite music, a friend, and get ready to twist!

HOW TO PLAY

1. Playing the game is easy. Just turn on your favorite jams and see how well you know your bones. When your friend shows you a sign, bust a bony move using whichever bones are shown on the signs you made.

Note: You can make ***A Bony Twist*** more challenging by writing the name of each bone on each piece of paper, or less challenging by just writing groups of bones on each piece of paper. For example, write femur, tibia, or scapula for a challenge. For something a bit easier, use groups of bones instead - for example, upper extremities, rib cage and spine, lower extremities, and head.



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