

Name: _____

MYSTERY science

2nd Grade

Student Booklet

MYSTERYscience Worksheets

NGSS Grade 2 Unit

Animal Adventures Mysteries:



Mystery 1

How many different
kinds of animals
are there?



Mystery 2

Why do frogs
say "ribbit"?



Mystery 3

How could you get
more birds to visit a
bird feeder?

MYSTERYscience Worksheets

NGSS Grade 2 Unit

Plant Adventure Mysteries:



Mystery 1

How did a tree travel halfway around the world?



Mystery 2

Could a plant survive without light?



Mystery 3

Why do trees grow so tall?



Mystery 4

Should you water a cactus?



Mystery 5

Where do plants grow best?

Challenge Cards



Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

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Challenge Cards



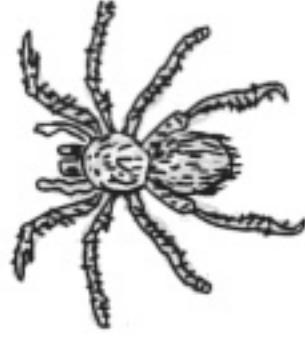
Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

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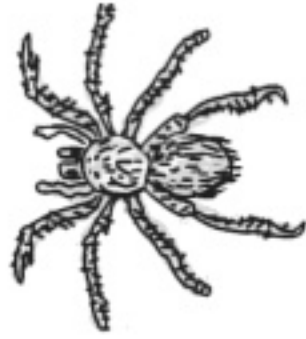
Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

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Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

MYSTERYscience



Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

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Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

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Penguin

Has bones inside its body



Lays eggs



Has feathers



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Ladybug

Doesn't have any bones at all

Lays eggs



Doesn't have fur or feathers or scales

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Squirrel

Has bones inside its body



Gives birth (doesn't lay eggs)



Has hair or fur

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Pigeon

Has bones inside its body



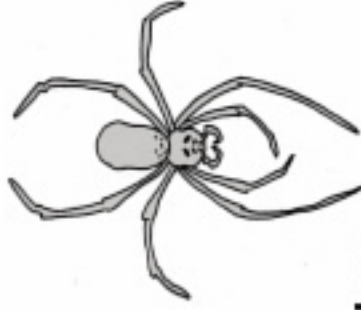
Lays eggs



Has feathers



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Spider

Doesn't have any bones at all

Lays eggs



Doesn't have fur or feathers or scales

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Snake

Has bones inside its body



Lays eggs



Has scales



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Turtle

Has bones inside its body



Lays eggs



Has scales



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Earthworm

Doesn't have any bones at all

Lays eggs



Doesn't have fur or feathers or scales

MYSTERY science



Hawk

Has bones inside its body



Lays eggs



Has feathers



MYSTERY science



Bat

Has bones inside its body



Gives birth (doesn't lay eggs)



Has hair or fur

MYSTERY science



Monarch butterfly

Doesn't have any bones at all

Lays eggs



Doesn't have fur or feathers or scales

MYSTERY science



Cat

Has bones inside its body



Gives birth (doesn't lay eggs)



Has hair or fur

MYSTERY science



Elephant stag beetle

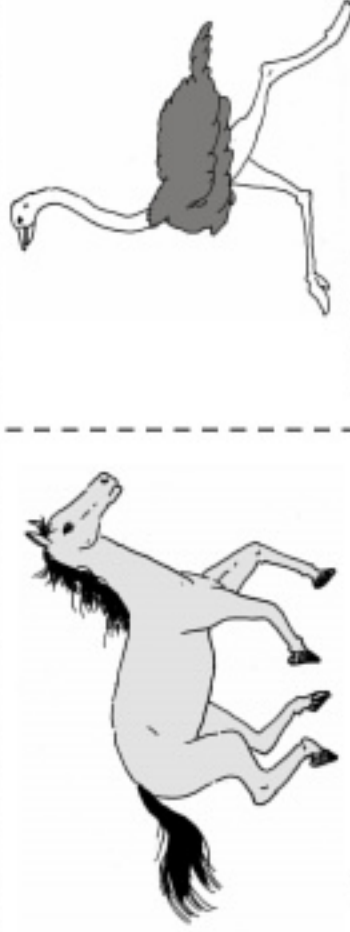
Doesn't have any bones at all

Lays eggs



Doesn't have fur or feathers or scales

MYSTERY science



Ostrich

Has bones inside its body



Lays eggs



Has feathers



MYSTERY science



Lizard

Has bones inside its body



Lays eggs

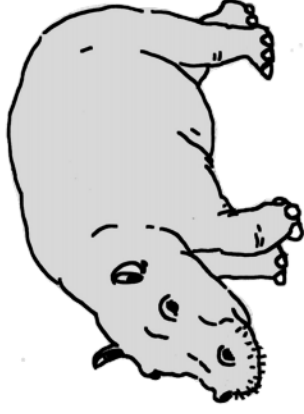


Has scales



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Challenge Cards



Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

MYSTERY science



Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

MYSTERY science



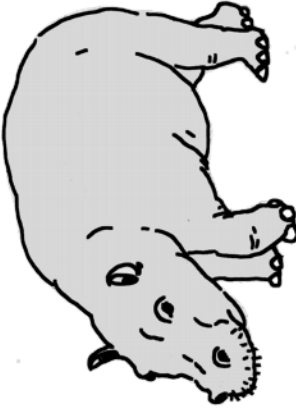
Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

MYSTERY science



Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

MYSTERY science



Name: _____

bones / no bones

lays eggs / gives birth

hair / feather / scales / none

MYSTERY science



Name: _____

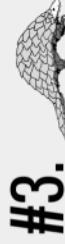
bones / no bones

lays eggs / gives birth

hair / feather / scales / none

MYSTERY science

Challenge Cards



Animal Adventures

Mystery 1: How many different kinds of animals are there?

Name: _____

Date: _____

End of Mystery Assessment

1. Match the group of animals with its characteristics.

- | | |
|--|--|
| <input type="checkbox"/> Invertebrates | a. Bones, scales, lays eggs |
| <input type="checkbox"/> Reptiles | b. Bones, hair or fur, gives birth to live young |
| <input type="checkbox"/> Birds | c. Bones, feathers, lays eggs |
| <input type="checkbox"/> Mammals | d. Bones, moist skin, lays eggs |
| <input type="checkbox"/> None of the above | e. No bones |

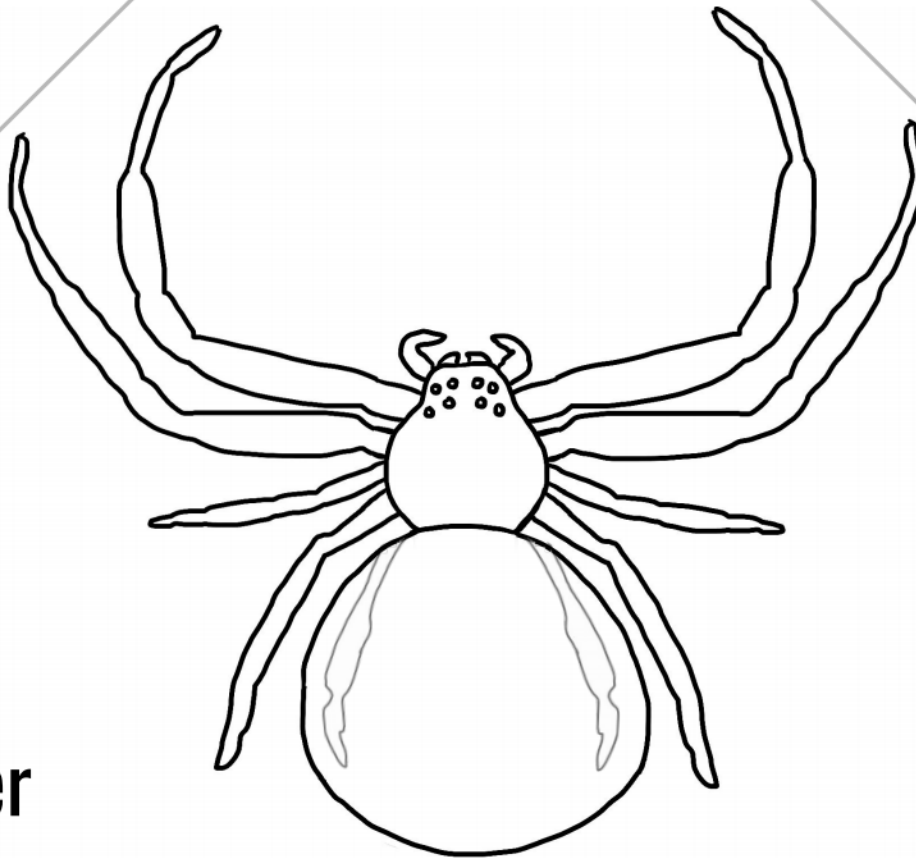
2. Put an **X** next to the characteristics that scientists use to group animals.

- ☐ Whether it has bones or no bones
- ☐ What color it is
- ☐ Whether it lays eggs or gives birth to live young
- ☐ What it eats
- ☐ Where it lives
- ☐ Whether it has scales, feathers, or hair

3. TRUE or FALSE? (circle one) Scientists only look at the outsides of animals' bodies to figure out which group they belong to.

4. Bats have wings and can fly, but scientists do not group them with birds. Why is that?

5. Tarantulas are covered in hair, but scientists do not group them with mammals. Why is that?



Crab Spider

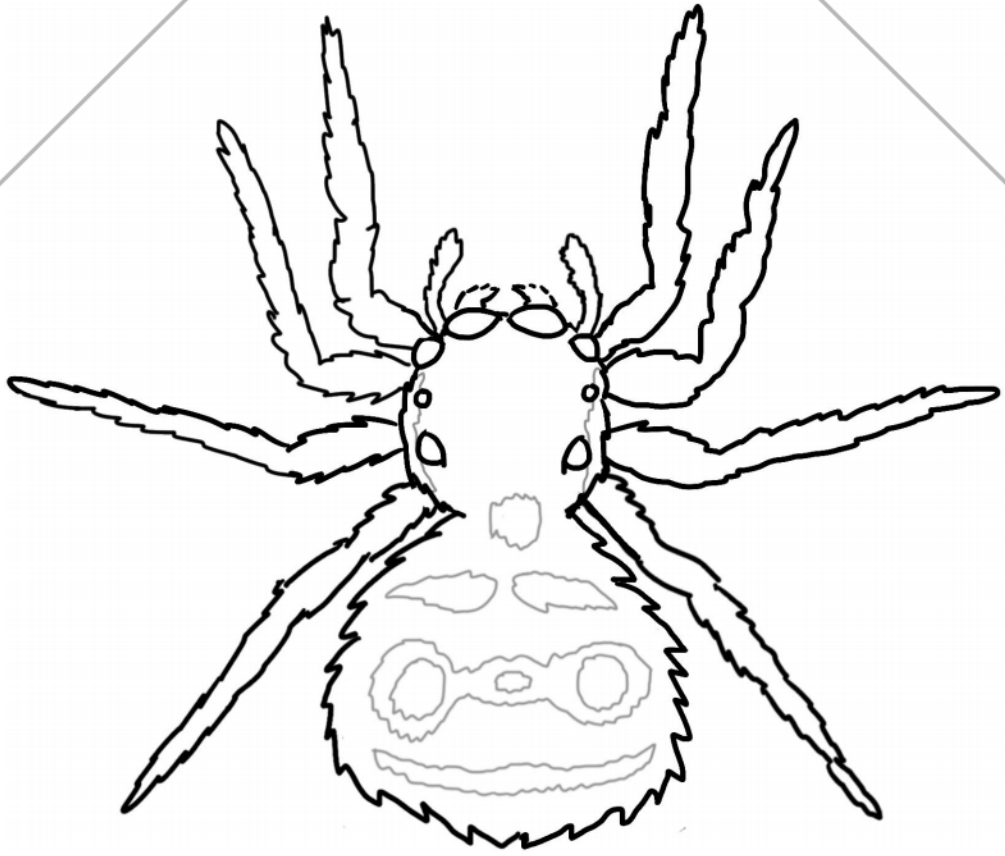
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Jumping Spider

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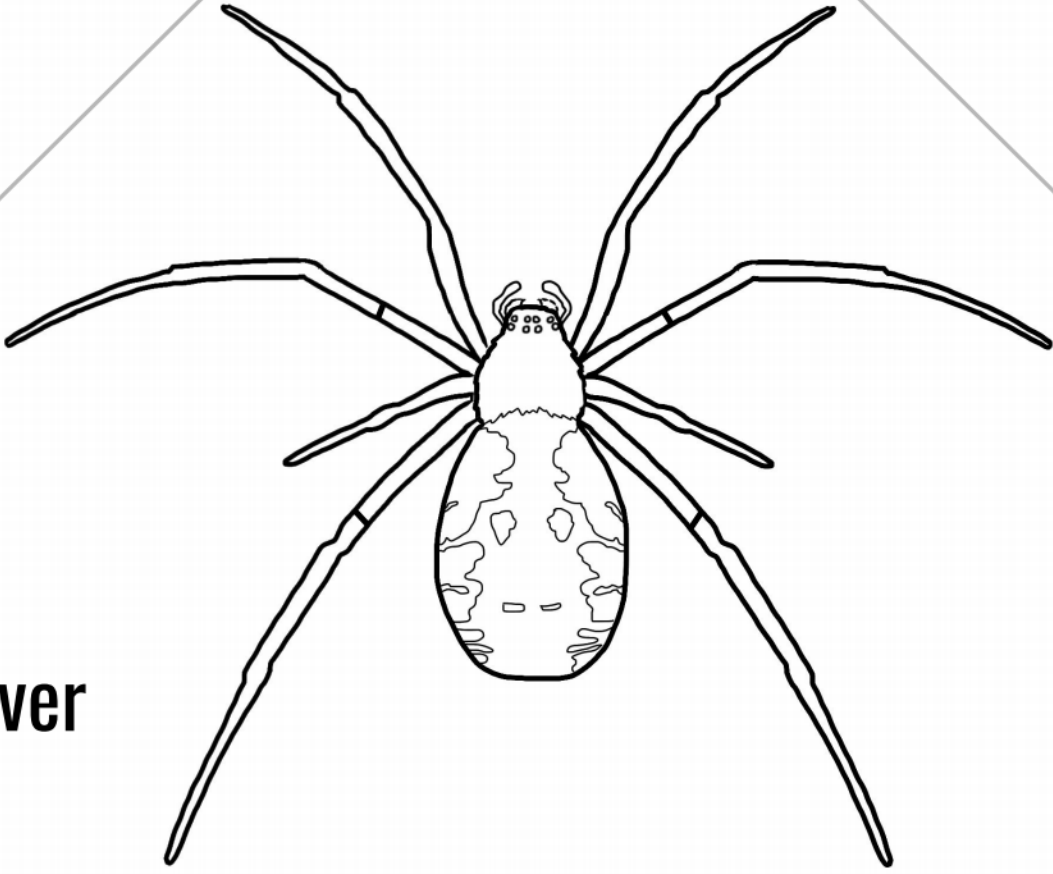
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Orb Weaver Spider



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Seasonal Science | Fall 2018

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fold

Who's Calling?

1. Learn to identify frogs by their calls:

	Kind of frog	Write a few words to remind yourself of what it sounds like.
	Wood Frog	
	Spring Peeper	
	American Bullfrog	
	Northern Leopard Frog	
	American Toad	

2. What kind of frog do you hear in Challenge #1?

3. What kind of frog do you hear in Challenge #2?

How Many Kinds of Frogs?

4. Listen to which kinds of frogs each place has:

OAKWOOD POND

In spring, this tiny pond is a shallow puddle in the woods. In summer, it dries up. There are no flowing streams or swamps here.

Oakwood Pond: check off what kinds of frogs you hear	
Wood Frog	<input type="checkbox"/>
Spring Peeper	<input type="checkbox"/>
American Bullfrog	<input type="checkbox"/>
Northern Leopard Frog	<input type="checkbox"/>
American Toad	<input type="checkbox"/>

SWEDE LAKE

This lake has swampy places with many plants, places with shallow water, and streams flowing into the lake. There's water here all year long.

Swede Lake: check off what kinds of frogs you hear	
Wood Frog	<input type="checkbox"/>
Spring Peeper	<input type="checkbox"/>
American Bullfrog	<input type="checkbox"/>
Northern Leopard Frog	<input type="checkbox"/>
American Toad	<input type="checkbox"/>

5. Which place has more kinds of frogs?

My claim is that _____ has more kinds of frogs. My evidence is that _____

Animal Adventures

Mystery 2: Why do frogs say “ribbit”?

Name: _____

Date: _____

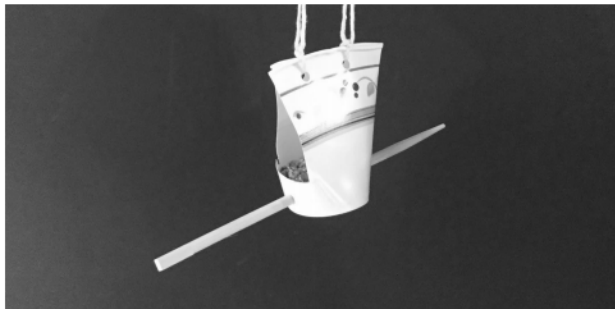
End of Mystery Assessment

1. Which is true about frogs and toads?
 - a. All frogs say “ribbit” but toads make other sounds.
 - b. Frogs and toads never live in the same places.
 - c. Toads are the kind of frog that has drier, rougher skin.
 - d. Only toads will give you warts.
2. Why do frogs call?
 - a. That’s the sound of their breathing.
 - b. Male frogs call to attract females.
 - c. Frogs call because they’re hungry.
 - d. Frogs call to tell people where they are.
3. If you visited two ponds, how could you tell which pond had more kinds of frogs?

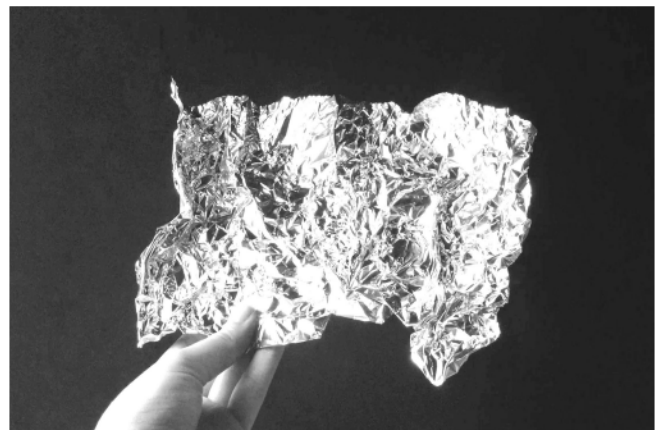
4. What kind of habitat do frogs look for during egg-laying season? Why do they need that kind of habitat?

Bird Feeder Inspiration

A stick or pencil through two holes can make a perch for birds to stand on.



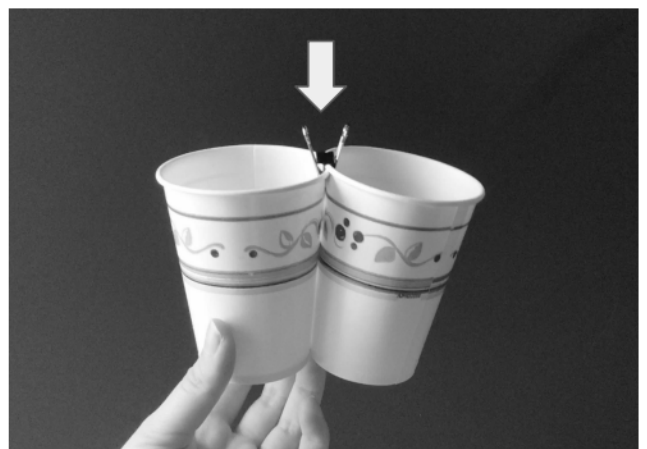
You can scrunch aluminum foil into any shape you want.



Push a pipe cleaner through a hole and use it to hang up your bird feeder:



A binder clip can hold things together. It also gives you a place to tie a pipe cleaner:



My Bird Feeder

Name: _____

1) Discuss what your bird feeder needs:

1a) What kind of bird do I want to come to my feeder? _____



Finches

- Eat seeds
- Like to stand on a peg while eating



Jays

- Eat seeds
- Like to stand on a tray while eating



Woodpeckers

- Eat seeds and bugs
- Like to hang on the sides of feeders to eat



Cardinals

- Eat seeds
- Like to stand on a tray while eating

1b) What does that bird eat? _____

1c) Where does the bird like to stand when it eats? _____

1d) How can my feeder keep birds safe from cats? _____

2) Fill in the blanks to write your problem statement:

I want _____ (kind of bird) to come to my yard. I need a bird feeder with _____ (kind of food) and _____ for my bird to stand on. I will make the bird feeder safe from cats by _____ (place to stand)

Name: _____

3) Here are my ideas for a bird feeder:

Draw at least two ideas for bird feeders. Be sure you show:

- Where will the food be?
- Where will the birds stand?
- What will keep the birds safe from cats?

Use the back of the page to draw any more ideas.

Idea #1

Idea #2

4) I've built my prototype. What next?

A real bird feeder needs to hold together in wind and rain. What materials could you use to make a real feeder that's like your prototype?

Animal Adventures

Mystery 3: How could you get more birds to visit a bird feeder?

Name: _____

Date: _____

End of Mystery Assessment

1. Choose the type(s) of feeders each bird would be MOST LIKELY to visit, and explain your answer choices below.



tray feeder



nectar feeder



tube feeder

X

none of these

Finches will most likely visit _____

because... _____



Hawks will most likely visit _____

because... _____



Hummingbirds will most likely visit _____

because... _____



Doves will most likely visit _____

because... _____



MYSTERYscience

Animal Adventures | Mystery 3

2. Two friends are discussing what is most important for attracting a bird to a feeder.
Ahmed says, "I think that having the **kind of food a bird likes** is most important."
Kristina says, "I think that having a **place for the bird to perch** is most important."

What do you think? How would you respond to Ahmed and Kristina?

3. In the activity, you made a *prototype* of a bird feeder. How would you want to change your prototype to create a final version of your feeder?

Unit Assessment

Multiple Choice

1. A butterfly is...

- a. A bird, because it has wings and can fly
- b. A reptile, because it lays eggs
- c. An invertebrate, because it doesn't have bones
- d. None of the above



2. A pangolin is...

- a. A reptile, because it has scales
- b. A mammal, because it has hair and gives live birth
- c. Both a reptile AND a mammal, because it has characteristics of both groups
- d. None of the above



3. Why do frogs and toads look for wet habitats during egg-laying season? Choose the **BEST** answer.

- a. That's where male frogs can find female frogs
- b. It's easier to hide in wet, swampy areas
- c. Their calls sound louder over water
- d. They need to lay their eggs in water

4. A bird feeder will attract birds if it...

- a. Has the right kind of food
- b. Has places for birds to perch or stand
- c. Is protected from cats and other predators
- d. All of the above

True/False

Circle TRUE or FALSE for each statement.

- | | | |
|------|-------|--|
| TRUE | FALSE | 5. Scientists can identify frogs by listening to their calls. |
| TRUE | FALSE | 6. Frogs usually have drier, wartier skin than toads. |
| TRUE | FALSE | 7. Only one kind of frog makes a call that sounds like "ribbit." |
| TRUE | FALSE | 8. The Amazon rainforest has the most kinds of frogs. |

Short Answer

9. Three friends are discussing what would happen if scientists discovered a new animal. What would scientists do to figure out which group the new animal belongs to?

Dhara says, "I think scientists would look at the *outside* of the animal."

Xavier says, "I think scientists would look *inside* the animal."

Luo says, "I think scientists would look at the inside *and* the outside of the animal."

Who do you agree with most and why?

10. What are the differences between a prototype and a final version of something?

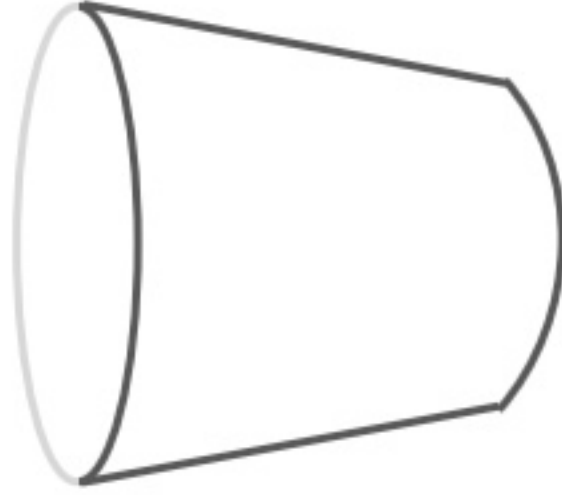
11. In your own words, what is a habitat? Why do some habitats have more animals than others?

Draw the Radishes

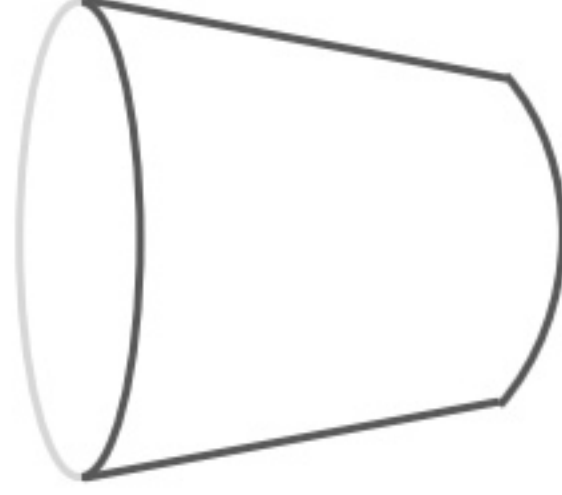
Name: _____

Drawing will help you notice things about your plants. Draw a picture of the plant that was in the light and the plant you kept in the dark. Notice how they are the same and how they are different.

Plant in sunlight 



Plant in darkness



Plant Adventures

Mystery 2: Do plants eat dirt?

Name: _____

Date: _____

End of Mystery Assessment

1. Why do you think roots are the first thing to grow after a seed cracks open?

2. Can you come up with a reason why hydroculture (growing plants in mineral water with no dirt) is important in some places?

3. What would happen if you watered a plant with pure bottled water?

Hint: bottled water often has the minerals removed.

4. Why does the Venus flytrap eat bugs?

Grass Head

My name: _____

My grass head's name: _____

Setup

Date: _____

This is my set-up:



This is what I predict will happen:



Results (do this after grass grows)

Date: _____

This is what happened:



Here's something that turned out as
I predicted: _____

Here's something that surprised me:

Plant Adventures

Mystery 3: Why do trees grow so tall?

Name: _____

Date: _____

End of Mystery Assessment

1. Why do you think trees grow so many leaves?

2. Why do leaves move to follow the sun during the day?

3. Can you think of a time of year when there would be lots of sunlight on the forest floor? Explain when and why.

4. What kind of experiment could you do that would prove that plants will grow tall to get light?

Plant Adventures

Mystery 4: Should you water a cactus?

Name: _____

Date: _____

End of Mystery Assessment

1. Do all plants need plenty of water and bright sunlight?

2. Should you water a cactus everyday? Explain.

3. How can you tell if a plant isn't getting the right amount of sunlight and water? Give an example.

Aloe



Needs

- Bright light
- Not much water

Aloe stores water in its thick, juicy leaves. Aloe juice has long been used to help heal burns, insect bites, and itchy skin.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|------------------|-----|----|
| • Bright light | Yes | No |
| • Not much water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Jumping Cholla



Needs

- Bright light
- Not much water

This cactus is covered with sharp spines. Its branches break off at the slightest touch, making it seem like the branch jumped!

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|------------------|-----|----|
| • Bright light | Yes | No |
| • Not much water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Baobob trees



Needs

- Bright light
- Not much water

This tree stores water in its thick trunk. In the dry season, it loses its leaves. Because its bare branches look like roots growing upward, it's sometimes called the upside-down tree.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|------------------|-----|----|
| • Bright light | Yes | No |
| • Not much water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Agave



Needs

- Bright light
- Not much water

This plant stores water in its thick, spine-tipped leaves. Some kinds of agave are called "century plants," because they bloom so rarely.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|------------------|-----|----|
| • Bright light | Yes | No |
| • Not much water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Donkey Tail



Needs

- * Bright light
- * Not much water

When it rains, this plant soaks up water and stores it in plump, waxy leaves. The trailing stems look like tails, which give the plant its name.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|------------------|-----|----|
| • Bright light | Yes | No |
| • Not much water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Barrel Cactus



Needs

- * Bright light
- * Not much water

Found in the deserts of the American Southwest, this prickly plant has sharp thorns to discourage hungry animals.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|------------------|-----|----|
| • Bright light | Yes | No |
| • Not much water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Saguaro Cactus



Needs

- * Bright light
- * Not much water

This giant cactus can grow up to 60 feet tall and can live for 150 years.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|------------------|-----|----|
| • Bright light | Yes | No |
| • Not much water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Maple Tree Sapling



Needs

- * Bright light
- * Plenty of water

The word *sapling* means "baby tree." This very young maple tree sprouted from a seed that spun like a helicopter, trying to land far away from the parent tree.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Bright light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Begonia



Needs

- Dim light
- Plenty of water

This flowering plant is found growing beneath the trees in jungles all over the world. It's also found growing in pots in many offices and homes.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Dim light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Sword Fern



Needs

- Dim light
- Plenty of water

This fern is also known as the Christmas Fern, because it's often used in Christmas wreaths. It often found on the forest floor in the American Northwest.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Dim light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Coleus



Needs

- Dim light
- Plenty of water

Coleus plants are native to Africa and Southeast Asia. Traders brought them to Europe and America, where they became popular garden plants.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Dim light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Hostas



Needs

- Dim light
- Plenty of water

Hostas range in size from 4 inches across to more than 6 feet across. Native to northeast Asia, gardeners like the showy leaves that come in many shapes and colors.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Dim light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Dandelion

Needs

- Bright light
- Plenty of water



Today, many people think of the dandelion as a weed. But for more than a thousand years, healers used the leaves of this plant to cure toothache, sores, and fevers.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Bright light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Venus Fly Trap

Needs

- Bright light
- Plenty of water



Most plants absorb minerals from the soil. The Venus Fly Trap usually lives where the soil lacks minerals. So it gets minerals by eating bugs, trapping them in leaves that snap shut.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Bright light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Moth Orchid



Needs

- Dim light
- Plenty of water

In the wild, this orchid can be found in the shade of forest trees, where it is protected from direct sunlight. It has been a favorite of orchid growers since 1833.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Dim light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Vanilla Orchid



Needs

- Dim light
- Plenty of water

This plant is native to tropical jungles. It grows a bean that smells great and tastes even better. That bean gives vanilla ice cream its flavor.

Where are you putting this plant? # _____

One year later, did your plant get:

- | | | |
|-------------------|-----|----|
| • Dim light | Yes | No |
| • Plenty of water | Yes | No |

Did you mark YES on both?

YES! 10 Points
Your plant lives!

NO
Your plant dies.
Try again.

Plant Adventures

Mystery 5: Where do plants grow best?

Name: _____

Date: _____

End of Mystery Assessment

1. Did your plant survive in the game each round? If so, explain why it survived.

2. Did your plant ever die during a round? If so, explain what happened.

Unit Assessment

Multiple Choice

1. Plants have ways of getting their seeds to travel away from them because _____.
 - a. they want to help animals.
 - b. seeds that travel away from the parent are more likely to get light.
 - c. seeds need water to grow.

2. Plants that eat insects (bugs) live in places where _____.
 - a. the soil doesn't have many minerals.
 - b. there are too many insects.
 - c. the plants don't get a lot of water.
 - d. the plants get too much sunlight.

3. Plants need sunlight to survive because _____.
 - a. they need to stay very warm.
 - b. they need to be able to see danger.
 - c. they get minerals from sunlight.
 - d. they make food from sunlight.

4. If you planted a cactus in the forest, the cactus would probably _____.
 - a. get too much water and not enough light.
 - b. get too much light.
 - c. live really well.
 - d. be eaten by the forest animals.

2. Why do some plants eat insects (bugs)?

3. How does a cactus survive in the desert where there is so little water?

4. Two plants grew in two different closed boxes. One box had a small hole in the top corner. The other box had no holes. Draw what you think they would look like, if you took the plants out of the boxes.

Why do you think they would each look like this?
