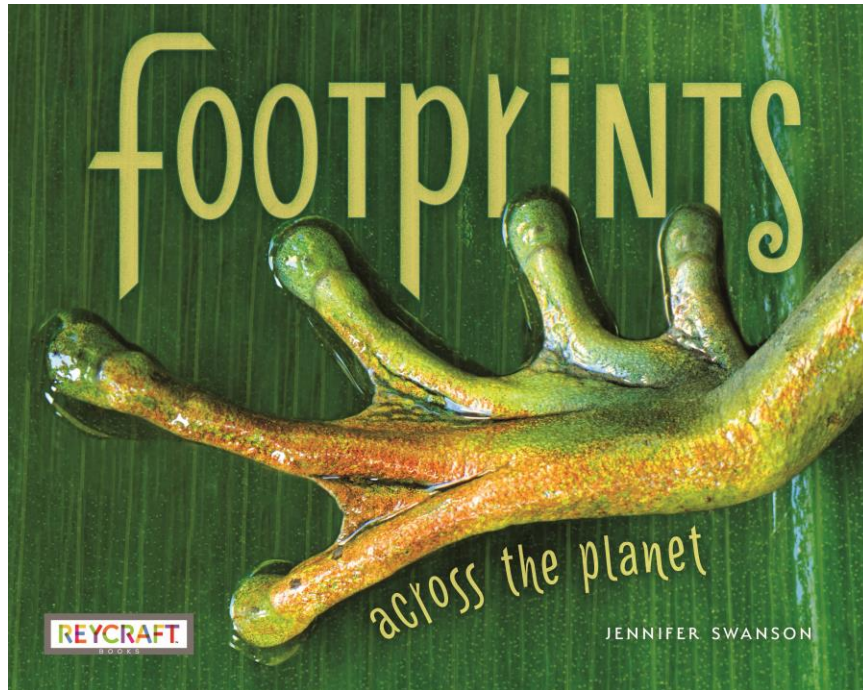


Educator's Guide

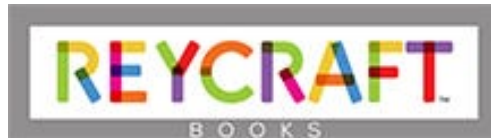


Footprints Across the Planet **Educator's Guide**

A teacher's guide created by author Annette Whipple
based on the picture book written by Jennifer Swanson

"An excellent choice for nature-loving elementary readers."
-Kirkus Reviews

<https://jenniferswansonbooks.com/>



Hardcover ISBN: 978-1478876038
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Meet the Author

Science Rocks! And so do Jennifer Swanson's books. She is the award-winning author of over 45 nonfiction books for children. Using her background in science and history that she received from the U.S. Naval Academy, and her M.S. in Education, Jennifer excels at taking complex facts and making them accessible, compelling, and humorous for young readers.

Jennifer's passion for science resonates in all her books but especially, *Astronaut-Aquanaut: How Space Science and Sea Science Interact* and *Beastly Bionics* which both received Florida Book Awards and NSTA BEST STEM book awards. Her *Save the Crash-test Dummies* book received an NSTA BEST STEM Award and a Parent's Choice GOLD Award.

Jennifer has been a featured speaker at the Tucson Book Festival, National NSTA conferences, the Highlights Foundation, the World Science Festival the Atlanta Science Festival and the Library of Congress' National Book Festival. You can find Jennifer through her website www.JenniferSwansonBooks.com.



Educator's Guide

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This educator's guide is free for use within an educational or home setting.
www.JenniferSwansonBooks.com.

How to Use This Guide

This guide is designed for use in elementary classrooms and can be modified for younger and older students. Activities provided can be adapted to meet students' needs and learning levels while meeting curriculum standards. Included are

4 Reading Activities

2 Writing Activities

12 STEAM Activities

4 Printable Worksheets

A Note for the Teacher:

As children learn more about the changing world and its environment, many are discouraged. Some are angered. In others, it leads to a form of anxiety called eco-anxiety. You can learn more about eco-anxiety at these links.

<https://emagazine.com/eco-anxiety-what-it-is-and-how-to-cope-with-it/>

<https://www.healthline.com/health/eco-anxiety>

<https://www.bbc.com/future/article/20220315-how-eco-anxiety-affects-childrens-minds>

<https://www.nais.org/learn/independent-ideas/june-2022/eco-anxiety-what-it-means-for-our-kids-and-how-they-are-taking-action/>

How to Share This Guide

Please share this guide with other educators and interested people by sending them to www.JenniferSwansonBooks.com. Thank you.

Reading Activities

Introduction of *Footprints Across the Planet*

Before introducing the book, consider having *Footprints Across the Planet* on display to build curiosity. Then introduce the book through discussion of the cover and a picture book walk.

The Cover

1. What do students notice about the cover?
2. Brainstorm different kinds of footprints with the class. Which footprints do they think might be included in the book?
2. Does the book look like it will be fiction or nonfiction/informational?
3. What does the title tell you about the book?

Preview Picture Book Walk

1. Open the book.
2. Preview the photographs included without reading the book. Are any of the images a surprise? Which ones?
3. Discuss how *Footprints Across the Planet* includes more than just animal tracks.
4. Will more than animal tracks be included in this book?

Reading of *Footprints Across the Planet*

Consider reading this book aloud multiple times over several days. The simple texts paired with the photo illustrations make this a powerful book to discuss.

- For the first reading, simply read the text and allow students to comment and ask questions.
- On a different day, follow the reading of the main text with the information included in the back matter highlighting different footprints.
- While reading for a closer look, read each page spread and then pause. Allow students to share what they think they know about the topic/animals/people mentioned. Help students recall the back matter from previous readings.
- Discuss (using photographs as prompts)

Famous People Who Left Their Mark

Neil Armstrong (first person to walk on the moon)
Edmund Hillary and Tenzing Norgay (first known humans to climb Mount Everest)
Rosa Parks (important role in the Montgomery, Alabama bus boycott)
Ruth Bader Ginsburg (Supreme Court justice)
Martin Luther King, Jr. (civil rights leader and Nobel Peace Prize winner)

Everyday People Who Left Their Mark

(from the page spread that says, "And those who strive to follow them.")






Leave a Mark Worksheet

After discussing some of the famous people in *Footprints Across the Planet*, complete the Leave a Mark worksheet together as a class for review.

Name: _____

Leave a Mark

Direction: Match the picture to the person or people related to the picture.

	• Ruth Bader Ginsburg
	• Martin Luther King, Jr.
	• Edmund Hillary & Tenzing Norgay
	• Neil Armstrong
	• Rosa Parks

How will YOU leave a mark? Draw a picture or write words that you can do.

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Tic-Tac-Toe Review

Review *Footprints Across the Planet* with a game of tic-tac-toe.

Each student needs his or her own large tic-tac-toe grid (student-created or use the printable provided). Younger students might like working in pairs.

Choose when to have students fill in the chart. After...

- several page spreads
- completing the main text
- completing the book, including back matter

1. After reading, have students write a unique type of footprint (or who might leave it) mentioned **or** shown in the book. Write one footprint in each space on the grid.
2. When finished, students take turns calling out the unique footprint they wrote in a space.
3. If anyone else has the same footprint, students can X it out.
4. If no one has the same footprint, it remains uncrossed.
5. Continue playing until all students have crossed out three boxes in a row (vertically, horizontally, or diagonally).

Older student option:

After crossing off facts with Xs, have students circle remaining facts with an O. Three Os in a row win!

Name: _____

Footprints Tic-Tac-Toe

Write a different kind of footprint in each space related to what you learned in *Footprints Across the Planet*. Follow class instructions to play the game.

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Writing Activities

Change the World: Kindness

Lead a brief discussion about some problems students see at school and in the community such as feelings of exclusion, loneliness, bullying, and more.

Remind the students of *Footprints Across the Planet*. Ask who makes a difference? (Everyone.) Every living being on this planet impacts others. Even you.

Discuss what one small step can look like toward

- kindness
- acceptance
- happiness

How can we make the world a better place? The world has a lot of problems. Big problems. But the best way to tackle big problems is to start small. Begin with just one small step.

Teach the students the sign for “Me, too” (link to brief video for you to the right). Encourage students to sign “Me, too” when they agree with another person’s idea of what one small step can look like.

Have students trace their foot or shoe on paper. Have each student choose a word or phrase from the brainstorming session that they want to do to make a difference to others.

Me, Too

Learn how to sign, “Me, too” or “Same.” Then teach it to your students!

<https://youtu.be/d2OqKBVvVLA>

Be the Change Writing Prompts

I want to be kind because...

Feet aren’t the only thing to leave footprints...

My digital footprint is important because...

I know one person can make a difference because...

I want to leave my mark on the world by...

My footprint is unique because...

Even small steps are important because...

STEAM Activities

One Small Step: Hope from the Past

Note: This activity may be completed over multiple days.

Background Information

- Neil Armstrong, Edwin “Buzz” Aldrin, and Michael Collins were the astronauts of Apollo 11.
- On July 20, 1969 Aldrin and Armstrong walked around the moon while doing experiments and collecting dirt and rocks. At the same time, Collins orbited the moon. He took photographs and completed experiments.

Aldrin and Armstrong planted a flag on the moon. Show the plaque to students. Discuss what kind of “footprint” the message left for others to know.

See the plaque: <https://www.nasa.gov/audience/forstudents/k-4/stories/first-person-on-moon.html>

Listen to Neil Armstrong’s brief words about the impact of walking on the moon:

https://youtu.be/w4wx_3XOrns

(Full video about 2 ½ minutes. Armstrong’s words: 17 second mark.)

<p>“That’s one small step for man, one giant leap for mankind.” -Neil Armstrong</p>

Discuss the quote.

The astronauts took actual steps on the moon. Armstrong paired literal and figurative language in this famous quote to remind people of the importance of walking on the moon for all of humankind. The moon landing and even Neil Armstrong’s words gave hope to all people.

(If you watch the video with the class, discuss how the world viewed it as a shared accomplishment, not just for the United States.)

One Small Step: Hope for the Future

Note: This can be combined with the discussion from Class Carbon Footprint activity.

Lead a discussion about some concerns the students have about the world, especially related to the environment. Re-read the last page-spread to remind students about carbon footprints and digital footprints, as appropriate.



Remind students the best way to tackle a big problem is to start small—even for world problems.

They can begin with just one step—even as a kid.

Together, brainstorm ways your students commit to help the world. Suggestions below focus on the environment but accept all ideas.

Kids can...

- pick up litter • turn off water when brushing teeth • drink from reusable water bottles • turn off lights • volunteer • reuse or recycle • use less plastic straws • walk, bike, or use public transportation if applicable • not waste food • upcycle • use scrap paper • plant flowers and gardens • take short showers • use reusable shopping bags •

Students cut out a moon footprint or make footprints.

- Moon footprint image can be found at this link and cropped prior to printing.
https://www.nasa.gov/centers/marshall/history/apollo11_140718.html
- If making a footprint, paint the bottom of foot with tempera paint. Remove paint with a baby wipe.

Students write what they pledge to do (as kids) on the moon footprint. It should be practical and done with little to minimal adult assistance.

Display all the ways your class helps the world by showcasing the footprint pledges. Remind students that we tackle a big problem with a small step. As students hang their footprint pledge, thank them for giving the world hope.

Inspirational ideas:

Linda Plevak, former Faculty Instructor Librarian at Northeast Lakeview College, Universal City, Texas created this display:

https://photos.google.com/share/AF1QipNobitwD0eOO_o5bDprxPK-BqLH82cp1XORoXwMtGWE0lie8Fas8Ape1wbbGTJhhg?key=UHBBbko1S0xNRkpiTEFGV01yM2xkYUxoVExqTUp3

Animal Tracks

We call the footprints animals leave *tracks*. It's easy to miss tracks when we're outdoors, but it's always exciting to spot a track.

Discuss:

How animal tracks don't show on hard surfaces like pavement or concrete (unless foot is wet and surface is dry), but they can be found in other locations. Show students a photograph of an animal track you saw recently (or ask a friend to share). Share the general location and environment where you saw it.

Note: It doesn't need to be a wild animal. Your neighbor's dog might leave a track near a mud puddle.

Challenge students to predict what type of animal made the track you photographed. Then research together considering the track's characteristics.

Resources:

Utilize these resources (or your own) so students can familiarize themselves with a variety of animal tracks.

Animal Track Printables

Free animal track guide >> <https://www.personalcreations.com/blog/animal-tracks>

Free animal track booklet >>
<https://www.prekinders.com/animal-tracks-book/>

Consider cutting apart the book pages to create a memory game.

Field Guide:

Consider having an animal field guide available so students can learn more about the animals. Ask for one at your local library.

View animal tracks:

a dirt hiking trail (especially near mud puddles or wet areas)
along the edge of a stream or pond
sand
snow (deep snow or just a dusting)
near mud/water puddles

Note: Let the grounds crew of your school know you are interested in showing students animal tracks. Ask them to notify you if they spot any.

No hiking? No problem:

Even if you cannot get outside to view animal tracks, challenge your students to watch for tracks during the rest of the school year. Students can take photos of tracks they spot. Consider printing and displaying the animal track photographs.

Whose Feet?

Footprints Across the Planet showcases many kinds of feet. Discuss how different feet serve different purposes.

toe- Human feet are designed to walk and run long distances.

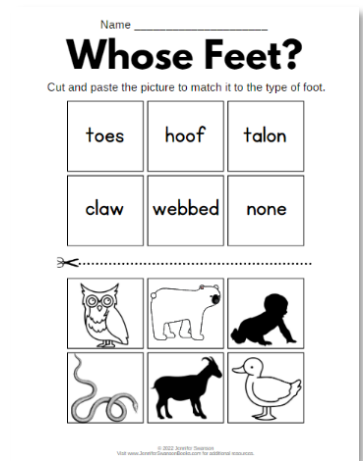
hoof- Horses, antelope, and goats are some animals that walk and run on hard ground with strong, insensitive hooves.

talon- Birds use talons to perch, climb, and dig. Some use talons to catch prey.

claw- A variety of animals like mammals and reptiles use claws to defend themselves, climb, dig, and catch prey.

webbing- Some water birds and amphibians have webbed feet for water motion.

none- Animals like snakes and clams move without feet.



After the discussion, follow up with the Whose Feet? worksheet.

How Long?

Challenge the class to estimate how long a class footprint would be if each student placed their foot directly behind another student. Complete the activity to find the exact measurement.

Utilize the unit of measure most familiar with the students.

1. Have each student measure their foot to the nearest unit with their shoes on.
2. In small groups, have students share their measurements and then add them together to find the total length for the group.
3. As a class, add the total of all the groups' measurements to calculate the length of the class footprint.
4. If appropriate, convert the measurement to meters or yards/feet.

Class Carbon Footprint

After completing the How Long? activity, remind students they also have an invisible footprint: the carbon footprint.

carbon footprint: the amount of carbon dioxide (greenhouse gases) produced because of our daily lives

How we travel, what we use, food we eat, and more contribute to our personal carbon footprint.

Learn More About Carbon Footprints

- <https://www.nationalgeographic.com/environment/article/what-is-a-carbon-footprint-how-to-measure-yours>
- <https://www.conservation.org/stories/what-is-a-carbon-footprint>

Carbon Footprint Activities for Kids

- <https://www.nps.gov/choh/learn/kidsyouth/carbon-footprint-activity.htm>
- <https://www.kitchencounterchronicle.com/what-is-carbon-footprint-stem-kids/>

Calculate a Household Carbon Footprint

- <https://www3.epa.gov/carbon-footprint-calculator/>

Admit your own mistakes related to wasting electricity, water, and/or plastic.

Explain once you learned the importance of saving water, electricity, and plastic, you were intentional about the changes you made. (Give examples...shorter showers, using disposable water bottles as little as possible, turning off lights, turning off water while brushing teeth.)

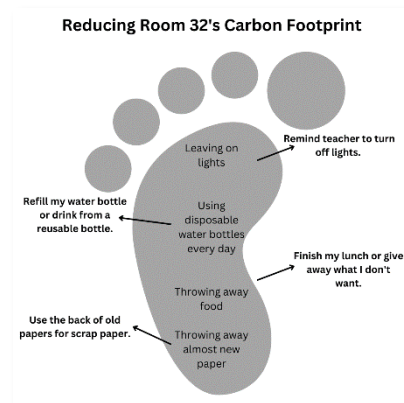
Discuss what the class can do at school to use less water, electricity, and electricity at school:

- Turning off lights when classroom is empty
- Riding the bus, walking, riding bike, or car pooling to school
- Use the back of worksheets as scrap paper
- Unplug devices once charged
- Eat all of lunch (and snacks)
- Drink from reusable water bottles

1. Draw a giant footprint on butcher paper or posterboard. Give it a title like "Reducing Room 32's Carbon Footprint."
2. Have students call out ways the class has made a carbon footprint. Write them on the footprint.
3. For each item, brainstorm together what the class can do to reduce their carbon footprint. Add the solutions to the poster.
4. Display your giant footprint in the classroom as a reminder.

Optional: Though students may not have control over everything that happens at home, there are some things they can do to have a smaller carbon footprint. Discuss or ask:

- Do you leave the water running when you brush your teeth?
- Have you forgotten to turn off a light when you aren't in a room?
- Do you leave the TV or fan on when you're not in the room?
- Do you throw away food that you don't want to eat?
- Do you disposable water bottles?
- Do you take long showers?
- Do you use baggies instead of reusable containers?



Share Your Pet!

Students share about a pet or potential pet.

1. Students draw a picture of their pet and the pet's footprints.
2. In small groups, students should discuss how they help take care of the pets and what additional things they might do for the pet.
3. For those with pets, have them share how their pet makes them feel and why their pet is important to them. For those without pets, they can share about a personal experience or someone else's experience why they think pets can be important to people.
4. Lead a discussion about how children can help a pet who is lost or hungry.
5. Talk about how caring for a pet might help them care for others as well as the environment.

Digital Footprint

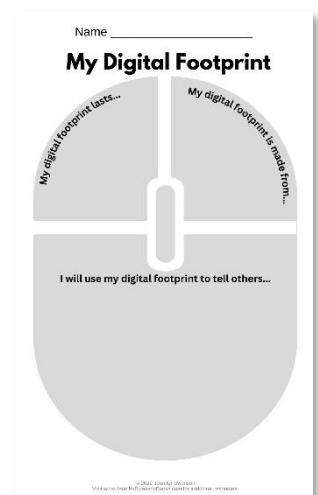
Any time you use an electronic device connected to the internet, you leave digital footprints. Every click adds to your personal digital footprint. And they all add up to show who you are.

Discuss:

- What are some things you do online or on a device?
(games, shop, talk to friends, research...)
- Even if you don't give your name or email address, you still leave a footprint. It cannot always be seen, but with the right tools, your footprints can be found.
- Digital footprints cannot be erased, even if you "delete" browsing history or posts or comments. Your footprints leave marks that tell who you are. Forever.
- What you post is permanent, even if it "disappears" from your view. Police, employers, and even strangers can still see it even if it doesn't show in an online search.
- How do you want to be seen? How others think of you is your reputation.
- What do you want to share about yourself? When you share on the internet, you share with strangers, even if you cannot see them.
 - Use nicknames instead of your actual name.
 - Never give your location (including town, school, or even team name).
 - Keep passwords private.

Have students complete the worksheet titled My Digital Footprint.

Option: Have students cut out the mouse, complete the sentences, and add to a bulletin board to display.



An Elephant Footprint

As a class, reread about the elephant's footprint in the last page spread. How many kids' footprints would fit in an elephant's footprint?

Brainstorm how you can create a circle the size of an elephant footprint.

Option:

Eventually, use a string 4.5 feet (1.54 meters) in length to create a circle. You can use the string as your circle or use the string to outline a large circle on butcher paper.

How many students' hands can fit in the elephant footprint in one layer?

How many students' shoes can fit in the elephant footprint in one layer?

Climbing Mountains

Climbing Mount Everest is more than just a challenging activity. It takes years to prepare to climb the tallest mountain in the world.

Mount Everest Height: 29,035 feet (8850 meters)

Knowledge Preparation: Understand weather (precipitation, winds, temperature), map skills, medical training beyond first aid, extreme weather survival skills...

Physical Preparation: Expert climbing knowledge, mountaineering experience, high level of exercise, healthy diet, positive attitude, climbing with 50-pound pack, preparing for high altitude sickness...

SEL Connection:

Connect the climbing of Mount Everest to personal challenges.

You might choose to face a challenge, but sometimes challenges come without our permission. Just like climbing a real mountain, you can prepare for your "mountain challenge" even if the challenge surprises you. Consider...

How can you prepare now that you know about the challenge?

What can you anticipate?

Who can support you?

How will you celebrate your victory?

This 3-D video shows the path taken by Mount Everest climbers. (Note: The words are on the screen briefly. You will need to pause the video for students to read.

https://youtu.be/UTxpNiA_Ujc)

High Altitude Breathing

Climbers must gradually acclimate their bodies to the high altitudes to prevent illness and even death. There is less air pressure at high altitude, so the air is thinner with less oxygen. At Mount Everest's peak, there is one-third the oxygen available at sea level. Less oxygen means people get sick. It's known as high altitude sickness.

High altitude sickness can include: headaches, problems sleeping, dizziness, shortness of breath, exhaustion, and more. Any of these would make difficult climbing even harder.

This activity introduces the idea of breathing less oxygen than typically available.

You inhale and exhale through your mouth and nose. Breathing only through a straw reduces the oxygen intake and carbon dioxide release.

Note: Let students know they may breathe without the straw anytime they need to. If their body or head begins to feel differently, they should breathe through their mouth and nose.

Materials Needed:
straws

To Do:

1. (Optional) Cut straws in half.
2. Give each student a cut straw.

Model the following and have students do the same

3. Purse lips around straw. Inhale deeply and to exhale fully, trying to breathe only through the mouth and straw.
4. After a moment of breathing deeply through the straw (which limits oxygen intake), encourage students to pause after each straw exhale before taking another breath. (Consider counting to 5 or 10 using your fingers as a visual.) Pause between breaths for a total of 3-5 times.
5. Discuss how students (and you) felt. They may not have had strong symptoms, but did anyone find that they were accidentally or intentionally breathing in and out through their nose? Did anyone remove the straw to get a deeper breath?

Show Me Your Shoes

Shoes can be a fashion showcase or a practical support for an activity. Some students have big feelings about the shoes they wear. Showcase their shoes with this activity.

1. Students draw pictures of their shoes including details. (They can choose the angle.)
2. Make an imprint of shoe's sole (the tread area).
Use mud, washable ink, or tempera paint. Remove ink/paint with a baby wipe right away.
Carefully use a brush to ink or paint the bottom of the shoe or step in mud. Make an imprint on a piece of paper.
3. Students talk about why they wear these particular shoes, how they are useful, and why they like or dislike them.
4. Students compare and contrast their shoes.
5. Show students shoes from other cultures, environments, or time periods. Discuss how they compare and contrast to the students' shoes and their importance.

Learn the interesting history of athletic shoes. >> <https://youtu.be/cNjJthwOVOc>

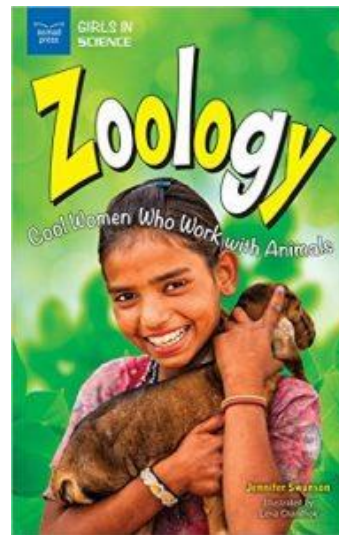
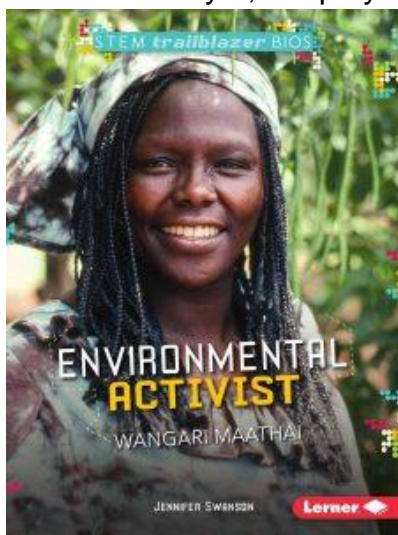
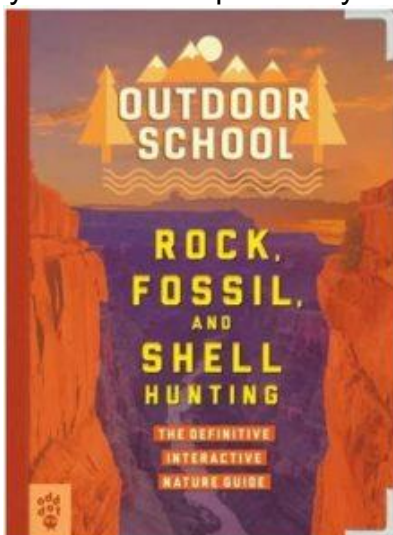
Consider a social media post for the class to follow to inquire what people call athletic shoes. (Sneakers, trainers, tennis shoes...) You might even ask where commenters are from to note regional differences in word choice.

Note: A similar video related to the history of high heels is also available from BBC Ideas. This video is more mature in content than their video about athletic shoes.

Thank You!

Thank you for using *Footprints Across the Planet* in your classroom. Please let me know if you have any questions.

If you haven't explored my website and books yet, I hope you will.



<https://jenniferswansonbooks.com/>

Name _____

Whose Feet?

Cut and paste the picture to match it to the type of foot.

toes

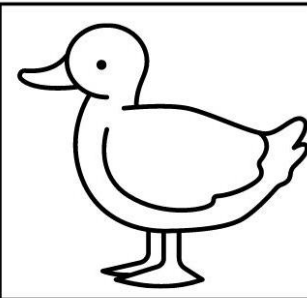
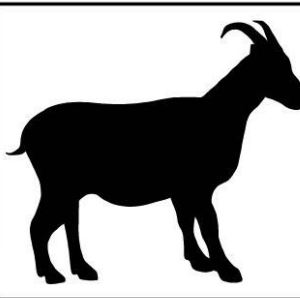
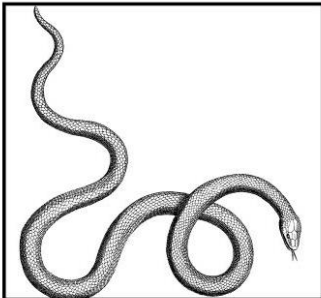
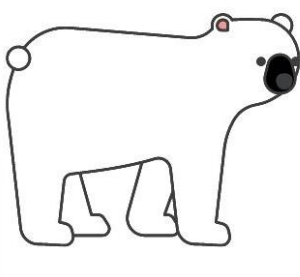
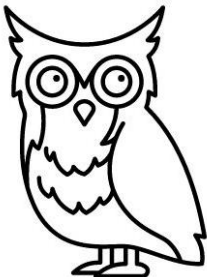
hoof

talon

claw

webbed

none



Name: _____

Leave a Mark

Direction: Match the picture to the person or people related to the picture.



•

• Ruth Bader Ginsburg



•

• Martin Luther King, Jr.



•

• Edmund Hillary & Tenzing Norgay



•

• Neil Armstrong



•

• Rosa Parks

How will YOU leave a mark? Draw a picture or write words that you can do.

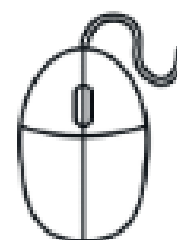
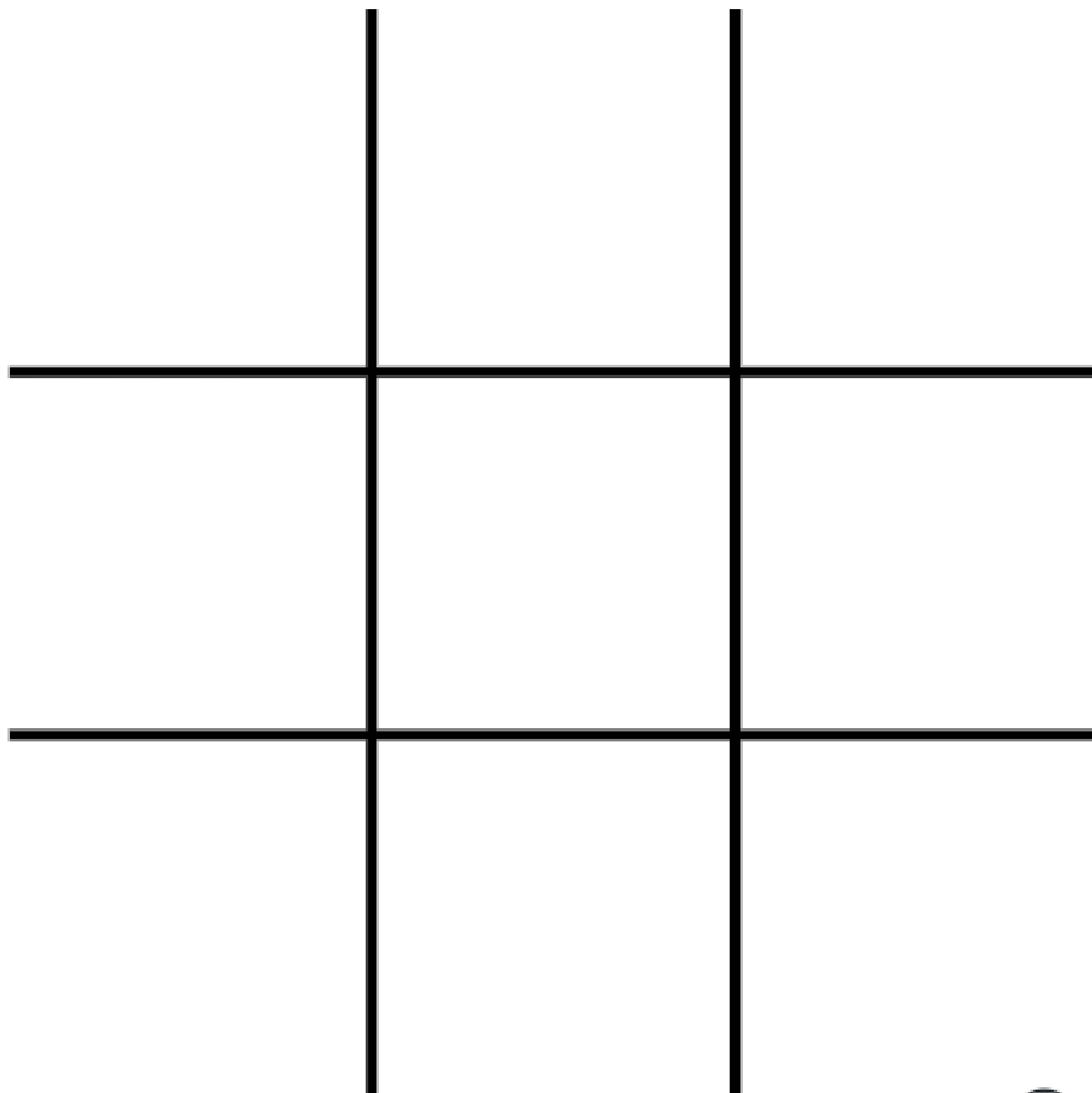


Name _____

Footprints Tic-Tac-Toe



Write a different kind of footprint in each space related to what you learned in *Footprints Across the Planet*. Follow class instructions to play the game.



Name _____

My Digital Footprint

My digital footprint lasts...

My digital footprint is made from...

I will use my digital footprint to tell others...