# Science @ Home

## SNAKES

**Enjoy a ssssensational selection of more than 16 snake-themed activities designed to delight reptile-lovers ages 8–11!**

Scary? Nope, just scaly. Wrap yourself around the fascinating world of snakes with four days of activities for young herpetologists-in-training, including guided videos, crafts, interactive programs, and resources.

*Please note: While Science @ Home activities are designed to be conducted by kids, some little ones might need adult help with reading instructions and preparing crafts.*

### Day 1: Snake Bodies
*90 minutes*

» Snake Encounter (video)
» Inside a Snake (coloring) (en español)
» Snake Search (activity)
» Slithering Snake (craft)

### Day 2: Snake Adaptations
*45–60 minutes*

» Snakes Around the World (coloring)
» Move Like a Snake (activity)
» Toxin Tango: The Garter Snake & The Newt (video)
» Snake Scale Pixel Art + template (activity)

### Day 3: Snake Snacks
*60 minutes*

» Snakes Sense Scents (activity) (en español)
» Venom vs. Constriction (video)
» Open Wide! How Snakes Eat (video)
» Skull Sketch (specimen) (questions)

### Day 4: Herpetologist How-To
*60 minutes*

» Snake Care at CAS (video)
» Spiral Snake (craft) (en español)
» Herpetology Collections Tour (video)
» How To Go Herping (activity/resource)

### Kid and caregiver extension activities

» How Many Erasers Long is a Snake? (activity)
» Science in Advice: Snake Virus (video) (questions)
» iNaturalist (activity/resource) (ongoing projects)

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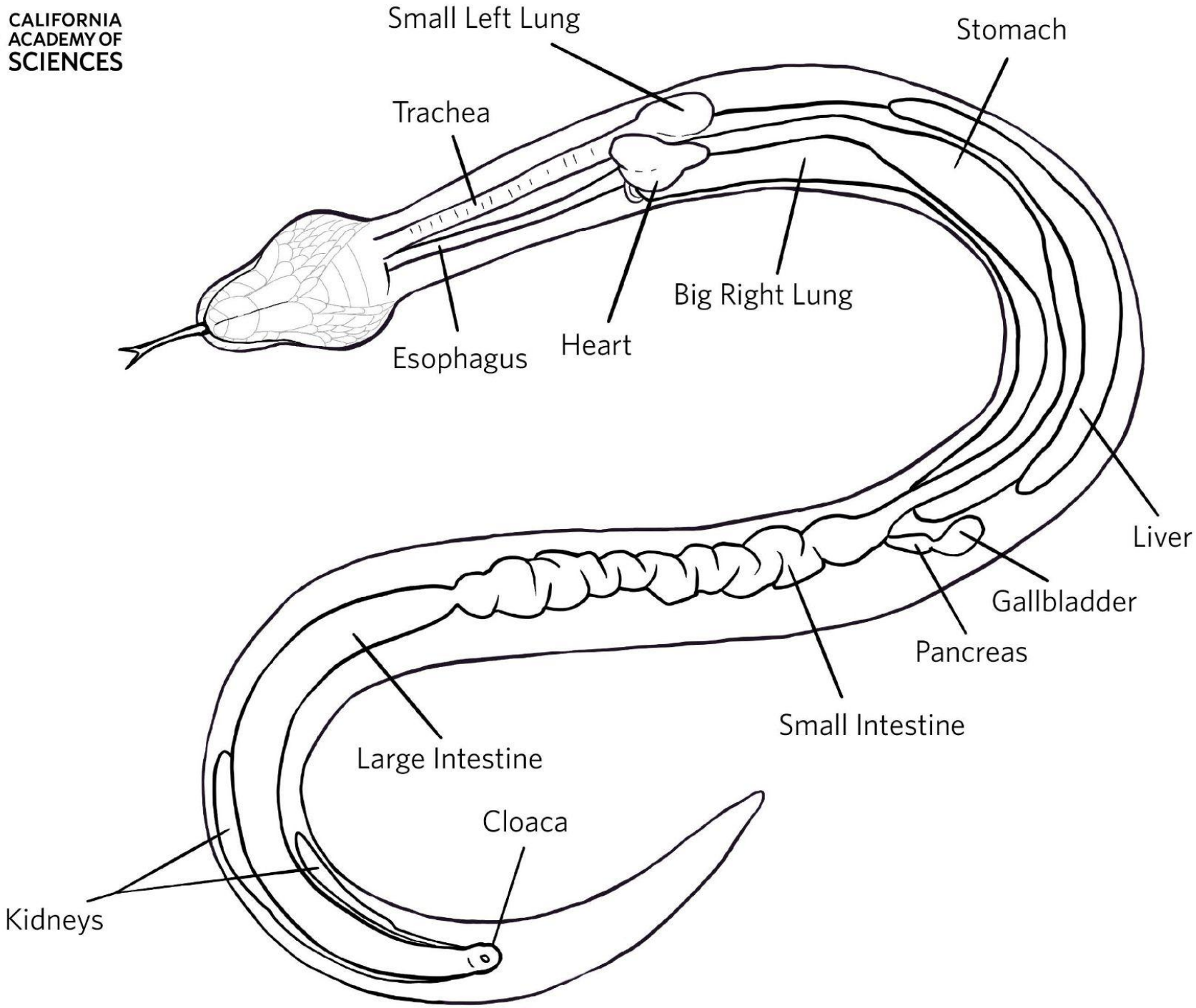

# Inside a Snake

Like humans, snakes are vertebrates, and underneath their spine and ribcage, we share many of the same organs. But how does everything fit inside a snake's tube-like body? Color in these snake body parts to find out:

**Cloaca:** Birds and reptiles have cloacas for excreting waste and laying eggs. The outside of the opening is called the vent.

**Esophagus:** The path from the mouth to the stomach. In snakes, the esophagus has folds to make it stretchy, accommodating large prey the snake swallows whole.

**Gallbladder:** The gallbladder stores bile made by the liver.

**Heart:** Just like our heart, a snake's heart pumps blood to its tissues. While mammal hearts have 4 chambers, snake hearts have only 3.

**Intestines:** Intestines help absorb nutrients from food. Snakes have a small and large intestine, just like humans.

**Kidneys:** Kidneys remove waste from the blood and regulate water loss.

**Liver:** The liver makes bile, which helps digest food.

**Lungs:** Snakes breathe air like other reptiles. Most species of snake breathe with just one lung, while the smaller second lung doesn't take up too much space. Other species might use the second lung for breathing.

**Pancreas:** The pancreas helps regulate blood sugar in both people and snakes.

**Stomach:** All snakes are carnivorous: They eat other animals. Digestion begins in the stomach since snakes do not chew their food like humans do.

**Trachea:** The tube the snake breathes into, connecting the nose and mouth to the lungs. While a snake swallows a large meal, the entrance to the trachea (called the glottis) moves so the snake can continue to breathe.

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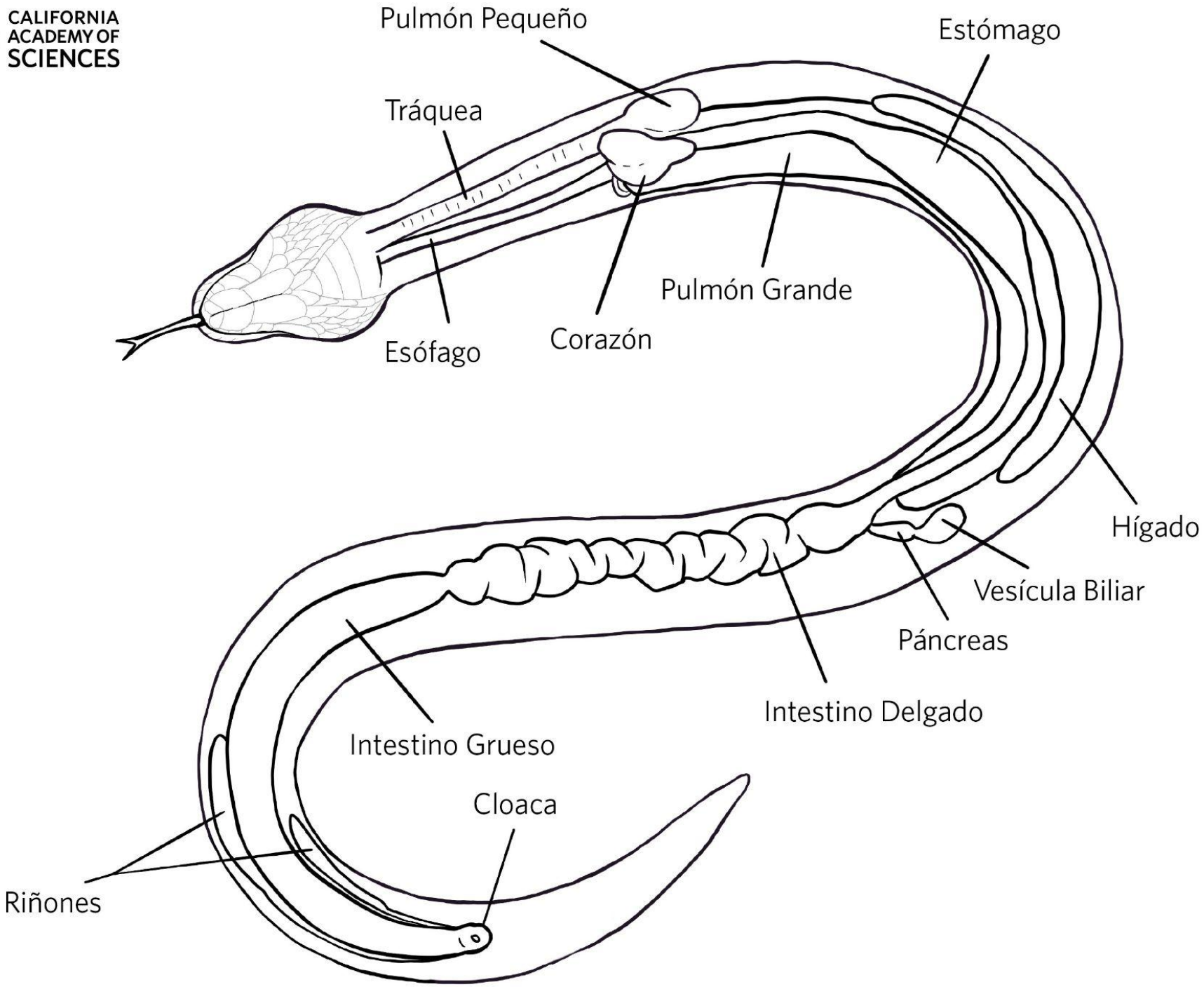

# Dentro de una serpiente

Al igual que los humanos, las serpientes son vertebradas, y debajo de su columna vertebral y caja torácica, compartimos muchos de los mismos órganos. Pero, ¿cómo cabe todo dentro del cuerpo en forma de tubo de una serpiente? Colorea estas partes del cuerpo de la serpiente para averiguar:

**Cloaca:** Las aves y reptiles tienen cloacas para excretar desechos y poner huevos. El exterior de la abertura se llama el respiradero.

**Esófago:** El camino desde la boca hasta el estómago. En las serpientes, el esófago tiene pliegues para hacerlo elástico, acomodando a grandes presas que la serpiente traga entera.

**Vesícula biliar**: La vesícula biliar almacena la bilis hecha por el hígado.

**Corazón:** Al igual que nuestro corazón, el corazón de una serpiente bombea sangre a sus tejidos. Mientras que los corazones de mamíferos tienen 4 cámaras del corazón, los corazones de serpientes tienen solo 3.

**Intestinos:** Los intestinos ayudan a absorber los nutrientes de los alimentos. Las serpientes tienen un intestino delgado y grueso, al igual que los humanos.

**Hígado:** El hígado produce bilis, que ayuda a digerir los alimentos.

**Riñones:** Los riñones eliminan los desechos de la sangre y regulan la pérdida de agua.

**Pulmones:** Las serpientes respiran aire como otros reptiles. La mayoría de las especies de serpientes respiran con un solo pulmón, mientras que el segundo pulmón más pequeño no ocupa demasiado espacio. Otras especies podrían usar el segundo pulmón para respirar.

**Páncreas:** El páncreas ayuda a regular el azúcar en la sangre tanto en las personas como en las serpientes.

**Estómago:** Todas las serpientes son carnívoras: Comen otros animales. La digestión comienza en el estómago ya que las serpientes no mastican sus alimentos como lo hacen los humanos.

**Tráquea:** El tubo en el que respira la serpiente, conectando la nariz y la boca a los pulmones. Mientras una serpiente se traga una comida grande, la entrada a la tráquea (llamada glotis) se mueve para que la serpiente pueda continuar respirando.

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# Snake Search

Snakes are found on every continent except Antarctica! How many snakes can you find in the word search below? Some words may be diagonal or backwards.

BALL PYTHON
BLACK MAMBA
BOOMSLANG
CALIFORNIA KING
COPPERHEAD
CORAL SNAKE
CORN SNAKE
COTTONMOUTH
DIAMONDBACK
GARTER SNAKE
GREEN ANACONDA
KING COBRA
RAINBOW BOA
SEA KRAIT
SUNBEAM SNAKE

E N B T E H X Z X R M E T C H
C K N L Q K P R A V K R A O T
O W A X A D A I W A Y L G R U
P T P N X C N N N N I R N N O
P B I J S B K S S F C L A S M
E R A A O M R M O L E E L N N
R Y T W R E A R A X A D S A O
H K B G T K N E K M W R M K T
E O Y R N I A Z B Y B F O E T
A M A F A H N E V N N A O C O
D G S K K Z C A S Q U F B V C
W K I N G C O B R A C S T L M
M N A D N O C A N A N E E R G
G D I A M O N D B A C K N Y Y
H P K L H N O H T Y P L L A B

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# Slithering Snake

Ancestors of modern snakes had arms and legs, and those with smaller limbs could more easily reach prey living underground. Today, snakes have evolved to be limbless, and use their scales and muscles to get around.

Create your own slithering snake and see how it moves.

## Materials

Crayons, colored pencils, or markers
Paper
Scissors
Glue

## Directions

1. **Create** a pattern for the snake's body on a piece of paper using crayons, colored pencils, or markers.
2. **Fold** the paper in half lengthwise 3 times. This will give you 8 sections.
3. **Cut** the paper along each fold to get 8 strips of paper.
4. **Glue** the ends of 2 strips together at a right angle.
5. **Fold** the strips over one another. When you reach the end, glue on more strips to lengthen each side. Keep going until you use all 8 strips of paper.
6. **Draw and cut** out a head, tongue, and tail for the snake.
7. **Glue** the head to the square at one end of the snake's body and the tail to the other end.
8. Make your snake **slither**!

*Challenge*: Can you make a snake that looks like one you have seen before?

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# Ssssnakes Around the World!

## There are about 3,000 species of snakes and they can be found all over the world. Color in these five unique snakes and draw and color their habitat around them.

**Ball Python:** Ball pythons can be found in West and Central Africa. They use the heat-sensing pits around their mouth to find food, including small mammals like rodents and shrews.

**Corn Snake:** Corn snakes can be spotted in the eastern United States. Young corn snakes will eat frogs and lizards while adults eat mice and rats.

**Green Anaconda:** Found in South America, the green anaconda is the world's heaviest snake. While most adult anacondas only reach a few hundred pounds, they can weigh up to 1,100 pounds!

**Bandy-bandy:** This Australian snake is nocturnal and feeds almost exclusively on another snake called the blind snake.

**Spider-Tailed Horned Viper:** Found in Iran, this snake has a very impressive method of hunting. It waggles its spider-like tail to trick birds into thinking it's food. Once fooled, the snake can capture the bird.

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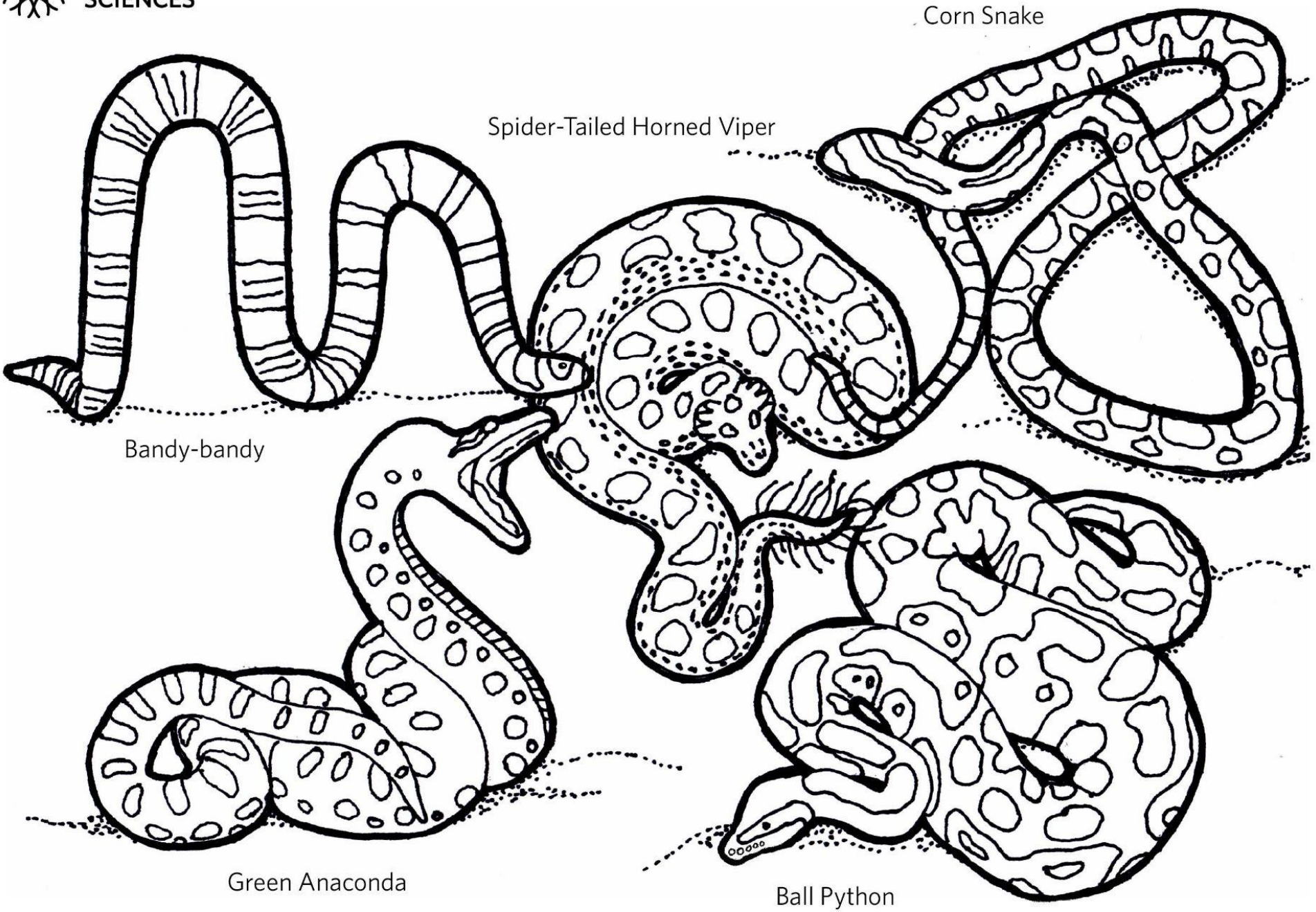

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# Move Like a Snake

How does a snake move without any limbs? With their muscles and their scales! Different snakes have also adapted to climb trees, burrow in leaf litter, fling themselves across sand dunes, and even swim.

Move your body to learn more about how different types of snakes move, hunt, and protect their young.

## Activity

1. Snakes use different parts of their body to help them move, hunt, and protect their young. Depending on their habitat and lifestyle, a snake might use one of four main methods of locomotion: serpentine, concertina, rectilinear (or caterpillar), and sidewinding. **Follow along** as we stretch our bodies to learn more about snake movement! Use the pictures and instructions as guidance, but feel free to **adapt** movements as needed.

2. Many snakes move by pushing the curves of their body against the ground as they slither, propelling them forward. We call this type of locomotion a **serpentine** movement. You can remember it because it starts with the letter "S" and when snakes use serpentine locomotion, it looks like they're drawing the letter "S" on the ground while moving side to side.

    » Let's **warm up** by putting our hands on our hips and slowly wiggling from side to side. Loosen your muscles and stretch it out!

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3. If a snake needs to burrow or move through a narrow space, they often use a **concertina** movement. They reach forward, anchor the front part of their body, scrunch up, anchor the back part of their body, then stretch forward. It's kind of like an accordion!

    » **Lower** yourself onto your hands and knees.

    » **Straighten** your legs and ensure your hands are flat on the ground below your shoulders.

    » Next, **lift** one leg and **bend** your knee close to your chest, like you're scrunching up to move through a tunnel.

    » **Lower** your leg and **repeat** with the other side.

4. Really large, heavy snakes like the green anaconda or snakes that live underground move using a **rectilinear** style of locomotion. This movement is when the snake moves forward in a straight line, also called the **caterpillar** movement. Snakes move this way by moving the loose skin on their belly forward, anchoring it on the ground, then using special muscles to pull the rest of the body forward.

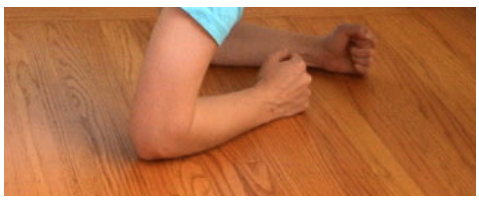
    » Find your way to a **plank** position, with your elbows under your shoulders.

    » **Lower** yourself onto your forearms and **make** a fist with each hand.

    » **Move** one arm forward, letting your leg drag forward too.

    » **Repeat** with your other arm.

    » Can you move forward in a straight line without swaying from side-to-side? Now try moving backward. Is it easier or harder?



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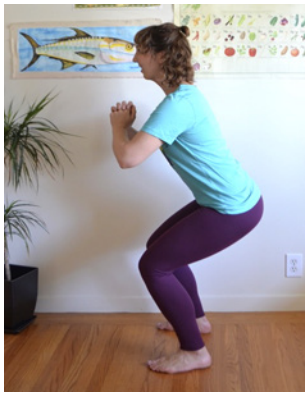
5. The next type of movement is particularly common among snakes that live in the desert: the **sidewinding** movement. It's similar to serpentine because they move their body side to side, but they also lift certain parts of their body off the ground completely and fling themselves forward that way. This is useful in the desert when a snake doesn't want their whole body to touch the hot sand and may be having a hard time getting a grip on the loose sandy ground. This is also the fastest type of locomotion for a snake: Sidewinders can travel up to 18 miles per hour!

   - To move side-to-side like a sidewinder, start with your feet shoulder-width apart and knees slightly bent.
   - **Guide** your left foot behind your right leg while keeping your back straight.
   - **Push** off from your right foot and **hop** to your left, crossing your right foot behind your left leg.
   - Now, use your left foot to push off and **jump** to your right.
   - **Repeat** jumping back and forth a few times. Like a sidewinder, only a small part of your body touches the ground while the rest of your body moves quickly in one direction!

6. Now that we know how snakes move, let's learn how snakes hunt. Most snakes are ambush predators, meaning they lie in wait for their prey to come close. When the prey gets close, the snake **strikes**! Both venomous and nonvenomous snakes can strike. Venomous snakes, like rattlesnakes, strike quickly to inject their prey with venom, then back off to wait for the venom to take effect.



   - Now let's practice sudden movements like a snake preparing to strike.
   - **Stand** with your feet under your hips.
   - **Squat** like you're sitting in a chair, then push down with your feet and **jump** as high as you can!
   - Allow your legs to bend when you land, squat, and jump again.

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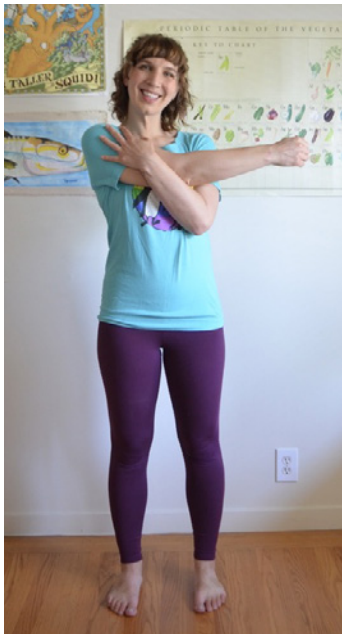
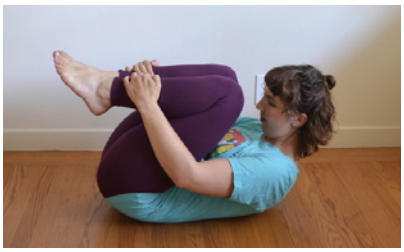
7. While many snakes strike, only about 10% of snakes are venomous. Most snakes subdue their prey using **constriction**. By squeezing the prey to cut off their circulation, it makes it safer for the snake to eat.

    » Give yourself a big squeeze and **hug** for exercising and stretching and moving today! Next, **take** your arm, **cross** it against your chest, and gently **squeeze** it to stretch. **Repeat** with the other arm.

8. We've learned a bit about how snakes move and how snakes hunt. Next, let's learn how snakes **care** for their young. Some snakes give birth to live young, some lay eggs and leave them hidden, and some lay eggs and **protect** them.

    » **Lay** on your back and **wrap** your arms around your legs, like you're coiling to protect your eggs. **Hug** your knees into your chest and take a deep breath. **Repeat** this a few times, stretching your legs out, hugging them close, and rocking a little to massage your back.



9. With all that traveling, hunting, and protecting their young, a snake's gotta take a break every now and then. Snakes are **ectothermic**, meaning they primarily rely on external heat sources to warm themselves.

    » Let's end our movements today by taking a **rest** and pretend we are basking in the sun like a snake. **Lay down** on the ground and get comfortable (you can grab a blanket to put over your body if you'd like). Close your eyes and take several deep breaths. Good job moving like a snake today!

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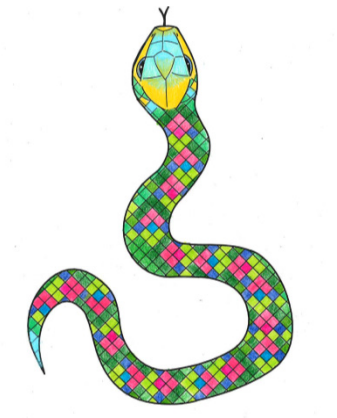

# Snake Scale Pixel Art

Snakes are entirely covered in scales that protect their skin. These little shields come in distinctive colors and patterns that can be simple or complex. They can be earthy colors that help a snake blend in (camouflage), or bright colors that stand out, warning predators of their protective venom. Each snake's pattern helps it survive and thrive on our shared planet.

If you were a snake, what would your pattern be?

## Materials

1 printed snake template (page 2)
Crayons, markers, or colored pencils

## Directions

1. **Print** the snake template on page 2.
2. **Think** about what color and pattern you want your snake to have.
3. **Color** in each scale with the colors you chose, using one color for each square.

## Challenge

Recreate the pattern of a snake you have seen before. Can you pixelate a rattlesnake or a green tree python?

You can find snakes living on every continent except for Antarctica, and they can live in almost any habitat. Snakes live in deserts, forests, and even in water! Choose your favorite habitat, and design a snake pattern that would blend in with the plants and colors that you would find there.

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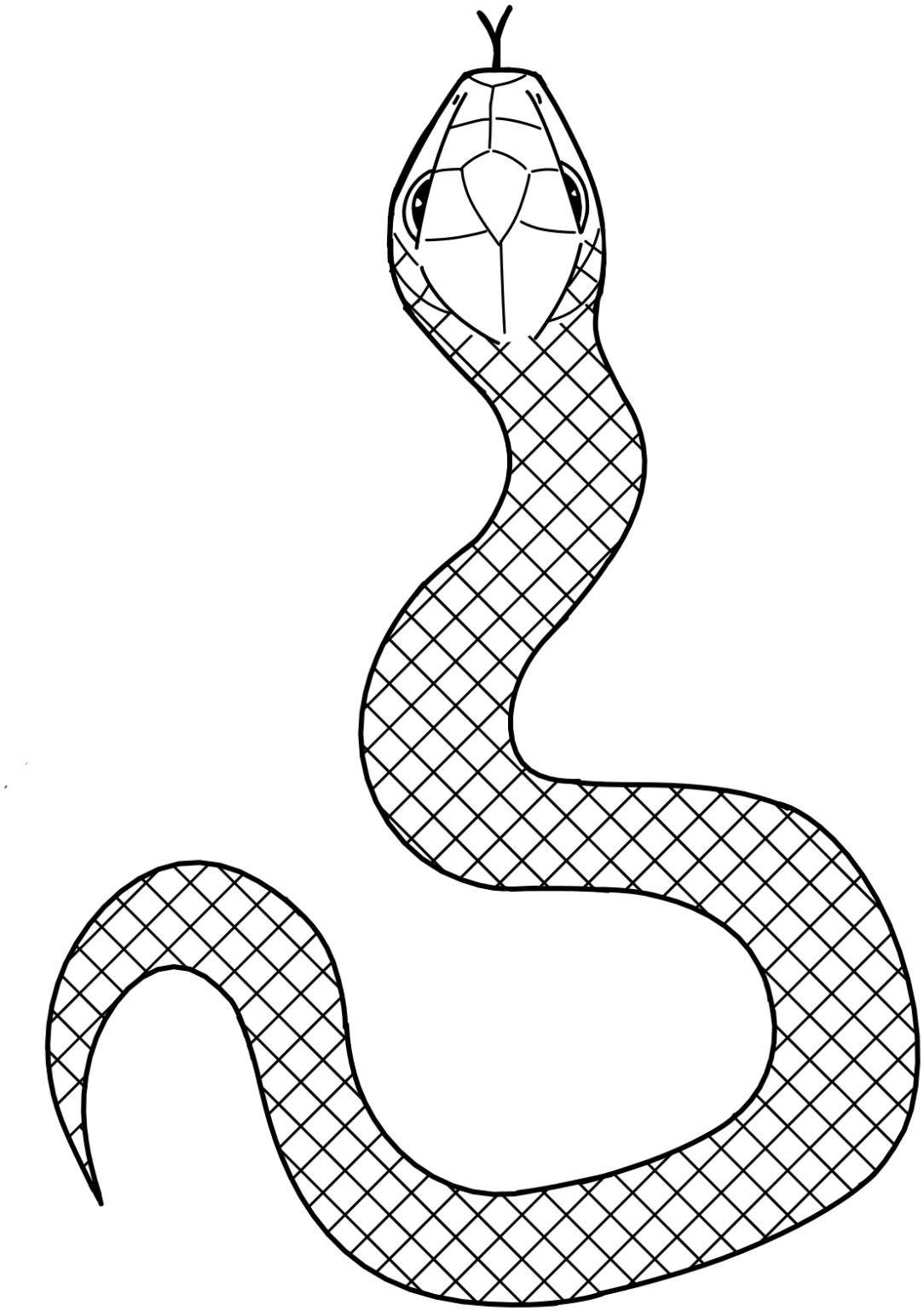

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# Snake Sense Scents Game

Snakes and humans have a lot of things in common. We both have eyes to see the world, mouths to eat our meals, and nostrils to breathe and smell the air.

Snakes also have things we don't, like a special, super-charged smell sensor called the **Jacobson's organ** that "smells" chemicals gathered by their forked tongue, helping them hunt. We may not have a working Jacobson's organ, or a forked tongue, but we do have two nostrils. See if you can use your sense of smell to hunt like a snake.

## Materials

Four cotton balls

Ziploc bag

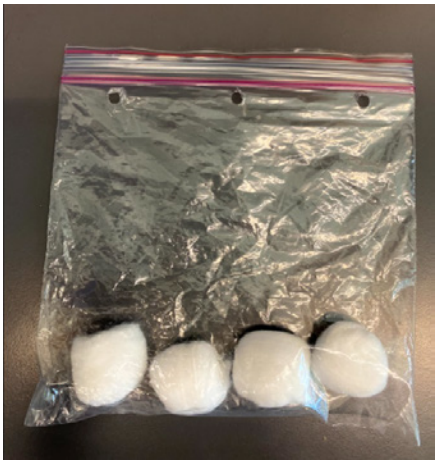
Single hole punch

Peppermint extract (peppermint is a distinctive scent that works well for this activity, however, you can also use any extract you have on hand.)

2 or more people to play

## Prepare the game

1. **Punch** three holes into the top of your Ziploc bag under the zipper
2. **Put** two drops of extract onto each cotton ball
3. **Place** the cotton balls into the Ziploc bag
4. **Seal** Ziploc bag tightly, checking the seal twice
5. **Play** the game!



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## Directions

1. Choose one person to be the mouse. Everyone else is a snake.
2. The snakes either can close their eyes or leave the room for about 30 seconds.
3. While the snakes are gone, the mouse takes the Ziploc bag with cotton balls and peppermint extract and hides it somewhere in the room (remember that the peppermint smell has to still be detectable by the snakes! That means the mouse should not bury the bag too far under anything.)
4. When the mouse is done hiding, the snakes can open their eyes, or come back into the room. The snakes will try to find the hidden bag using just their sense of smell!
5. *Challenge:* Try a different extract. Is it easier or harder to find vanilla, root beer, or cinnamon? Why do you think that is? What would it be like to sense the world mainly through your sense of smell?

## Learn more: the Jacobson's organ

Snakes have a special, super-charged smell sensor called the **Jacobson's organ.** It sits right above the roof of a snake's mouth. When a snake flicks its forked tongue, it gathers chemicals from the air. The Jacobson's organ can then "smell" these chemicals when the snake brings its tongue back into its mouth.

Snakes also have a forked tongue. The fork gives their tongue two separate sides that sense the direction a scent is coming from. This helps them hunt and find mates. We have a similar ability with our ears.

**Try this**: Find a friend or family member to be your sound maker. With your eyes closed, ask your friend to clap, snap, or make a funny sound. Listen carefully: Are you able to tell where that sound came from? With your eyes still closed, point to where you think your friend is standing while they are making the sound. Open your eyes. Did you guess correctly?

Any animal with two ears can tell what direction a sound is coming from because the sound is reaching one of your ears slightly faster than the other. Your brain can take that information and figure out the direction of the sound based on the ear that heard the sound first. It's the same thing with a snake's forked tongue: If the smell of a mouse is stronger for the right fork, a snake knows that the mouse must be to the right.

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# Juego de olores de sentido de las serpientes

Las serpientes y los seres humanos tienen muchas cosas en común. Ambos tenemos ojos para ver el mundo, bocas para comer nuestras comidas, y fosas nasales para respirar y oler el aire.

Las serpientes también tienen cosas que no tenemos, como un sensor de olor especial súper cargado llamado **órgano de Jacobson** que "huele" productos químicos recogidos por su lengua bifurcada, ayudándolas a cazar. Puede que no tengamos un órgano de Jacobson funcionando, o una lengua bifurcada, pero tenemos dos fosas nasales. Ve si puedes usar tu sentido del olfato para cazar como una serpiente.

## Materiales

Cuatro bolas de algodón

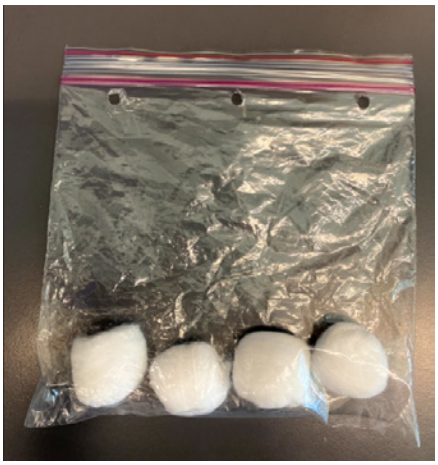
Bolsa de Ziploc

Perforadora

Extracto de menta (la menta es un aroma distintivo que funciona bien para esta actividad, sin embargo, también puedes usar cualquier extracto que tengas a mano).

2 o más personas para jugar

## Prepare el juego



1. **Perfora** tres agujeros en la parte superior de su bolsa Ziploc debajo de la cremallera.
2. **Pon** dos gotas de extracto en cada bola de algodón.
3. **Coloca** las bolas de algodón en la bolsa Ziploc.
4. **Sella** firmemente la bolsa Ziploc, comprobando el sello dos veces.
5. **¡Juega** el juego!

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## Instrucciones

1. Elige a una persona para que sea el ratón. Todos los demás son una serpiente.
2. Las serpientes pueden cerrar los ojos o salir de la habitación durante unos 30 segundos.
3. Mientras las serpientes se han ido, el ratón toma la bolsa de Ziploc con bolas de algodón y extracto de menta y las esconde en algún lugar de la habitación (recuerda que el olor a menta todavía tiene que ser detectable por las serpientes! Eso significa que el ratón no debe enterrar la bolsa demasiado lejos debajo de nada).
4. Cuando el ratón ha terminado de esconderse, las serpientes pueden abrir los ojos, o volver a la habitación. Las serpientes tratarán de encontrar la bolsa oculta usando sólo su sentido del olfato!
5. *Desafío:* Prueba un extracto diferente. ¿Es más fácil o más difícil encontrar vainilla, zarzaparrilla, o canela? ¿Por qué crees que es así? ¿Cómo sería sentir el mundo principalmente a través de tu sentido del olfato?

## Más información: el órgano de Jacobson

Las serpientes tienen un sensor de olor especial súper cargado llamado **órgano de Jacobson**. Se encuentra justo encima del techo de la boca de una serpiente. Cuando una serpiente mueve su lengua bifurcada, recoge productos químicos del aire. El órgano de Jacobson puede entonces "oler" estos productos químicos cuando la serpiente trae su lengua de nuevo a su boca.

Las serpientes también tienen una lengua bifurcada. El tenedor le da a su lengua dos lados separados que detectan la dirección de la que viene un aroma. Esto les ayuda a cazar y encontrar parejas. Tenemos una habilidad similar con nuestros oídos.

**Prueba esto:** Encuentra a un amigo o familiar para que sea tu creador de sonido. Con los ojos cerrados, pídele a tu amigo que aplauda, chasquee o haga un sonido divertido. Escucha atentamente: ¿Eres capaz de saber de dónde viene ese sonido? Con los ojos todavía cerrados, señala dónde crees que tu amigo está de pie mientras están haciendo el sonido. Abre los ojos. ¿Has adivinado correctamente?

Cualquier animal con dos orejas puede decir de qué dirección viene un sonido porque el sonido está llegando a uno de sus oídos un poco más rápido que el otro. Su cerebro puede tomar esa información y averiguar la dirección del sonido basado en el oído que escuchó primero. Es lo mismo con la lengua bifurcada de una serpiente: Si el olor de un ratón es más fuerte para el tenedor derecho, una serpiente sabe que el ratón debe estar a la derecha.

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# Snakes Guiding Questions

**Day 3**

Skull Sketch (green anaconda skull)

This specimen is the skull of a green anaconda, part of the Academy's natural history collection. Take a close look at the skull—you can move it, spin it, and zoom in. Explore and investigate as you think about the following four questions. Share your answers with a friend or family member or just think in your head.

1) What do you notice about the skull? Does it remind you of anything?
2) Do you see which direction the teeth are pointing? Why do you think the teeth point toward the back of the anaconda's mouth?
3) What could the different holes and openings in the skull be for?
4) What else can you guess about this animal just by looking at its skull?

**Caregiver/Extension**

Science in Action: Snake Virus

Join Academy Veterinarian, Freeland Dunker, and Academy Virologist, Dr. Shannon Bennett, on their quest to learn more about a mysterious snake disease and how it can help us study human viruses. While you watch this video, think about the following three questions. Share your answers with a friend or family member or just think in your head.

1) What is the difference between a viral and bacterial infection?
2) Why is it important to look at healthy snakes when studying sick snakes?
3) Why is it useful for humans to study diseases that only impact animals?

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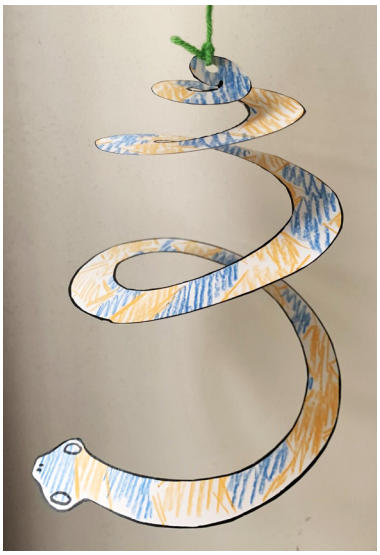

# Spiral Snake

Try this: Reach your hand around to your back and feel your backbone. The bones that make up your backbone are called **vertebrae**.

Humans have 33 vertebrae but snakes have more than 100—and some even have more than 300! Having so many vertebrae helps snakes be very flexible. Flexibility is an important adaptation for snakes whether they need to slither through underground burrows, navigate through tree branches, or sidewind their way across hot desert sand.

In this craft you will make your own flexible, spiraling snake.

## Materials

1 printed snake template (page 2)
Crayons, markers, or colored pencils
Scissors
Hole puncher or pencil
Yarn or string

## Directions

1. **Print and color** the snake template on page 2.
2. **Cut out** the snake template, making sure to follow the lines as it spirals in toward the middle.
3. **Punch a hole** in the end of the snake's tail using a hole puncher or sharpened pencil.
4. **Cut** a piece of yarn to about 6 inches long, or about the length of your hand.
5. **Tie** one end of the yarn to the end of the snake's tail by stringing the yarn through the hole.
6. **Hold up** the free end of the string to watch your snake uncoil into a spring-like spiral.

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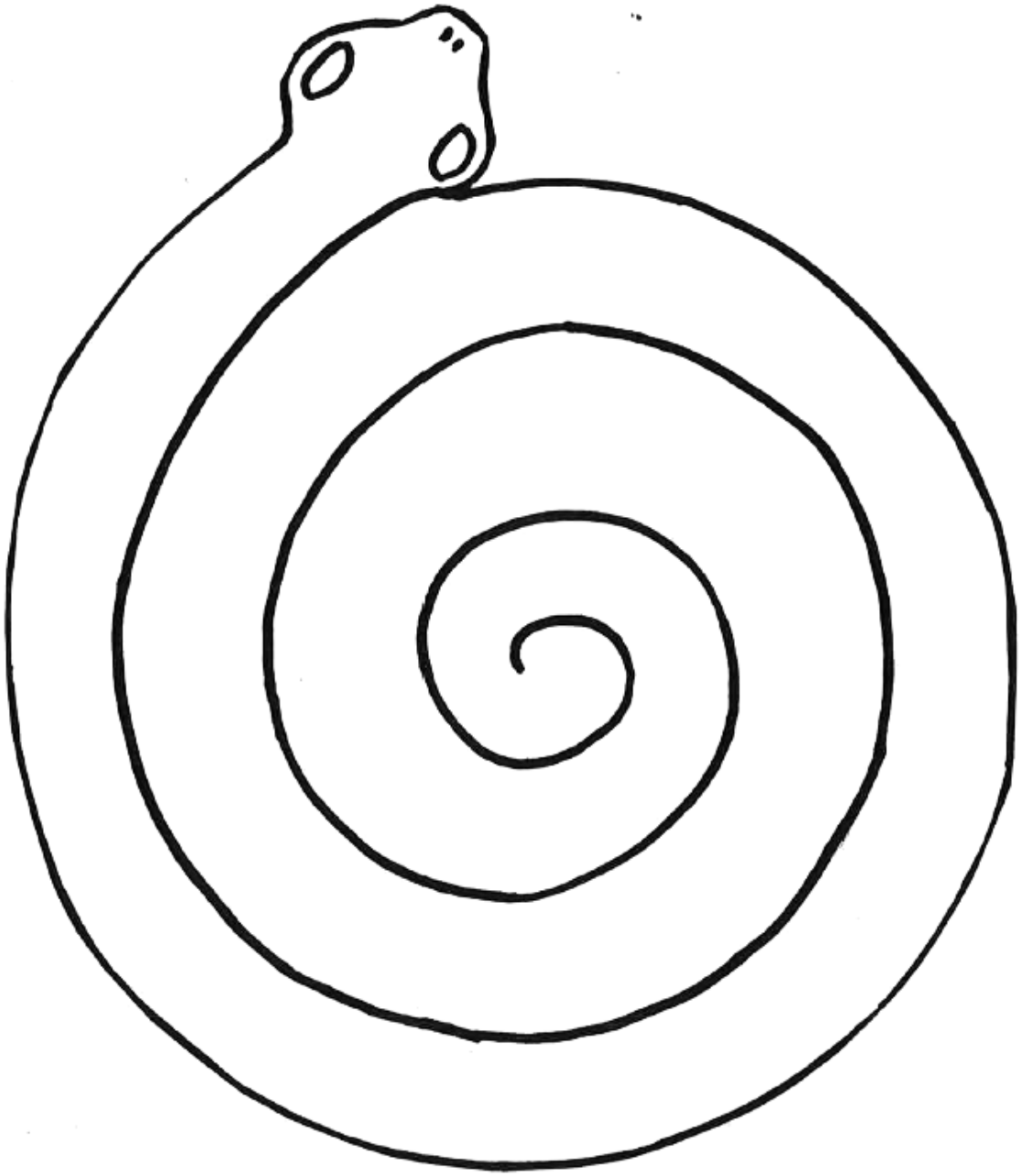

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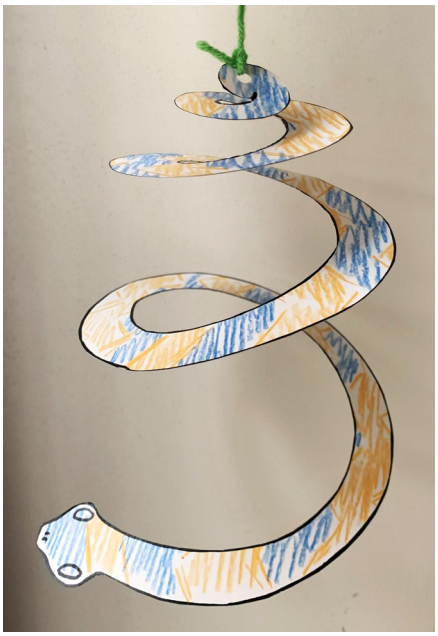

# Serpiente espiral

Prueba esto: Extiende tu mano hacia tu espalda y siente tu columna vertebral. Los huesos que componen la columna vertebral se llaman **vértebras**.

Los humanos tienen 33 vértebras, pero las serpientes tienen más de 100, ¡y algunas incluso tienen más de 300! Tener tantas vértebras ayuda a las serpientes a ser muy flexibles. La flexibilidad es una adaptación importante para las serpientes, ya sea que necesiten desplazarse a través de madrigueras subterráneas, navegar a través de las ramas de los árboles o deslizarse lateralmente a través de la arena caliente del desierto.

## Materiales

1 plantilla de serpiente impresa (página 2)
Crayones, marcadores o lápices de colores
Tijeras
Perforador de agujero o lápiz
Hilo o cuerda

## Instrucciones

1. **Imprime y colorea** la plantilla de serpiente en la página 2.
2. **Corta** la plantilla de serpiente, asegúrate de seguir las líneas a medida que entra en espiral hacia el medio.
3. **Perfora un agujero** en el extremo de la cola de la serpiente con un perforador de agujeros o un lápiz afilado.
4. **Corta** un pedazo de hilo a aproximadamente 6 pulgadas de largo, o aproximadamente la longitud de tu mano.
5. **Amarra** un extremo del hilo al extremo de la cola de la serpiente encadenando el hilo a través del agujero.
6. **Mantén** el extremo libre de la cuerda para ver a su serpiente desenroscar en una espiral primaveral.

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# How to Go Herping

Are you ready to take your herpetology know-how on the road? Outdoor observation is a great way to learn about snakes and their habitats. These tips will help you learn about snakes safely, and be a good neighbor to them out in the field!

## What to bring:

Water
Comfortable clothing
Sun protection, like a hat and sunscreen
Closed-toe shoes
Field notebook (page 3 and 4) or paper
Your favorite snake field guide
Camera (optional)

## What is "herping" and why do it?

» Herpetology is the study of reptiles and amphibians. Animals that are classified as reptiles or amphibians are sometimes referred to as "herps." Looking for these animals outdoors in their habitats is called "herping" or "field herping."

» Herping allows you to see snakes and other reptiles and amphibians in their native ranges and habitats. This can teach you a lot about their behavior, range and distribution, and interactions with other living things!

## Tips for safe herping

» **Know before you go:**

- Where will you go to look for snakes or other herps?
- What kinds of snakes live in the area? Are there any venomous snakes to be aware of?
- What are other signs a snake has been around? (sheds, tracks, scat, etc.)
- Explore iNaturalist's San Francisco Reptiles page to get an idea of reptiles you might encounter in San Francisco County.

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- **How to stay safe:**
  - Bring a buddy with you.
  - Keep your distance: Don't approach or handle wildlife, whether they are venomous or not.
  - Let snakes be snakes:
    - Don't feed or bait wildlife.
    - Avoid loud noises or sudden movements that might startle the snake.
    - Allow the snake to do whatever it is doing without distraction (whether it is sunning, traveling from one place to another, or engaging in any other behaviors).
- **How to protect snake habitat:**
  - Stay on designated trails.
  - Leave the habitat the way you found it.
  - Pack out everything you brought in, including all waste items like snack wrappers.
- **Record what you find:**
  - Take a photo of the snake or the evidence of a snake.
  - Use your field journal, or the worksheet below, to draw what you find. You can also include notes, thoughts, or questions.
  - Use a snake or reptile field guide to help you identify the snakes you see.
- **Practice community science!**
  Upload photos to iNaturalist, and contribute to data used by scientists.
  - Learn more about iNaturalist and download the app.
  - Read about iNaturalist's snake-related projects.

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# Herping Field Notebook

**Name:**
**Date:**
**Location:**

| **Sketch**<br>*Sketch what you see:a snake, evidence of a snake (shed, scat, tracks, etc.), or even a potential snake habitat.* | **Notes**<br>*What do you notice about the snake?* | **Species Identification**<br>*Use a field guide to identify your snake!* |
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| **Sketch**<br>*Sketch what you see: a snake, evidence of a snake (shed, scat, tracks, etc.), or even a potential snake habitat.* | **Notes**<br>*What do you notice about the snake?* | **Species Identification**<br>*Use a field guide to identify your snake!* |
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# How Many Erasers Long is a Snake?

The longest snake in the world is the reticulated python, measuring over 15 feet (4.5 meters) on average. But what if you wanted to know how long this snake was in everyday objects?

In this activity, you will discover how long a 15 foot (4.5 meter) reticulated python is when compared to objects you have around the house.

## Materials

1 foot-long ruler (with both inches and centimeters)
Recording sheet (page 2)
Pen or pencil
Various objects in your house

## Directions

1. **Print** the worksheet on page 2 (or use a blank sheet of paper).
2. **Find** 2 objects around your house and **measure** their length. **Record** the names of the items and their length in inches on the worksheet.
3. **Use a calculator** (or your math skills) to figure out how many of your objects you would need to be as long as a 15 foot python. There are 12 inches in 1 foot, and pythons are about 15 feet. So, if we multiply 12 inches by 15 feet, we see that there are 180 inches in 15 feet.

   Divide 180 inches by the length of your object. This will equal how many of your objects will fit within 15 feet.

   180/_____(object length) = _____ (number of objects)
4. **Record** your object's length and the number of the objects you calculated you would need to be as long as a 15 foot python.
5. *Challenge*: Measure your height in inches and record it. Use the same calculations to figure out how many of you equal a python.

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# Measurements

**My object is a(n):**_____**eraser**_____

It is ____**2**____ inches long

Because there are 180 inches in 15 feet, divide 180 inches by the length of your object to get how many of your objects it would take to be as long as a python.

180 inches/____**2**____ inches (object length) =___**90**_____

It would take ___**90**__ ____**erasers**____(my object) to be as long as a 15 foot python.

**My object is a(n):**_____

It is _____ inches long

Because there are 180 inches in 15 feet, divide 180 inches by the length of your object to get how many of your objects it would take to be as long as a python.

180 inches/_____ inches (object length) =_____

It would take _____ _____(my object) to be as long as a 15 foot python

**My object is a(n):**_____

It is _____ inches long

Because there are 180 inches in 15 feet, divide 180 inches by the length of your object to get how many of your objects it would take to be as long as a python.

180 inches/_____ inches (object length) =_____

It would take _____ _____(my object) to be as long as a 15 foot python

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# Ongoing iNaturalist Snake Projects (2021)

Want to take part in ongoing research? As a community scientist, you can use iNaturalist to help researchers gather information about your local snakes. Check out the projects below and contribute observations of your own.

» **Animals in Urbania**
This project encourages the community to take a look around their city and document which animals have adapted to living in human-dominated environments. Most people have seen a racoon or two in their neighborhood, but let's see if you can spot some other snakes and reptiles!
https://www.inaturalist.org/projects/animals-in-urbania

» **Medically Important Venomous Snakes**
Humans have learned how to harness the venom from snakes and develop important medications. These venomous snakes are found all over the world, and this project seeks to document their geographical distribution.
https://www.inaturalist.org/projects/medically-important-venomous-snakes

» **Herpetofauna de Baja California**
This project works to document the various species of reptiles in Baja California. Please note that the project description is in both English and Spanish.
https://www.inaturalist.org/projects/herpetofauna-de-baja-california

» **Snakes of the World**
Snakes are found on every continent except Antarctica. This project seeks to document the wide range of snake distribution across the globe.
https://www.inaturalist.org/projects/snakes-of-the-world-2dd20232-8d42-4986-a404-359d118cc7d5

» **US Snake Sightings**
This project encourages people to get outside and document snakes across the United States.
https://www.inaturalist.org/projects/us-snake-sightings