Chippokes Plantation State Park Presents

BIG ADVENTURES

WITH LITTLE LUNA

Pasture Pals

TAKING A CLOSER LOOK AT THE HISTORIC MANSION OF CHIPPOKES

Who is Luna?

Luna is a rescue cat that now lives at Chippokes and has one very important job: she explores the park and finds new adventures for you and me! (Well, she also hunts mice and keeps them out of the museum.) Each week you can follow Luna on a new adventure and discover what mysteries are hidden at Chippokes Plantation State Park!

This week, we're investigating the Ambassador Animals of Chippokes.

Follow Luna as she meets the ambassador animals who call Chippokes their home. In this workbook you'll find activities to help you take a closer look at the animals of Chippokes.

Other important information:

Luna's adventures are for everybody, and we encourage families and friends to work together to discover what Luna has in store. If something has stumped you, or if you would like to learn more, reach out to our park interpretive staff by phone at 757.294.3439

Please remember to not feed the animals and that they can and will bite.

Sometimes a ranger might not be present, so if you experience an emergency or need assistance after 5 p.m. contact the Park Ranger on duty by phone at 757.353.7997.

Ambassador Animals

Because Ruby is a domesticated animal she is easier to tame than a wild animal and allows park rangers to halter her for walks and programs and, more importantly, put flower crowns on her head.

Chippokes Plantation State Park currently hosts 2 standard Donkeys, 2 goats, 2 pot-bellied pigs, 8 chickens, 1 American milking Devon cow, and 1 cat. These animals live at the Farm and Forestry Museum and serve as ambassador animals, or animals that the park uses for education.

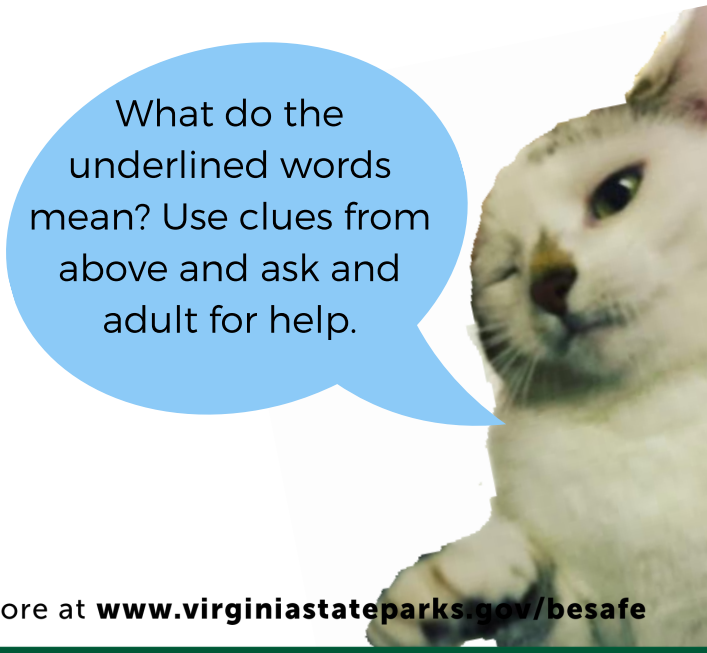
Farm animals are known as livestock, and have been used by people for thousands of years. Before these animals became livestock, they were wild and lived in habitats with other wild animals. Sometimes the natural adaptations the animal developed to survive in the wild were useful to people who domesticated them. There was a good reason to take these animals from the wild to raise them; these animals helped people with their work and provided useful products for people.

Livestock-

Wild-

Adaptations-

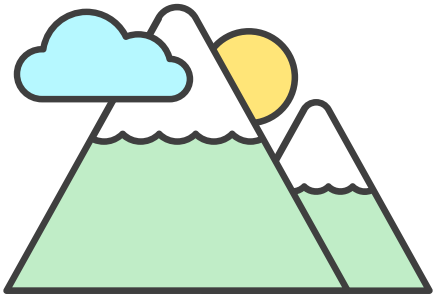
Domesticated-



Where did they come from?

Using the clues provided, draw a line from the livestock to their original environment. Do they have other adaptations that help them live in that environment?

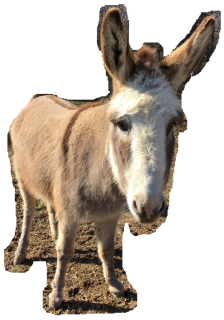
A pig's nose is made of strong cartilage to root in mud and dirt for food.



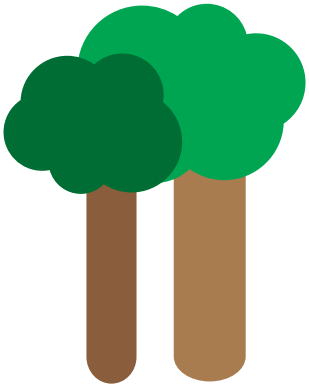
Mountains

A goat's feet are perfect for gripping rocks and steep surfaces.

Deserts



A donkey's long ears help to cool them down in hot climates.



Forests

Pigs: Forest, Goats: Mountains, Donkeys: Desert

Recreate responsibly. Learn more at **www.virginiastateparks.gov/besafe**

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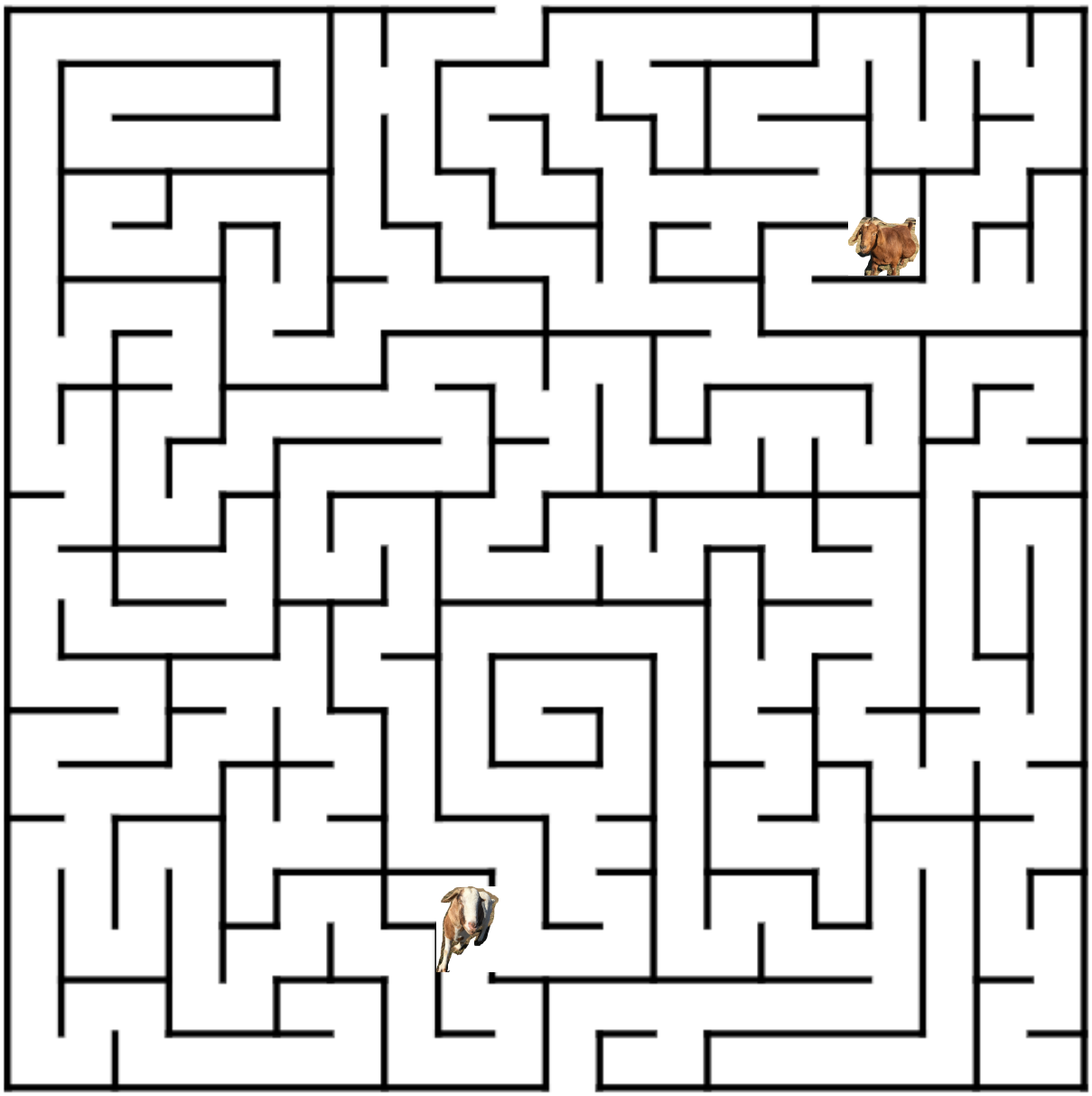
It's such a hot day. Help Tazewell find his way to the wallowing pit to cool off with his brother Chew-Chew.

Start



Finish!

Ahhh! That is much better. We Pot-Bellied Pigs like to wallow in muddy water to help us cool down, and use the mud as sunscreen.

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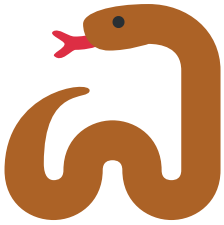
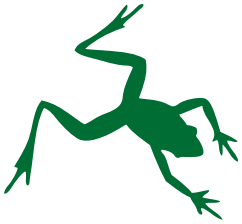
Chicken Snack

Ms. Nesbit the Easter Egger hen has just laid an egg and is looking for a healthy snack. Circle the the options that are healthy for chickens to eat.

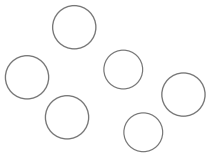


A small nonvenomous snake slithering past the fence

Your fries or chips



A frog who hopped into the pen

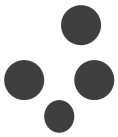


Ground up oyster shell

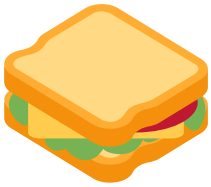
A beetle flying by her head

A mouse she finds hiding in the coop

Clover



small rocks



Your sandwich

Are chickens herbivores, carnivores, or omnivores? Do chickens have teeth? What might she eat to help grind up her food? What would help her replenish the calcium she lost laying the egg?

Mrs. Nesbit's snacks are: Oyster shell, frogs, small snakes, beetles, small mice, small rocks, and clover!

Taking Advantage of Nature's Adaptations

Take a look at some of these animal adaptations and decide how they may have benefited people once they domesticated the animal.

Gabby and Chip are standard donkeys. The donkey's reputation for stubbornness is a defense mechanism. Rather then running from their problems, they tend to confront them. They have been known to chase off large predators, like coyotes.

How might a farmer take advantage of this natural adaptation?

Pigs are omnivores, they can digest both meat and plants. A sow can have more than 10 piglets per litter and 2 litters a year. The large litter size in the wild would ensure that not all piglets would be eaten by predators and that some would survive to adulthood.

How would these adaptations have benefited the people who domesticated them?

The chicken's ancestor are called the red jungle fowl. These birds are in the galliformes family and include heavy-bodied ground-feeding birds like turkeys and pheasants. These birds are often too heavy to migrate, so they have to be hardy enough to survive the winter. The very round appearance of chickens in winter isn't fat, by puffing up their feathers they create air pockets that keep them warm. While some birds like parrots and songbirds hatch from the egg helpless and without feathers, red jungle fowl are hatched covered in a warm layer of down feathers and fully capable of following their parents.

How would these adaptations be useful to a farmer?

You may have noticed my belly hanging down. This is called a primordial pouch. It allows me to stretch my full length while running and helps protect my vital organs from predators and other cats.

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Artificial Selection

When people took wild animals and domesticated them, they realized they could breed the animals for desirable traits, or genetically determined characteristics. This artificial selection could produce different colors and fur lengths and increase how much milk or eggs an animal produced. This is possible because of genetics. Heredity is the passing of physical or mental characteristics genetically from one generation to the next. For centuries, people have selected livestock for specific traits.

Most plants and animals have two of every kind of gene, a unit of heredity transferred from a parent to the offspring, One from their mother and one from their father. Only one gene from each parent is passed to each offspring for a particular trait. Linked genes are inherited together or do not assort independently. Alleles are forms of the same gene with small differences in their DNA sequence.

Alleles can be either dominant or recessive. Dominant alleles always overpower recessive alleles and are always expressed in offspring (AA. Aa). Recessive alleles are only expressed if a recessive allele is inherited from both parents (aa). Dominant alleles are denoted by an uppercase letter (A), and recessive alleles by a lower case letter (a).

Using the hypothetical chart on the next page, build your own chicken by flipping a coin to determine genes from the mother and father.

In early Virginia, desirable traits included the ability to survive scorching humid summers and chilly winters. Livestock had to have a natural ability to forage for their own food, strong maternal instincts to take care of their young, and a natural resistance to diseases and parasites. The livestock that colonists and early Americans bred and used are called heritage breed animals. The Dominique chickens and American Milking Devon cow are our first heritage breed animals here at the park.

Build Your Own Chicken

Directions: Flip a coin to determine what genes your offspring will carry. Heads will be a dominant gene, and tails will be a recessive gene. Match the genetic traits each parent will pass on to their offspring by recording the uppercase or lowercase letter from the coin into the chart. Color and add detail to the chicken picture below to match the traits of the offspring.

Mother's Traits

	Heads (Dominant)	Tails (Recessive)
Male/Female	X=Female	X
Big/small comb	b	b
Brown/Black Feathers	F	f
Yellow/Gray Shank	S	s
Brown/blue egg color gene	G	g

Father's Traits

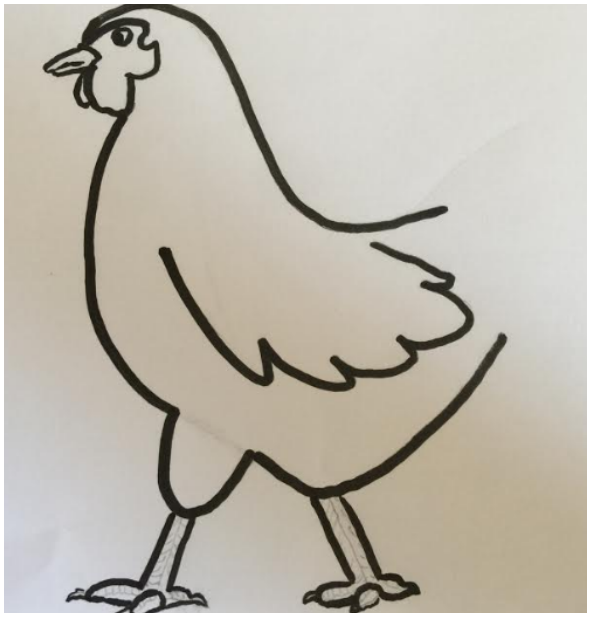
	Heads (Dominant)	Tails (Recessive)
Male/Female	X	Y=Male
Big/small comb	B	b
Brown/Black Feathers	F	F
Yellow/Gray Shank	S	s
Brown/blue egg color gene	g	g

Hint: shanks are legs, combs are the fleshy part of the chicken that is on top of their head. Whether a chicken is a rooster or hen will change the shape of their tail. Males don't lay eggs but they still carry the gene for the color to pass down to their daughters.

Traits of Offspring

	Mother's Trait	Father's Trait	Circle the Inherited Trait		
Sample Trait	R	r	RR	Rr	rr
Male/Female			Male XY	Female XX	N/A
Big/Small Comb			Big Comb BB	Big Comb Bb	Small Comb bb
Brown/Black Feathers			Brown Feathers FF	Brown Feathers Ff	Black Feathers ff
Yellow/Gray Shanks			Yellow Shanks SS	Yellow Shanks Ss	Gray Shanks ss
Solid Feathers/Spotted Feathers			Brown Egg GG	Brown Egg Gg	Blue Egg gg

My chicken's name is:



More Than You Can Stomach

Ruby, Billy, and Curly are ruminants and have a very different stomach than humans do. A ruminant is any mammal of the suborder "Ruminantia", most have two-toed feet and a four-chambered stomach. The multiple compartments ensure the animals get as many nutrients as they can from the grasses and brush that they are eating. They also regurgitate the food back into their mouth to chew it again, this process is called rumination and the food they are re-chewing is called cud. Anytime you see the goats or cow laying down and chewing they are re-chewing their cud.

Billy and Curly chewing cud.

Cows and goats don't have upper front teeth... Instead they have a dental pad, an area of tough skin in their mouth that helps them rip and tear out grass.

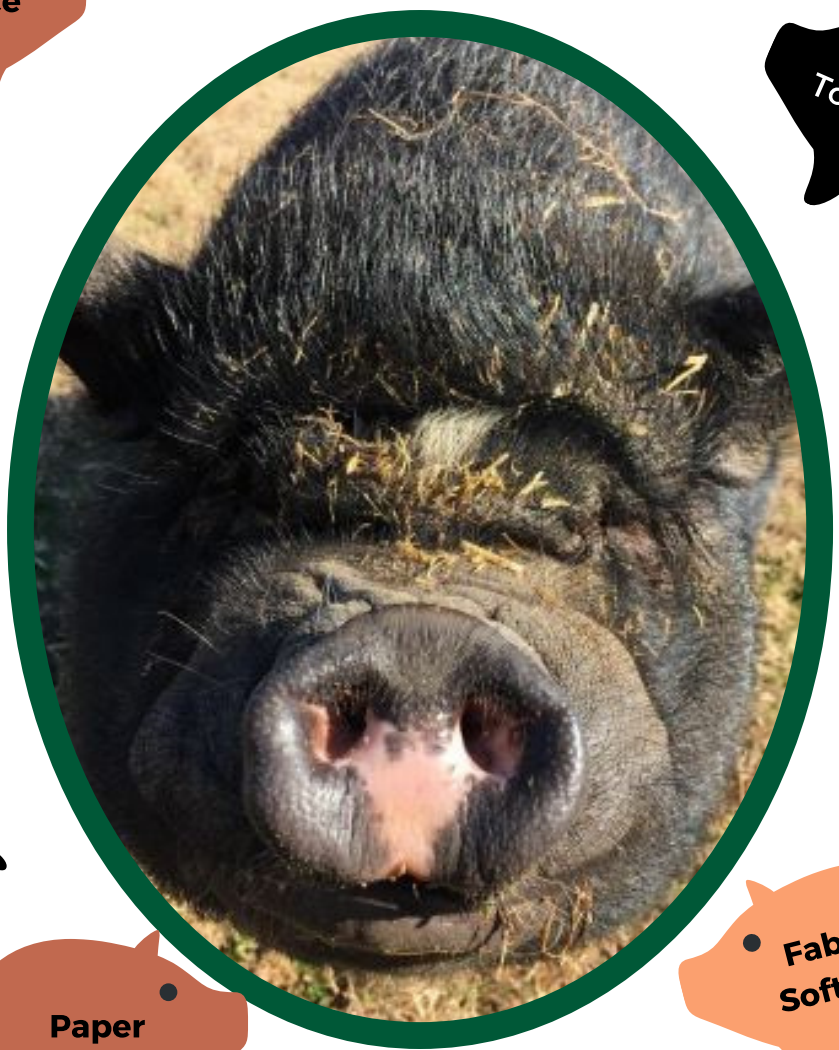
Other ruminants include sheep, antelopes, deer, and giraffes!

Discover which compartment goes where in Ruby's stomach by matching the description to the image

Rumen is the biggest part of the cows stomach. In a full grown cow it can hold over 25 gallons of material. It stores food for the cow and microbes digest or ferment the material.
Reticulum is a pouch-like structure in the very front of the cows stomach, technically still a part of the rumen. It is a honeycomb like structure that catches heavier food.
Omasum is attached to the rumen, the omasum is folded leaves of tissue similar to paper, it absorbs water and other substances from digestive contents.
Abomasum is lined with glands, this part of the stomach releases digestive enzymes and acids to further break down food, it is connected to the intestines.

Everything but the Oink

Pigs are used in many everyday products. Circle the pigs with products you think pigs can be used to make. Chew-Chew and all the other ambassador animals in the park are used for education only and will live out the rest of their natural lives in the park.



Marshmallows

Train Brakes

Fruit Juice

Toothpaste

Shampoo

Ham

Bread

Paint

Beer and Wine

Fabric Softener

Paper

Each of these products contain byproducts from pigs! Any product with gelatin, glycerin, or L-cysteine have some product from a pig.

Recreate responsibly. Learn more at **www.virginiastateparks.gov/besafe**

Wild Animals that can Help on a Farm

Think of one wild animal that helps farmers.
Draw it below and explain how. See Luna for an example.

In one summer, a colony of 150 big brown bats can eat 38,000 cucum ber beetles. They are nature's exterminators.

Pasture Pals Word Search

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

Farm and Forestry	Standard Donkey	Heritage Breed	Domestication
Tazewell	Rooster	Chicken	Museum
Gabby	Chew Chew	Tame	Billy
Ruby	Curly	Chip	Feral
Wild	Luna	Hen	Adaptation
Goat	Pigs	Cat	

Relevant Science SOLs in this worksheet

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Kindergarten

- **K.7** Offspring of plants and animals are similar but not identical to their parents or to one another.
- **K.10** Natural and human-made things may change over time

Grade 1

- **1.1 C.** Describe patterns and relationships classify and arrange objects based on a single physical characteristic or property
- **1.1 D.** Make simple conclusions based on data or observations
- **1.5** The student will investigate and understand that animals, including humans, have basic life needs that allow them to survive. a) animals have different physical characteristics that perform specific functions; and b) animals can be classified based on a variety of characteristics.

Grade 2

- **2.5** The student will investigate and understand that living things are part of a system.

Grade 3

- **3.5** The student will investigate and understand that adaptations allow organisms to satisfy life needs and respond to the environment.

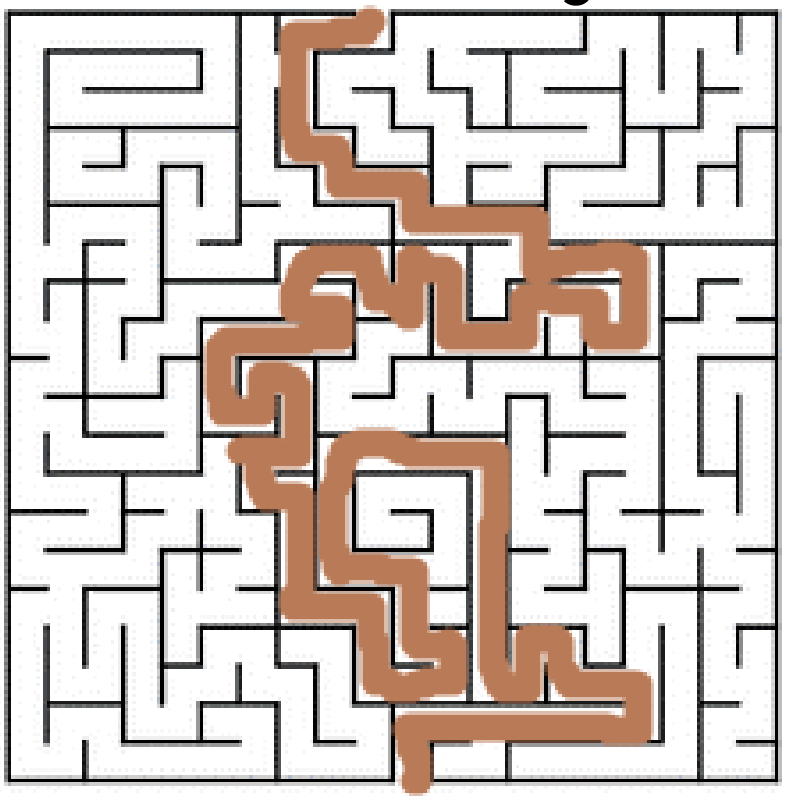
Grade 4

- **4.2** The student will investigate and understand that plants and animals have structures that distinguish them from one another and play vital roles in their ability to survive.

Life Science

- **LS. 1** Obtaining, evaluating, and communicating information
- **LS. 7** The student will investigate and understand that adaptations support an organism's survival in an ecosystem.
- **LS.10** The student will investigate and understand that organisms reproduce and transmit genetic information to new generations
- **LS. 11** The student will investigate and understand that populations of organisms can change over time.

Puzzle key



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