

Supporting Teachers in the Classrooms!



Sylvan Dell Publishing

Science and Math Through Literature
So Much More Than a Picture Book

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Sylvan Dell Publishing
Mt. Pleasant, SC 29464



Just a Few Issues Classroom Teachers Face

Connecting subjects to real life and other subject areas.

Classes with varying abilities and learning styles. Throw in a little ESL for some more fun!

Building on previous knowledge and what to do when that previous knowledge isn't there.

Discipline issues.

Not enough time in the day/year to cover it all.

Not enough parent involvement in their children's education. And too much involvement from others.

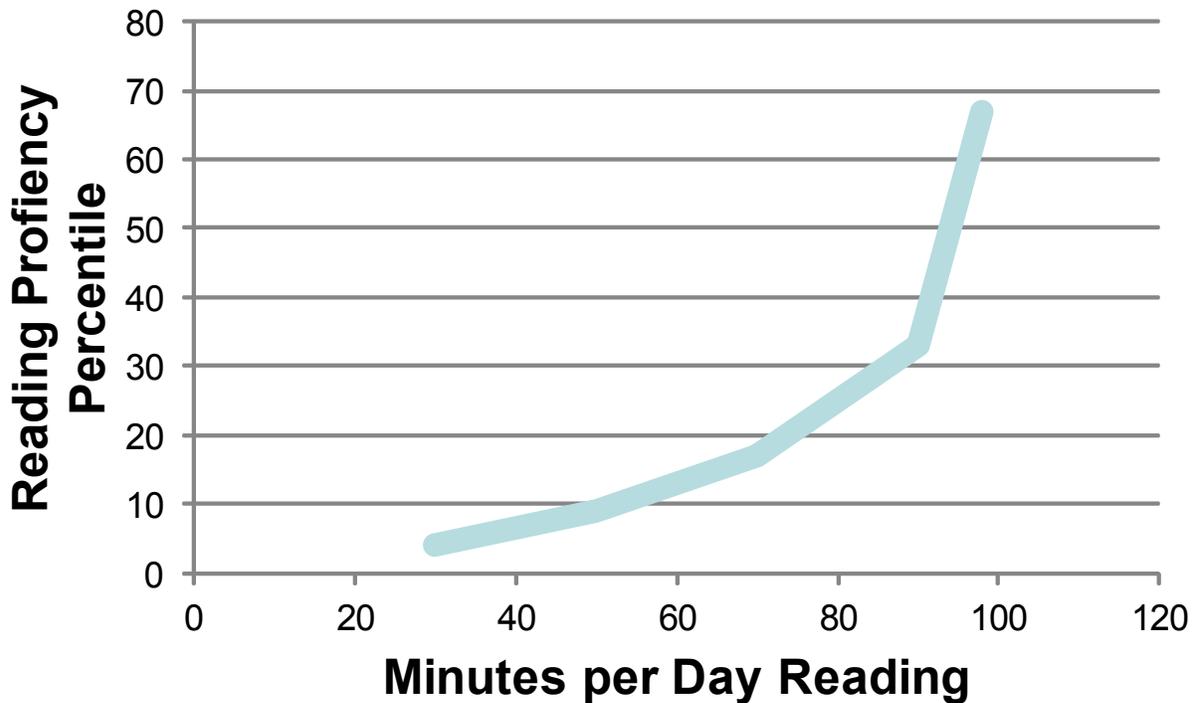
Teaching to the tests. And children regurgitating for the test—do kids know it or do they understand it?

Aligning to standards, lesson plans, and other administrative details.

Are we preaching to the choir? Teachers in the classroom know better than anyone else what issues confront our educational system. You see it and deal with it on a daily basis.

We don't have all the answers. But we do want to try to make your life easier if we can. We all share a common goal to get children excited about reading and learning!

Reading



We all have probably seen similar statistics on reading proficiency correlations:

- reading fun to reading time
- reading time to reading proficiency
- reading proficiency to overall ability to learn math, science ... anything

Doesn't it seem like common sense? The more fun a child has reading, the more they'll read. The more they read, the better reader they become. The better reader they are, the easier time they'll have learning other subjects.

In a perfect world children would start school with a thirst for learning and a hunger for reading, not for food. By the time a child walks into school for his or her first day of school, that child is already a reader . . . or not. As educators, you know the importance of those first few years. Our challenge is how to reach the children who did not have that gift given to them and how to encourage all children to read.

All Sylvan Dell titles are first and foremost picture books. We seek manuscripts that are fun-to-read stories, not textbooks or straight non-fiction. Using historical fiction novels as a model, the stories often have non-fiction facts woven into the story (creative non-fiction). Our selection of manuscripts is based on the story PLUS the underlying educational component. We want children to read to themselves or to ask parents to read that book to them repeatedly because they love the story and the art.

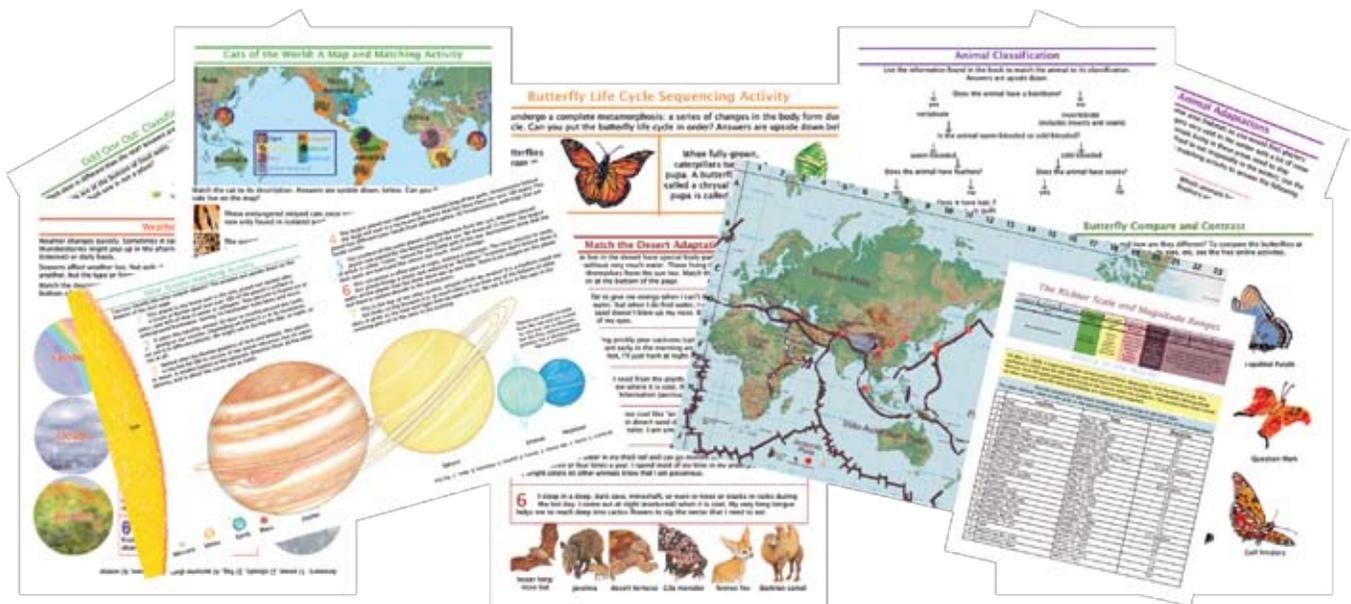
Hands-On Experiences

In a perfect world, all children could travel to the Grand Canyon to learn about geology or dive on a coral reef to learn about marine life. A visit to a zoo, aquarium, nature center, state or national park, hands-on science museum or discovery center are all great ways for children to experience life and to learn about the world around them. Unfortunately, not all children are exposed to these life experiences.

Children comprehend and retain information better if they are required to participate in gathering information and not just absorbing it. Each of our titles includes a 3-6 page “For Creative Minds” (FCM) section to build on the underlying educational theme in the story. While, like many other books, some of Sylvan Dell books do include a page or two of fun facts, all of our books include some kind of activity: matching, sequencing, true or false questions, sorting, or comparing and contrasting. These activities are inspired by and patterned after many great educational programs at museums, zoos, aquariums, and US National Park Junior Ranger Programs.

Whether in your role as an educator, parent, or important adult in a child’s life, have you ever gotten the “why” question but not known how to answer? After all, we can’t be experts in everything! The FCM sections present the information so that the adult can sound knowledgeable and answer questions (and learn too).

Since we are not experts in the science behind the stories either, we find people who are. Zoo and aquarium educators, NASA and JPL scientists and educators, US National Park rangers, NOAA scientists, USGS scientists and educators are just some of the experts who have vetted our titles (story text and FCM sections) for accuracy prior to publication.



Not Enough Time! Aligning to Standards

Teachers across the US must account for time spent and document that each book read or each activity done in the classroom applies to state standards. Until the recent adoption by many states of the Core Standards in Language Arts and Math, each state had their own standards for the core subjects of Language Arts, Math, Science, and Social Studies. Many states have standards for technology, arts & music, and even for basic skills. Core science standards are in development but not are still a few years off and it is still uncertain which states will actually adopt them.

Teachers are familiar with their state standards out of necessity. They are used in developing lesson plans, and the administrative details of accounting for time. Often, however, especially if elementary subjects are team-taught by different teachers, they may not be as aware of the standards for other core subjects. However, there are standards that overlap . . .

- Is learning to read a map to determine the range and distribution of a plant or animal considered science, social studies (geography) or math (coordinate grids)?
- Is learning to read and interpret data and charts science, social studies, or math?
- Is learning to take surveys and communicate data science, social studies, or math?
- Is comparing and contrasting or sorting science (classification) or math?
- Is telling time science (24-hour solar cycle, lunar months) or math?

To try to make teachers' lives easier, each title is aligned to each state's standards in science and social studies and to math if the state does not use the new Core Standards. In addition, each title is aligned to the Core Language Arts and Math Standards. Teachers can search by database (what books meet this standard in my state?) or by state standard (which state standards does this book cover?).



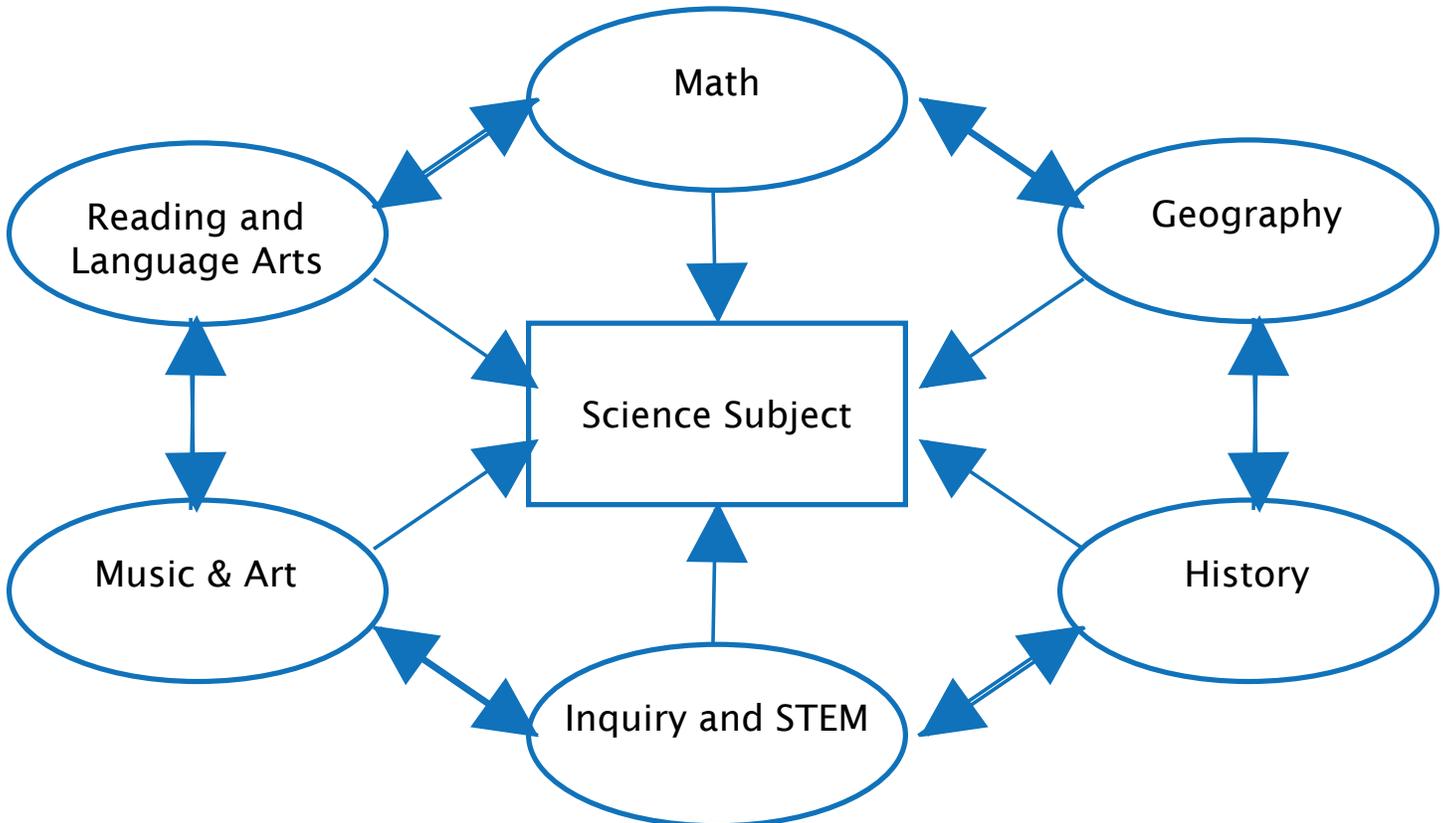
The screenshot shows the Sylvan Dell Publishing website interface. At the top, the logo and name 'Sylvan Dell Publishing' are visible. Below the navigation bar, the main heading is 'Alignment to Science and Math Standards'. Underneath, there is a search bar labeled 'Titles by: Keyword (qf)'. A section titled 'Standards by State and Title' lists various states in a grid format. The states listed are: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District Of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

<http://www.sylvandellpublishing.com/Standards.php>

Not Enough Time! Integrating Subjects

There isn't enough time in the day or the school year to do it all. We already know that the love of reading is one of the most important gifts a parent can give a child and the ability to read is one of the most important skills a teacher can teach. It's for that very reason that so many early elementary teachers focus so much time and energy on reading and language arts (and math). Unfortunately, in many schools or states, science has taken a back seat and history or geography might not be covered at all! Yet all these subjects should be covered. What is a teacher to do?

As adults, many of us multitask on a regular basis. Not only is multitasking in the classroom is time efficient, but the reinforced concepts are more likely to be remembered.



Each Sylvan Dell title has 40-80 pages of FREE cross-curricular, integrated teaching activities. The activities are easily adapted up or down depending on the age and abilities of the children involved. And, it is easy to pick and choose what is appropriate for your setting and the time involved. Most activities can be done with an individual child or a group of children.

We also know and understand that you must account for all activities done in the classroom. While each title is aligned to all of the state standards (both the text and the For Creative Minds), it would be near impossible to align all of these activities to each state's standards at each grade level. However, we do include some of the general wording of the CORE language arts and math standards, as well as some of the very general science or social studies standards. You'll find them listed as "objectives" in italics. You should be able to match these objectives with your state standards fairly easily.

These general ideas may be used with virtually any picture book...we just do the work for you! In the following pages, you'll find actual samples of teaching activities.

What Do Children Already Know?

This is a variation of a KWL chart. Suggested leading questions are provided in the “Pre-Reading Questions.”

Young children are naturally inquisitive and are sponges for information. The whole purpose of this activity is to help children verify the information they know (or think they know) and to get them thinking “beyond the box” about a particular subject.

Before reading the book, ask the children what they know about the subject. A list of suggested questions is below. The children should write down their “answers” (or adults for them if the children are not yet writing) on the chart found in Appendix A, index cards, or post-it notes.

Their answers should be placed on a “before reading” panel. If doing this as a group, you could use a bulletin board or even a blackboard. If doing this with individual children, you can use a plain manila folder with the front cover the “before reading” panel. Either way, you will need two more panels or sections—one called “correct answer” and the other “look for correct answer.”

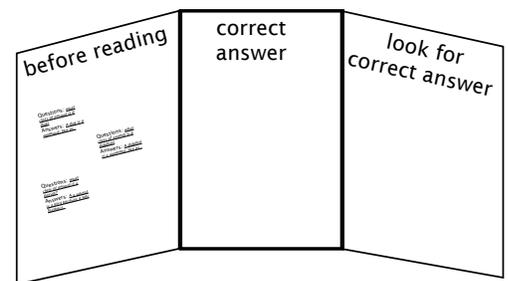
Do the children have any more questions about the subject? If so, write them down to see if they are answered in the book.

After reading the book, go back to the questions and answers and determine whether the children’s answers were correct or not.

If the answer was correct, move that card to the “correct answer” panel. If the answer was incorrect, go back to the book to find the correct information.

If the child/children have more questions that were not answered, they should look them up.

When an answer has been found and corrected, the card can be moved to the “correct answer” panel.



Pre-Reading Questions

What are some animals that live in a pond?

What are some animals that live on land but live close to a pond?

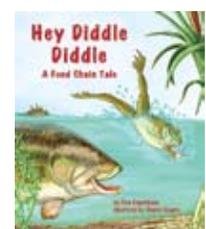
What are some ways those animals rely on the water from the pond?

What are some things they might eat?

How do you think those animals get their food?

How might they get their food?

Can an animal that eats another animal (predator) be eaten by yet another animal (prey)?



Comprehension Questions & Writing Prompts

Objective Core Language Arts, Speaking and Listening: Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Retell stories, including key details, and demonstrate understanding of their central message or lesson. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

Do you think everything in the story could be true? Why or why not?

Write a different ending to the story.

Does this story remind you of any other story that you've read? If so, which one, and how are they alike?

How would you describe Sophia?

Have you ever seen any of these animals? If so, describe where you saw them and what they were doing.

Why did Sophia have trouble getting to sleep?

What did Sophia's mother do to help her get to sleep?

What did the wind do to the animals in Sophia's dream?

What did she give the animals in her dream?

Why didn't Sophia's clothes help the animals?

Then how did Sophia help the animals?

What kind of coat did the polar bear need and why?

What little "extra" did Sophia sew onto her coat?

What kind of coat did the duck need?

What did Sophia change on the duck?

What kind of coat did the porcupine need?

What did Sophia use to make her new coat?

What kind of coat did the frog need?

What kind of coat did the fish need?

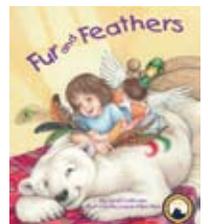
What kind of coat did the snake need?

What did the snail need?

Where did Sophia and her grandmother go the next day?

What did they see on the polar bear?

Do you think that could be true? Why or why not?



Observation Skills: Art Scavenger Hunt

Objective Core Language Arts Integration of Knowledge and Ideas: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a character or setting).

Use illustrations and details in a story to describe its characters, setting, or events.

The illustrator drew all different kinds of plants and animals in each illustration. How many can you find?

How would you describe the habitat shown in the illustration?

What season do you think it is and why?

What are some of the non-living things you see in the habitat?

How do you think some of the plants or animals in the illustration might be using those non-living things?

Are any of the non-living things man made?

If so, how do those man-made objects change the habitat?

Is there water? If so, is it fresh or salty?

What do you think the climate is like? Is it dry like a desert or cold, windy, and snowy like a mountaintop? Does it rain (or snow) all year long or just during some months of the year?

What are some ways animals are helping plants?

What are some ways the animals are using the plants?

Which habitat is similar to where you live?

Have you even been to any habitats like this? If so, when and why?

How close are some of these habitats to where you live?

How far are some of these habitats to where you live?

American lady butterfly

beagle

bumblebee

cardinal

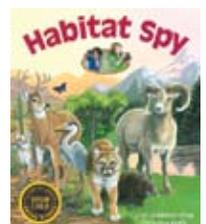
chipmunk

goldfinch

oriole

rabbit

raccoon



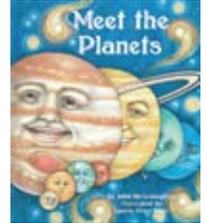
Illustrator Laurie Allen Klein added all kinds of extra things to the art. Descriptions and explanations of who people were, what things are, or even why she used certain colors or layout are explained in the “Answer” section.

Moons:

Callisto: one of Jupiter’s moons
Deimos: one of Mars’ moons
Enceladus: one of Saturn’s moons
Europa: one of Jupiter’s moons
Ganymede: one of Jupiter’s moons
Iapetus: one of Saturn’s moons
Io: one of Jupiter’s moons
Mimas: one of Saturn’s moons
Miranda: one of Uranus’ moons
Oberon & Titania: two of Uranus’ moons
Phobos: one of Mars’ moons
Titan: one of Saturn’s moons
Triton: one of Neptune’s moons

Constellations:

Big and Little Dippers
Cassiopeia
Cepheus the King
Draco the Dragon
Gemini
Leo the Lion



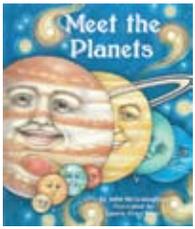
Stonehenge was built between 2900 BC and 1600 BC, probably by the Druids. This ancient group of stone monuments could have been some kind of astronomical observatory or calendar.



Planet symbols in the art

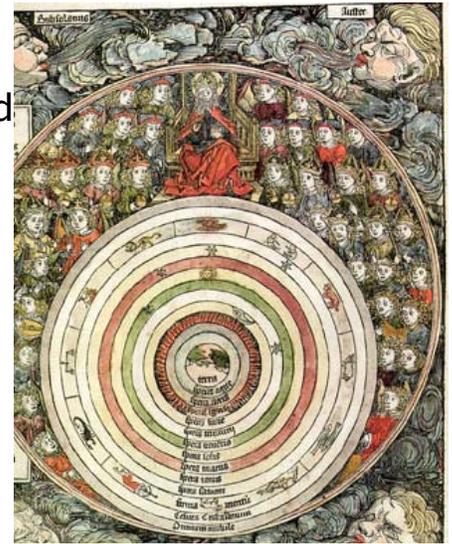
Probes and Spacecrafts

Cassini Space Probe: launched in 2004, this mission is still exploring Saturn and its moons
Huygens Probe : dropped from the Cassini spacecraft and landed on Titan to transmit data
Magellan: US planetary probe to Venus in 1994
Mariner 1: First planetary explorer attempted to fly by Venus in 1962 but veered off course
Messenger: launched in 2004, this mission is currently exploring Mercury
Sojourner: a rover that collected samples and data from the Martian surface in 1977
Venera 14: A Russian probe that landed on Venus in 1982 and sent back photos & data for 57 minutes before melting
Voyager 2: launched in August, 2007, this spacecraft sent back photos of all of the outer planets



The crowd on the introductory illustration was inspired by the engraving done of the Ptolemaic Universe in 1490. Ptolemy believed that the Earth was the center of the universe and that the sun, stars, and planets all revolved around the Earth. Of course, we now know that the sun is the center of our universe.

The illustrator, Laurie Allen Klein, drew several historical figures (see next page) and paid tribute to: Chinese Astronomers who built observatories and made the earliest known observation of a comet about 2,300 BC.



The Mayans: a pre-Columbian culture in Mexico and Central America that built an astronomical observatory around the year 1,000.

Mrs. Klein enjoys science fiction movies and you'll also find some fun aliens scattered throughout the art!



The layout, and general look, of the Venus page illustration is based on Botticelli's "Birth of Venus." Compare and contrast the two.



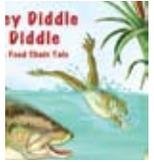
Halley's Comet as seen in the Bayeux Tapestry—an 11th or 12th century tapestry showing artistic depictions of the comet from a variety of different cultures and time periods.

A set of 1,670 on-off pulses was transmitted into space sending a message to any intelligent life form that might be out there somewhere. This number is the result of multiplying two prime numbers, 23 and 73, and the message becomes clear when laid out in 73 rows of 23 columns. With black squares for 1s and white squares for 0s, a pictogram is produced.

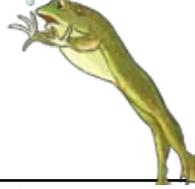
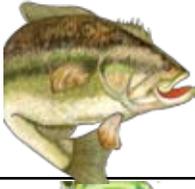
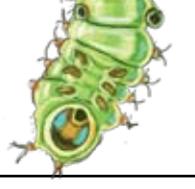
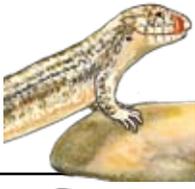
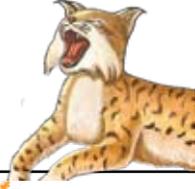


Language Arts & Science: Five Senses

Objective Core Language Literature 4: Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.



Re-read the story and write down any words that relate to the five senses:

| Animal | Touch | Taste | Sight | Smell | Hearing |
|---|-------|-------|-------|-------|---------|
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Language Arts & Science: Basic Needs

Objective: Describe the basic needs of living things and how they are met.

Plants need water, oxygen, food, light, a way to disperse seeds, and space to grow; animals need water, oxygen, food, and shelter/space to grow and reproduce.

Re-read the story and write down any words that relate to how the plants or animal(s) meet their basic needs.

| Plant/ Animal | water | oxygen | food | light | space/seed dispersal |
|--------------------------|--------------|---------------|-------------|--------------|---------------------------------|
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If not mentioned in the text, are there any indications in the illustrations of how these needs are met? Can you describe, draw, or write an explanation of how the needs are met?

Cross-Curricular Vocabulary Activities

Objective Core Language Arts:

Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content.

Identify new meanings for familiar words and apply them accurately (e.g., duck is a bird & the verb to duck). Use words & phrases acquired through conversations, reading/being read to, and responding to texts.

Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade level topic or subject area.

Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.

Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

Use frequently occurring adjectives.

Vocabulary game: This activity is a very general idea and is designed to get children thinking of vocabulary words that will then be used as the beginning vocabulary list for a science lesson.

Select an illustration from the book and give the children a specific length of time (five minutes?) to write down all the words they can think of about the particular subject. It is helpful to project an illustration on a whiteboard. Use eBook or book preview found at www.SylvanDellPublishing.com.

The children's word list should include anything and everything that comes to mind, including nouns, verbs, and adjectives. At the end of the time, have each child take turns reading a word from his/her list. If anyone else has the word, the reader does nothing. However, if the reader is the only one with the word, he/she should circle it. While reading the list, one person should write the word on a flashcard or large index card and post it on a bulletin board or wall.

At the end, the child with the most words circled "wins." And you have a start to your science vocabulary list. Note: if a child uses an incorrect word, this is a good time to explain the proper word or the proper usage.

Glossary/Vocabulary words: Word cards may be used (see Appendix) or have children write on index cards, a poster board, or on a chalkboard for a "word wall." If writing on poster board or chalkboard, you might want to sort words into nouns, verbs, etc. right away to save a step later if using for Silly Sentences. Leaving the words posted (even on a refrigerator at home) allows the children to see and think about them frequently. The glossary has some high-level words. Feel free to use only those words as fit your situation.

Using the Words: The following activities may be done all at once or over a period of several days.

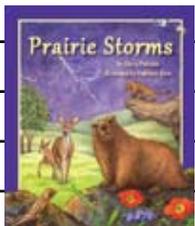
- Sort vocabulary words into nouns, verbs, adjectives, etc. and write what they are on the backs of the cards. When the cards are turned over, all you will see is "noun," etc. (these can then be used for the "silly sentences" on the next page).
- After the cards have been sorted, go over the categories to ensure that all cards have been placed correctly. (Mistakes are a great opportunity to teach!)
- Choose two words from each category and write a sentence for each word.
- Write a story that uses at least ten vocabulary words from the word sort.
- Have children create sentences using their vocabulary words. Each sentence could be written on a separate slip of paper. Have children (individually or in small groups) sort and put sentences into informative paragraphs or a story. Edit and re-write paragraphs into one informative paper or a story.

Silly Sentence Structure Activity: This "game" develops both an understanding of sentence structure and the science subject. Use words from the "word wall" to fill in the blanks. After completing silly sentences for fun, have children try to fill in the proper words by looking for the correct information in the book.

Word Bank

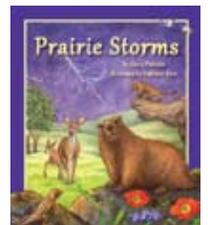
See Glossary for words in Spanish and the definition in English.

| Adjective | Noun | | | Verb |
|-------------|---------------|-----------------------|------------------|-------------|
| bushy | air | ice | snow | bask |
| cloudless | ash | January | snowfall | blow |
| cloudy | bald eagle | July | snowflake | boom |
| dry | bison | June | snowstorm | build |
| fertile | blizzard | land | soil | burn |
| flat | burrowing owl | lesser earless lizard | spring | call |
| frosty | climate | lightning | squall, downpour | coat |
| frozen | cloud | livestock | storm | crash |
| icy | cloudiness | March | summer | depend |
| low | cold front | May | sun | dig |
| muddy | cougar | nest | surface | dump |
| nutritious | December | nitrogen | tail | eat |
| parched | deer | November | thunder | echo |
| puffy | den | nutrient | thunderstorm | emerge |
| rough | desert | October | tornado | flash |
| sandy | drift | plains | tree | flee |
| soft | dust storm | prairie | white-out | flutter |
| stormy | evaporation | prairie chicken | wildfire | fly |
| thick | February | prairie dog | wildlife | freeze |
| treeless | fire | precipitation | wind | gather |
| underground | fog | rain | winter | graze |
| wet | forest | rainbow | | grow |
| white | funnel cloud | red fox | | hunt |
| windy | fur | sandhill cranes | | pass |
| | grass | savanna | | precipitate |
| | grassland | September | | preen |
| | ground | shoot (plant) | | prevent |
| | ground hog | shower | | release |
| | habitat | shrub | | shed |
| | hail | skunk | | stir |
| | hailstorm | sky | | take wing |
| | heat wave | sleet | | thunder |



Cross Curricular: Silly Sentences

1. Prairies, seas of grass, or grasslands are _____
_____ areas of _____ land covered with _____
_____ adjective
_____ noun
2. Some grasslands have _____ grass, some
_____, and some have mixed grasses.
_____ adjective
3. _____ is an important process in grassland
_____ nouns.
4. After plants _____, the _____ provides
_____ to the _____ and nitrogen is released
_____ noun
_____ noun
below ground.
5. As a result, _____ plant shoots that _____
_____ after the burn are more nutritious for _____ and
_____.
_____ adjective
_____ noun
_____ noun
6. Fire also _____s _____s and shrubs from
_____ verb
_____ noun
taking over the grassland.
7. _____ can cause _____, especially if
_____ nouns
_____ noun
weather conditions are _____ and _____.
_____ adjective
_____ adjective
8. Grasslands receive an average of _____ to _____
_____ number
_____ number
inches (about 25 to 100 cm) of _____ each year.
_____ noun
9. Less rain would turn the grassland to _____ and
_____ nouns
more rain would allow trees to grow into _____s.
_____ noun



Language Arts: Word Families & Rhyming Words

Language Arts, Reading Standards: Foundational Skills, Recognize and produce rhyming words.

Word families are groups of words that have some of the same combinations of letters in them that make them sound alike...or rhyme. For example ad, add, bad, brad (Brad), cad, Chad, clad, dad, fad, gad, glad, grad, had, lad, mad, pad, plaid (silent 'i'), sad, shad, and tad all have an "ad" letter combination and rhyme.

- Find and write down rhyming words in the poem.
- Are they in the same word family?
- If so, circle the combination of letters that are the same.
- Can you think of more words in the word family?

Rhyming words are:

and

They are / are not from the same word family.

Other words that rhyme are:

Rhyming words are:

and

They are / are not from the same word family.

Other words that rhyme are:

Rhyming words are:

and

They are / are not from the same word family.

Other words that rhyme are:

Rhyming words are:

and

They are / are not from the same word family.

Other words that rhyme are:

Language Arts: Shades of Meaning

Objective Core Language Arts Vocabulary Acquisition and Use:

Distinguish shades of meaning among verbs differing in manner (e.g., look, peek, glance, stare, glare, scowl) and adjectives differing in intensity (e.g., large, gigantic) by defining or choosing them or by acting out the meanings.

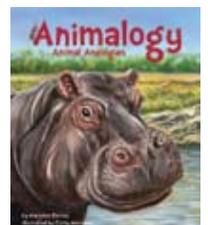
Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms).

Choose words and phrases to convey ideas precisely.

Use the word bank words to fill in the sentences or to answer the questions.

Word Bank

| | | |
|---------------------|--------------------------|-----------------------|
| bark | big, bigger, biggest | build |
| burrow | buzz | chirp |
| cool | crawl | dart |
| dash | dig | diurnal |
| dry | feathery | flit |
| float | fly | furry |
| giant | glide | growl |
| grunt | hard | hiss |
| hoot | hop | hot |
| hum | icy | jump |
| light | little | long, longer, longest |
| moist | new | nip |
| nocturnal | old | ragged |
| roar | rocky | rough |
| run | scamper | scratch |
| scurry | sing | slime-covered |
| slow | small, smaller, smallest | smooth |
| snarl | soar | soft |
| spin | squeak | swim |
| tall/taller/tallest | walk | wet |
| whistle | young | yowl |



1. If a dog barks, a lion roars, and an owl hoots; what does a mouse do? What about a bee? What are some other words for the sounds animals make?

2. If a bat flits and an eagle soars; what are they both doing? What are some other words that could mean that too?



3. If the robin is small, describe the chick and the bee.

4. What are some words to compare or describe the three bears?

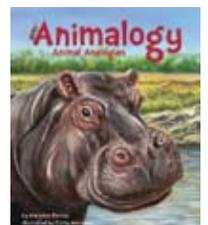


5. If a bear is furry, and a fish is slime-covered, what is a bird?

6. If a bird flies and a mouse scurries, what does a fish do? What are some other words for how animals move? Can you act out the differences?



7. If bats are active at night, or nocturnal, what is an animal called that is active during the day?



Language Arts: Sequence Sentence Strips

Cut into sentence strips, laminate if desired, and place in a “center.” Have children put the events in order. Children may work alone or in small groups. Cards are in order but should be mixed up when cut apart.

Objective Core Language Arts: Use temporal words and phrases to signal event order. Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.
Sequencing, chronological order

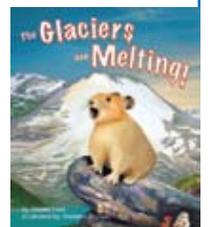
A drop of water dripped on Peter Pika’s head.

Peter Pika told Tammy Ptarmigan.

Tammy Ptarmigan told Sally Squirrel.

Sally Squirrel told Mandy Marmot.

Mandy Marmot told Harry Hare.



All five went to tell the Mountain Monarch.

Wiley Wolverine suggested they take a shortcut but led them into his den.

The Mountain Monarch stopped the five from going into Wiley Wolverine's den.

Mountain Monarch knocked Wiley Wolverine over the side of the mountain. Wiley Wolverine ran away.

The five friends told the Mountain Monarch that the glaciers are melting.

Mountain Monarch said there's nothing the animals can do. Peter Pika asked who can do something.

Word Search

Find the hidden words. Even non-reading children can match letters to letters to find the words! Easy—words go up to down or left to right (no diagonals). For older children, identify the coordinates of the first letter in each word (number, letter).

| | A | B | C | D | E | F | G | H | I | J |
|----|---|---|---|---|---|---|---|---|---|---|
| 1 | A | I | N | S | E | C | T | C | A | M |
| 2 | B | U | T | T | E | R | H | S | Z | O |
| 3 | D | O | J | I | P | D | O | V | K | A |
| 4 | O | B | U | T | T | E | R | F | L | Y |
| 5 | M | I | I | M | O | N | A | R | C | H |
| 6 | E | N | C | O | J | E | X | D | I | E |
| 7 | N | G | E | L | H | C | E | U | T | A |
| 8 | I | E | A | T | O | T | W | E | X | D |
| 9 | W | I | N | G | S | A | P | U | P | A |
| 10 | F | L | Y | O | S | R | E | Q | U | N |

BUTTERFLY

THORAX

JUICE

MOLT

PUPA

INSECT

HEAD

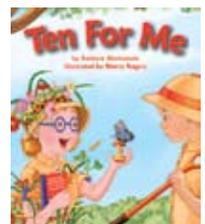
ABDOMEN

MONARCH

NECTAR

WINGS

EAT



Compare/Contrast Butterflies

Use the information on the next ten pages to compare and contrast the different butterflies mentioned in the book.

Describe the eggs. What color are they?

Describe the host plant (where the eggs are).

What do the caterpillars look like?

What do the pupas look like?

What do the adult butterflies look like?

Compare the butterflies by wing span size.



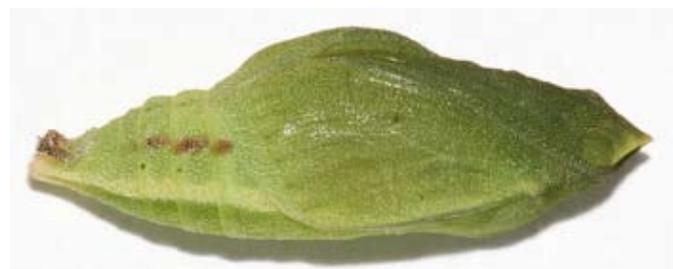
Maps from www.Gardenswithwings.com

size data from www.butterfliesandmoths.org

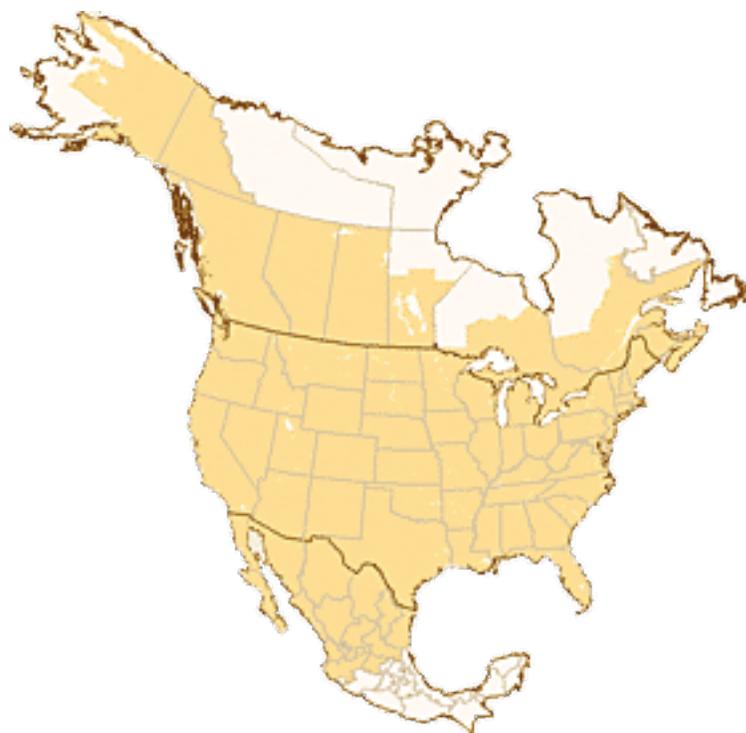
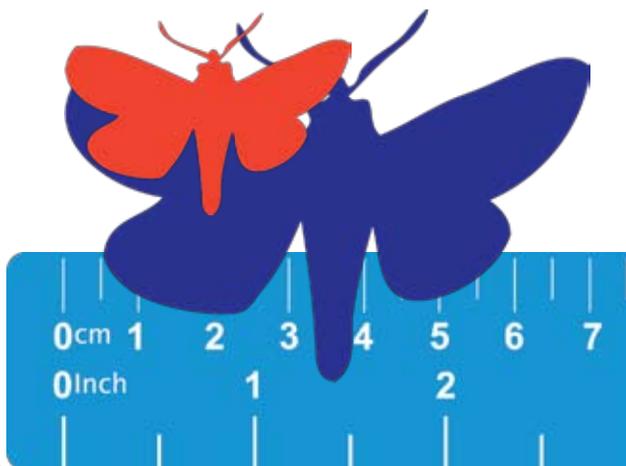
photos from various non-copyrighted internet sources

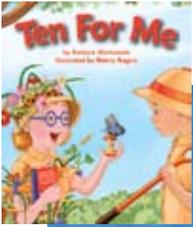
Using these maps as a reference, color the areas where these animals live on the blank map (in appendix). Do any butterflies live in the same state or province as you?

Clouded Sulphur



1 1/2 - 2 3/4 inches (3.8 - 7 cm)

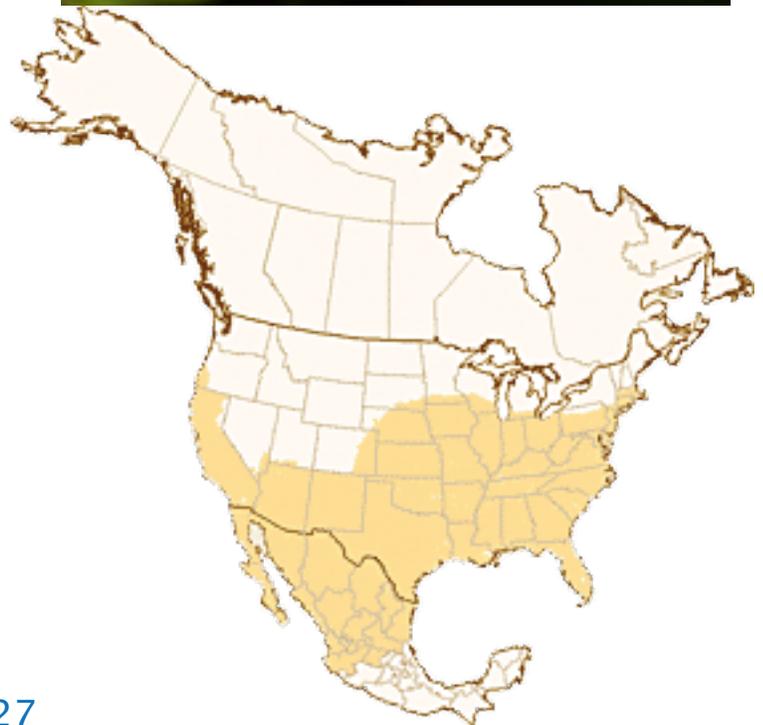
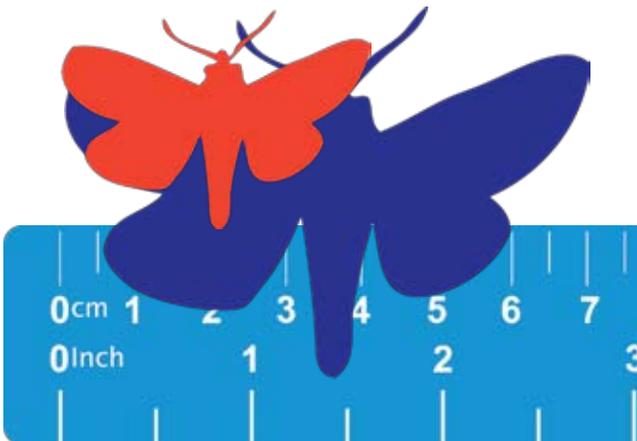




Common Buckeye



1 5/8 - 2 3/4 inches (4.2 - 7 cm)



Compare and Contrast: Glaciers

Scientists are studying glaciers and how fast they are melting. Just as you use the scientific method in school, scientists use scientific methods too.

They have questions to answer. Can you think of any other questions they might want to answer about melting glaciers?

- What glaciers are melting?
- How fast are the glaciers melting?
- What do some of the melting glaciers have in common?
- Why are the glaciers melting?
- What, if anything, can we do to slow or prevent the glaciers from melting?
- How could melting glaciers affect plants and animals that live on earth?
- How could melting glaciers affect rising water levels (lakes, rivers, and the oceans).

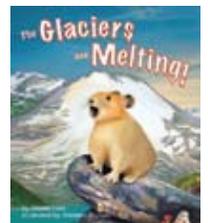
They must be able to measure changes. But how can they measure something from years ago? They can't go back in time to measure the glaciers of old. Instead, they are using old photographs to compare and contrast the historical photos to the current conditions.

Pick one of glaciers documented with historical and recent photo (found on the next several pages or go to:

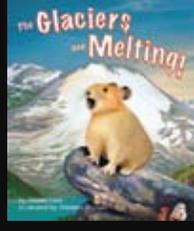
USGS Repeat Photography Project at Glacier National Park or
USGS Repeat Photography Project of Alaskaa Glaciers

Write (or tell for younger children) a description of the historical glacier comparing and contrast to the recent photo of the glacier. Remember to include the name of the glacier, where it is, and when the historical photo was taken.

If you were a scientist studying glaciers today, can you think of other ways and tools you might use to explore the glaciers?

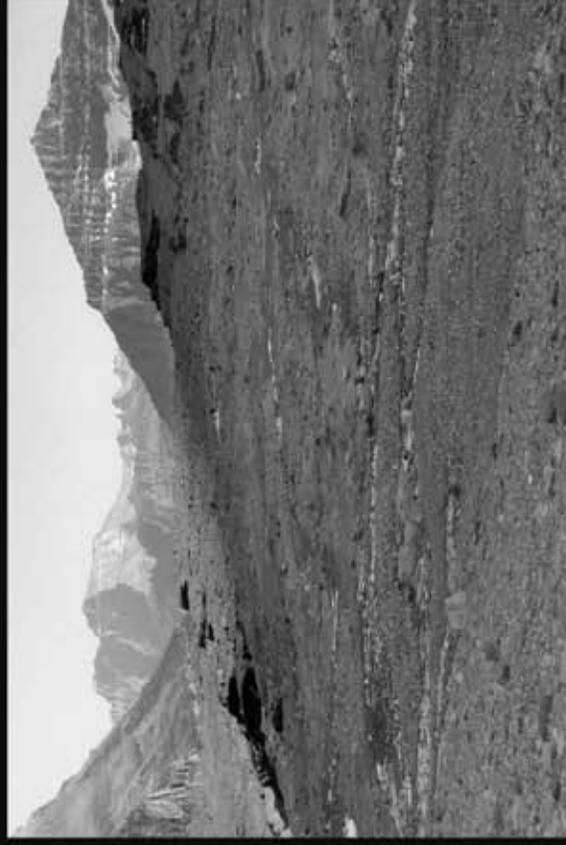


Boulder Glacier Glacier National Park, MT



1932

*T. J. Hileman photo
courtesy of GNP archives*



1988

*Jerry DeSanto photo
K. Ross Toole Archives
Mansfield Library, UM*



USGS Repeat Photography Project
<http://nrm-sc.usgs.gov/repeatphoto/>



Edible Sorting and Classifying Activity

Objective Core Language Arts Vocabulary Acquisition and Use: Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.

Gather a cup of edible “sorting items.” For example:

- As many different kinds of M&Ms as you can find
- Chocolate & peanut butter chips
- Hershey Kisses
- Peanuts or other type of nuts



Ask the children to sort the items into groups. There is no right and wrong, only what makes sense to the child. When finished, ask the child:

What feature or attribute (color, size, ingredient, etc.) did you use to sort the items?

- Are there some items that fit more than one group or don't fit any group?
- If so, how did the child decide which attribute was more important?
- 1. How are various objects similar and different?
- Is it easy to sort or were there some items that were a little confusing?

If more than one person did this, did everyone sort by the same attribute? To extend the learning, graph the attributes used to sort the items (blank graph below).

Graph the attributes that children used to sort their items.

What was the most common attribute (size, shape, color, etc.) used?

| | | | | |
|-----------|--|--|--|--|
| 10 | | | | |
| 9 | | | | |
| 8 | | | | |
| 7 | | | | |
| 6 | | | | |
| 5 | | | | |
| 4 | | | | |
| 3 | | | | |
| 2 | | | | |
| 1 | | | | |
| attribute | | | | |

Classifying Animals

Objective: Scientific classification

Just as we sort candy, scientists sort all living things into groups to help us understand and connect how things relate to each other. Scientists ask questions to help them sort or classify animals.

Based on the answers to the questions, scientists can sort the living organisms. The first sort is into a Kingdom. There are five commonly accepted Kingdoms: Monera, Protista, Fungi, Plantae, and Animalia. All of the living things in this book belong to Animalia or the Animal Kingdom.

The next big sort is into a Phylum. One of the first questions that a scientist will ask is whether the animal has (or had at some point in its life) a backbone. If the answer is “yes,” the animal is a vertebrate. If the answer is “no,” the animal is an invertebrate.

Each Phylum is broken down into Classes, like mammals, birds, reptiles, fish, insects, or gastropods (snails). Then each class can be broken down even further into orders, families, genus and species, getting more specific.

The scientific name is generally in Latin or Greek and is the living thing’s genus and species. People all over the world use the scientific names, no matter what language they speak. Most living organisms also have a common name that we use in our own language.

Some questions scientists ask:

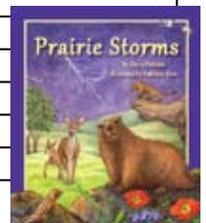
- Does it have a backbone?
- What type of skin covering does it have?
- Does it have a skeleton? If so, is it inside or outside of the body?
- How many body parts does the animal have?
- Does it get oxygen from the air through lungs or from the water through gills?
- Are the babies born alive or do they hatch from eggs?
- Does the baby drink milk from its mother?
- Is it warm-blooded or cold-blooded?

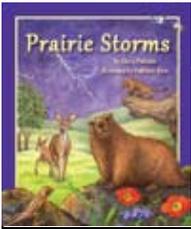
Using what you know, and information and pictures in the book, see how many Animal Chart squares you can fill in for each animal.

Animal Chart

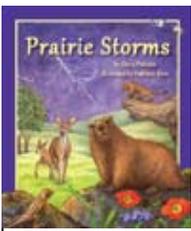
Objective Science: Living things have different structures and behaviors that allow them to meet their basic needs in their environment.

| | Animals |  |  |
|--|--------------------------------|--|---|
| Appendages | legs (how many) | | |
| | flippers/fins | | |
| | wings | | |
| | tail/no tail | | |
| | horns/antlers | | |
| Feet or hands: if they have; may have more than one | claws | | |
| | web | | |
| | toes | | |
| | opposable thumbs/toes | | |
| | hooves | | |
| Movement: may do more than one | walks/runs | | |
| | crawls | | |
| | flies | | |
| | slithers | | |
| | swims | | |
| | climbs | | |
| | hops | | |
| Backbone | backbone/vertebrate | | |
| | no backbone/invertebrate | | |
| Skeleton | inside skeleton (endoskeleton) | | |
| | outside skeleton (exoskeleton) | | |
| | no skeleton | | |
| Body covering | hair/fur/whiskers/quills | | |
| | feathers | | |
| | dry scales or bony plates | | |
| | moist scales | | |
| | smooth, moist skin | | |
| | hard outer shell | | |
| | hard outer covering | | |
| Color/patterns | stripes or spots | | |
| | mostly one color | | |
| | skin color changes | | |
| | bright, vivid colors | | |
| Gets oxygen | lungs | | |
| | gills | | |
| Body temperature | warm-blooded (endothermic) | | |
| | cold-blooded (ectothermic) | | |
| Babies | born alive | | |
| | hatch from eggs | | |
| | born alive or hatch from eggs | | |
| Metamorphosis | complete | | |
| | incomplete | | |
| | none | | |
| Teeth | sharp | | |
| | flat | | |
| | no teeth (bill/beak) | | |
| Food | plant eater (herbivore) | | |
| | meat eater (carnivore) | | |
| | both (omnivore) | | |





| | Animals |  |  |
|--|--------------------------------|--|---|
| Appendages | Legs (how many) | | |
| | flippers/fins | | |
| | wings | | |
| | tail/no tail | | |
| | horns/antlers | | |
| | claws | | |
| Feet or hands: if they have, may have more than one | web | | |
| | toes | | |
| | opposable thumbs/toes | | |
| | hooves | | |
| Movement: may have more than one | walks/runs | | |
| | crawls | | |
| | flies | | |
| | slithers | | |
| | swims | | |
| | climbs | | |
| | hops | | |
| Backbone | backbone/vertebrate | | |
| | no backbone/invertebrate | | |
| Skeleton | inside skeleton (endoskeleton) | | |
| | outside skeleton (exoskeleton) | | |
| | no skeleton | | |
| Body covering | hair/fur/whiskers/quills | | |
| | feathers | | |
| | dry scales or bony plates | | |
| | moist scales | | |
| | smooth, moist skin | | |
| | hard outer shell | | |
| | hard outer covering | | |
| Color/patterns | stripes or spots | | |
| | mostly one color | | |
| | skin color changes | | |
| | bright, vivid colors | | |
| Gets oxygen | lungs | | |
| | gills | | |
| Body Temperature | warm-blooded (endothermic) | | |
| | cold-blooded (ectothermic) | | |
| Babies | born alive | | |
| | hatch from eggs | | |
| | born alive or hatch from eggs | | |
| Metamorphosis? | complete | | |
| | incomplete | | |
| | none | | |
| Teeth | sharp | | |
| | flat | | |
| | no teeth (bill/beak) | | |
| Food | plant eaters (herbivore) | | |
| | meat eater (carnivore) | | |
| | both (omnivore) | | |



| | Animals |  |  |
|--|--------------------------------|--|---|
| Appendages | Legs (how many) | | |
| | flippers/fins | | |
| | wings | | |
| | tail/no tail | | |
| | horns/antlers | | |
| Feet or hands: if they have, may have more than one | claws | | |
| | web | | |
| | toes | | |
| | opposable thumbs/toes | | |
| | hooves | | |
| Movement: may have more than one | walks/runs | | |
| | crawls | | |
| | flies | | |
| | slithers | | |
| | swims | | |
| | climbs | | |
| | hops | | |
| Backbone | backbone/vertebrate | | |
| | no backbone/invertebrate | | |
| Skeleton | inside skeleton (endoskeleton) | | |
| | outside skeleton (exoskeleton) | | |
| | no skeleton | | |
| Body covering | hair/fur/whiskers/quills | | |
| | feathers | | |
| | dry scales or bony plates | | |
| | moist scales | | |
| | smooth, moist skin | | |
| | hard outer shell | | |
| Color/patterns | stripes or spots | | |
| | mostly one color | | |
| | skin color changes | | |
| | bright, vivid colors | | |
| Gets oxygen | lungs | | |
| | gills | | |
| Body Temperature | warm-blooded (endothermic) | | |
| | cold-blooded (ectothermic) | | |
| Babies | born alive | | |
| | hatch from eggs | | |
| | born alive or hatch from eggs | | |
| Metamorphis? | complete | | |
| | incomplete | | |
| | none | | |
| Teeth | sharp | | |
| | flat | | |
| | no teeth (bill/beak) | | |
| Food | plant eaters (herbivore) | | |
| | meat eater (carnivore) | | |
| | both (omnivore) | | |

Vertebrate Classes

Mammals:

hair, fur, whiskers, or quills at some point during their lives
backbone (vertebrate)
inside skeleton (endoskeleton)
lungs to breathe
most give birth to live young
produce milk to feed young
warm-blooded

Birds:

feathers
backbone (vertebrate)
inside skeleton (endoskeleton)
lungs to breathe
hatch from hard-shelled eggs
warm-blooded

Reptiles:

dry scales or plates
backbone (vertebrate)
inside skeleton (endoskeleton); most turtles also have a hard outer shell
lungs to breathe
most hatch from leathery eggs
cold-blooded

Warm-blooded animals make their own heat and have a constant body temperature

Cold-blooded animals' body temperature comes from their surroundings

Fish:

most have scales covered with a thin layer of slime
backbone (vertebrate)
inside skeleton (endoskeleton)
gills to breathe
babies are either born alive or hatch from jellylike eggs
cold-blooded

Amphibians:

soft, moist skin
backbone (vertebrate)
inside skeleton (endoskeleton)
most hatchlings (jellylike eggs) are called larvae or tadpoles and live in water, using gills to breathe
as they grow, they develop legs and lungs and move onto land
cold-blooded

Using the sorting cards, sort the animals into their class.

Common Invertebrates

Arthropods: Insects:

- hard outer covering
- no backbone (invertebrate)
- outside skeleton (exoskeleton)
- adults have 3 body parts: head, thorax & abdomen
- mouthparts adapted for chewing, biting, sucking and lapping
- breathe through tracheae
- compound eyes
- 3 pairs of legs
- usually 2 pairs of wings and 1 pair of antennae
- most hatch from eggs
- metamorphosis: none, incomplete, or complete
- cold-blooded

Mollusks

Bi-valves:

- have a two-part shell with a hinge to open/close
- no backbone (invertebrate)
- outside skeleton (exoskeleton)
- hatch from eggs
- cold-blooded
- marine and freshwater
- symetry:

Mollusks

Gastropods (Snails):

- most have hard shells
- no backbone (invertebrate)
- outside skeleton (exoskeleton)
- hatch from eggs
- cold-blooded

Arthropod

Arachnia (Spiders):

- no backbone
- one or two body segments
- pincers or fangs near mouth
- 4 pairs of legs
- no antennae

Arthropod

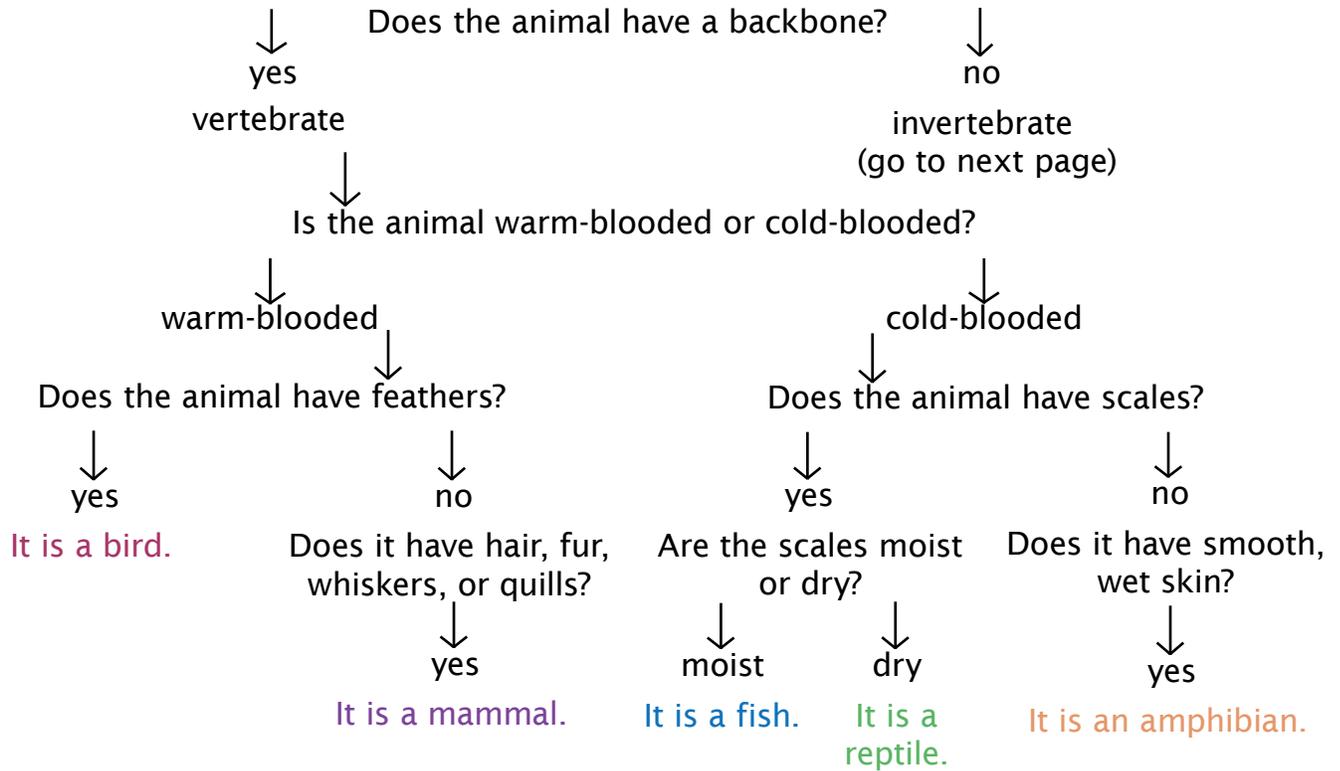
Crustaceans (Crabs):

- hard outer covering
- no backbone (invertebrate)
- outside skeleton (exoskeleton)
- mouthparts adapted for chewing
- 5 or more pairs of legs
- claws
- 2 pairs of antennae
- 2 compound eyes on stalks
- adults have 2 or 3 body segments
- hatch from eggs
- cold-blooded

Dichotomous (Yes/No) Key

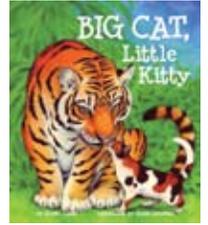
Objective: using a "yes/no" (dichotomous) key, sorting, classification

Use the information found in the book to match the animal to its classification.
Answers are upside down.



Compare/Contrast: Animal and Human Senses

Compare and contrast cat and human body parts used for senses.



to smell



to feel



to hear



to see



Animal Sorting Cards

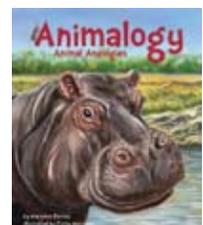
Sorting: Depending on the age of the children, have them sort cards by:

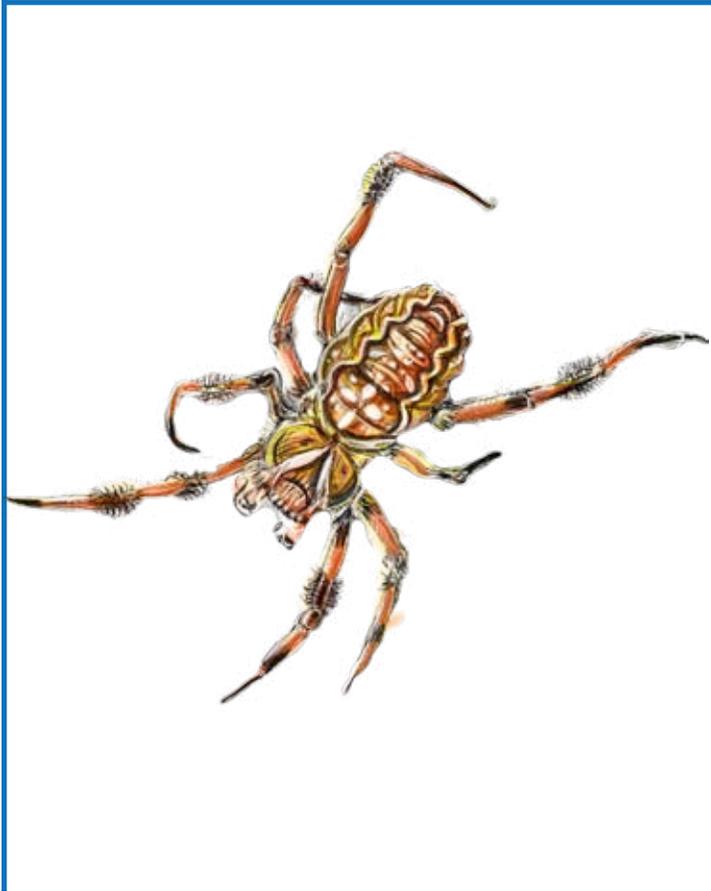
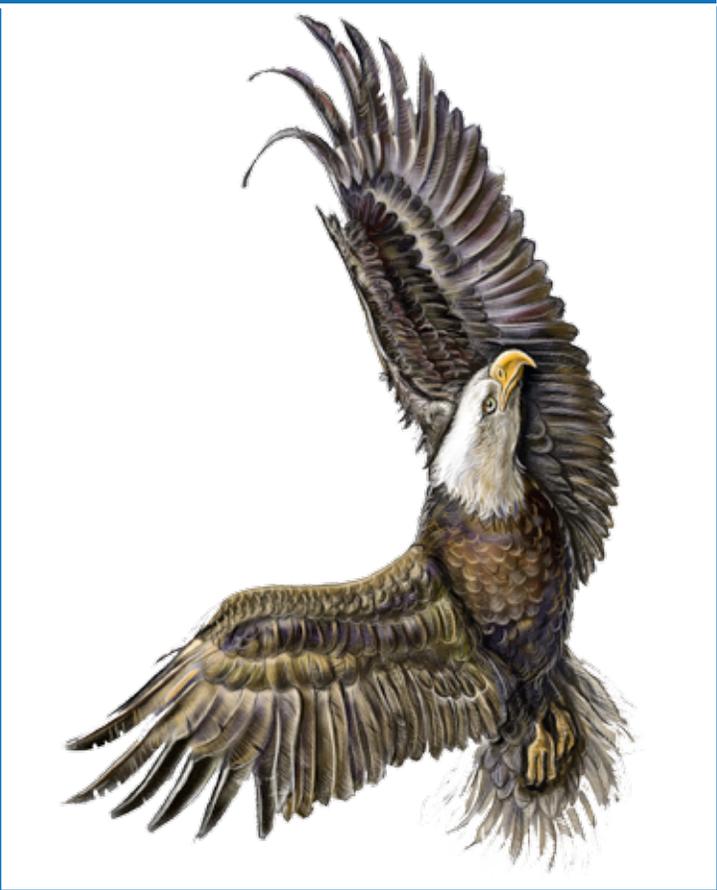
| | |
|---|-------------------------|
| where the animals live (habitat) | tail, no tail |
| number of legs (if the animals have legs) | colors or skin patterns |
| how they move (walk, swim, jump, or fly) | animal class |
| type of skin covering (hair/fur, feathers, scales, moist skin) | |
| what they eat (plant eaters/herbivores, meat eaters/carnivores, both/omnivores) | |

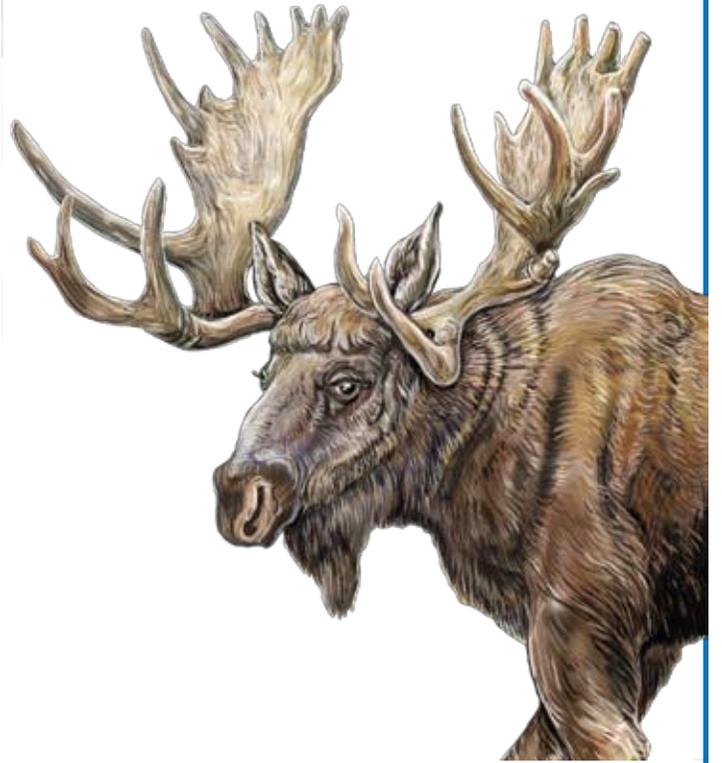
Memory Card Game: Make two copies of each of the sorting card pages and cut out the cards. Mix them up and place them face down on a table. Taking turns, each player should turn over two cards so that everyone can see. If the cards match, he or she keeps the pair and takes another turn. If they do not match, the player should turn the cards back over and it is another player's turn. The player with the most pairs at the end of the game wins.

Who Am I? Copy and cut out the cards. Poke a hole through each one and tie onto a piece of yarn. Have each child put on a "card necklace" without looking at it so the card hangs down the back. The children get to ask each person one "yes/no" question to try to guess "what they are." If a child answering the question does not know the answer, they should say they don't know. This is a great group activity and a great "ice-breaker" for children who don't really know each other.

Charades: One child selects a card and must act out what the animal is so that the other children can guess. The actor may not speak but can move like the animal, can imitate body parts or behaviors. For very young children, you might let them make the animal sound. The child who guesses the animal becomes the next actor.

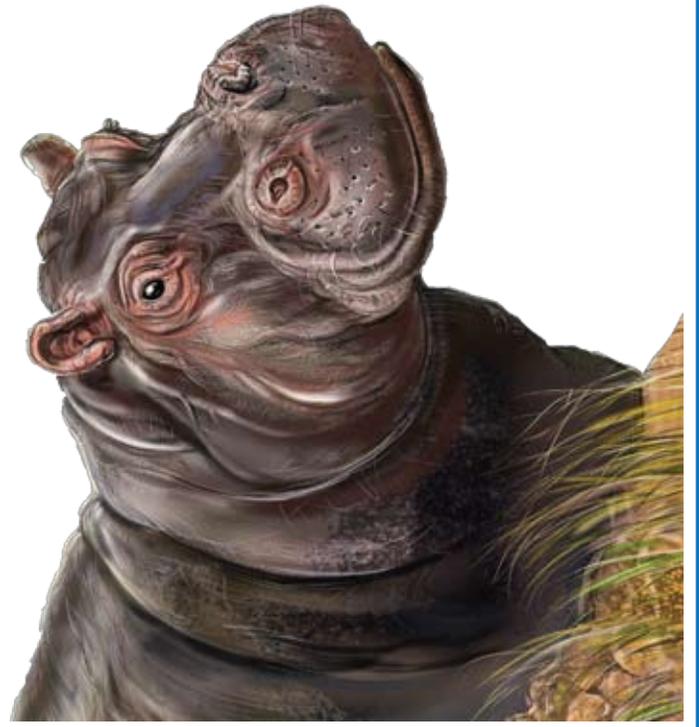


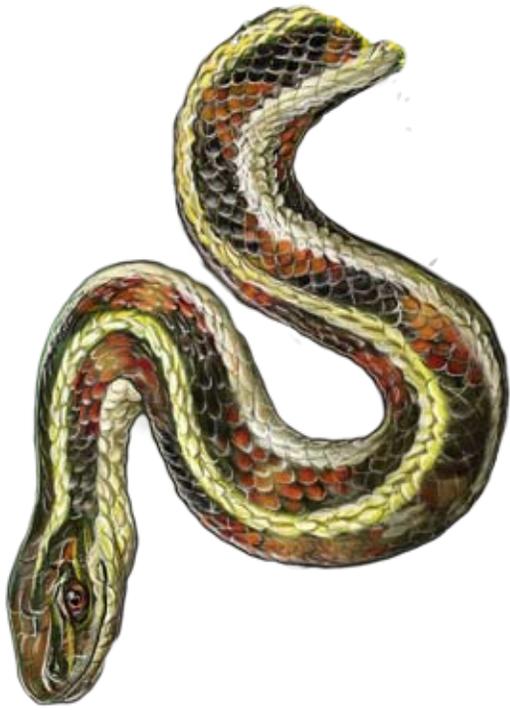








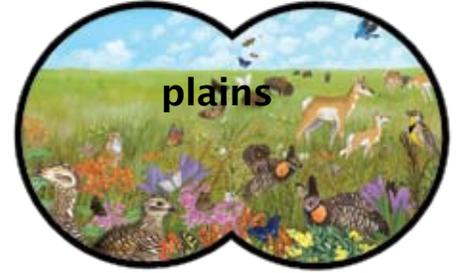




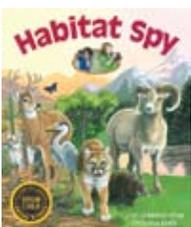
Match the Habitats

Match the habitat to its description, some of the plants and animals you might find there, and the adaptations living things might need to live there.

Objective: The student will develop knowledge of organisms in their environment.



- 1 This habitat can be hot or cold but it is always dry. Many plant and animal bodies store water so they don't have to drink every day. Many animals that live in this hot habitat stay out of the sun during the day and are active at night when it is cooler.
- 2 This small, grassy field can be found inside other, larger habitats (mountains, forest) or next to rivers, ponds, or even your backyard. The soil is usually moist and you'll find lots of plant-eating animals.
- 3 The ocean meets the land in this habitat. It's a hard place to live because sandy land moves around; depending on the tide, it can be under water or dry; it can be very windy; and the water is salty.
- 4 This moving body of freshwater usually starts at a "headwater" in the mountains and travels all the way to an ocean. It is usually narrow and fast moving at the start but as it approaches the ocean, it gets wider and moves more slowly.
- 5 This habitat goes by other names too (prairie, savanna, grassland, steppe, or pampas). The most common plant is grass and there aren't many trees. Large plant-eating mammals can be found here.



Answers: 1. desert; 2. meadow; 3. beach; 4. river; 5. plains

Adaptations

Adaptations help animals to live in their habitat: to get food and water, to protect themselves from predators, to survive weather, and even to help them make their homes. Here are a few different types of adaptations.

Objective: Science observing and comparing external features of plants and of animals that may help them grow, survive, and reproduce in their habitat.

Examine interrelationships among plants, animals, and their environment.

Physical Adaptations

Use the illustrations in the book to see how many physical adaptations you can see for each animal.

body parts

teeth—depends on type of food eaten
feet, flippers, fins—ability to move
placement of eyes
gills, lungs, or other—how does the animal get oxygen
ears—or how the animal hears/senses

body coverings

hair or fur
feathers
scales
moist skin

camouflage and protection

color of skin or pattern to blend into background
mimicry: pretending to be something else to fool predators
poisonous or stinky smells

Behavioral Adaptations

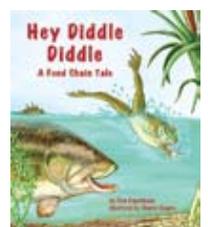
instinct: behaviors or traits that the animals are born with
learned behavior: traits that animals learn to improve their chances of survival or to make their life easier
social groups versus solitary living
communication with other animals
defense/camouflage
reaction to cycles (day/night, seasons, tides, etc.)
migration: the seasonal movement of animals from one location to another
hibernation: a long, deep sleep in which the animal's breathing and heartbeat are slower than usual

Physical or Behavioral?

Objective: Science observing and comparing external features of plants and of animals that may help them grow, survive, and reproduce in their habitat.

Circle whether you think the adaptation is physical (P) or behavioral (B):

1. P/B The beetle has six legs to help him go.
2. P/B The snake slithers along the ground.
3. P/B The bird has feathers to help it fly.
4. P/B The frog swims in water and hops on land.
5. P/B The fish has gills.
6. P/B The lizard basks in the sun to get warm.
7. P/B The caterpillar nibbles on leaves.
8. P/B The bobcat has fur to keep it warm.

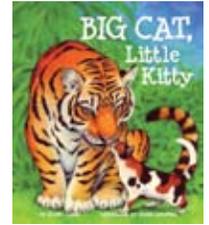


Learned or Inherited?

Objective: Science: identifying that some behaviors are learned and some behaviors are instinctive.

Learned behavior: Behavior that is obtained by observing, practicing, or experimenting.

Inherited behavior: Behavior received from parents and ancestors through genetics; instinct; born knowing it.



Circle whether you think the behavior is learned or inherited:

- | | | |
|--|---------|-----------|
| 1. A dog barks, a duck quacks. | learned | inherited |
| 2. A dog sits when told to. | learned | inherited |
| 3. A human baby cries. | learned | inherited |
| 4. Animals migrate (birds, butterflies, whales). | learned | inherited |
| 5. People smile or dogs wag tails when happy. | learned | inherited |
| 6. Cats mark their territory (scratching, etc.). | learned | inherited |
| 7. Pet cats meow. | learned | inherited |
| 8. Cats quietly sneak up on prey. | learned | inherited |
| 9. Lions roar. | learned | inherited |
| 10. Cats chase prey. | learned | inherited |

Objective: Science observing and comparing external features of plants and of animals that may help them grow, survive, and reproduce in their habitat

Examine interrelationships among plants, animals, and their environment.

Pick an animal from the book and answer the following questions:

My animal is:

Where (in what kind of habitat) does your animal live?

What is one of its physical adaptations and how does it help the animal live in its environment?

What is another of its physical adaptations and how does it help the animal live in its environment?

What is another of its physical adaptations and how does it help the animal live in its environment?

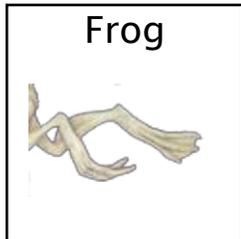
What behavioral adaptations (if any) were mentioned in the story?

Match the Feet Adaptations

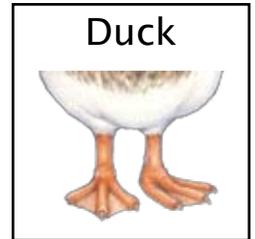
Objective: Science observing and comparing external features of plants and of animals that may help them grow, survive, and reproduce in their habitat

Examine interrelationships among plants, animals, and their environment.

The shape and kind of feet animals have are another adaptation to help animals live in their environment. Can you match the feet adaptations to the animals that use them?



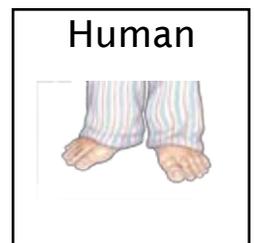
1. I don't have any feet but I use my tail to help me swim.



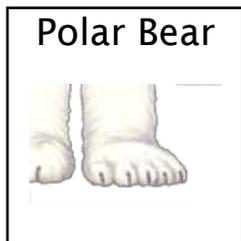
2. I have five toes on each foot that help me stand and walk. Because I don't have fur to keep me warm, I use socks and shoes.



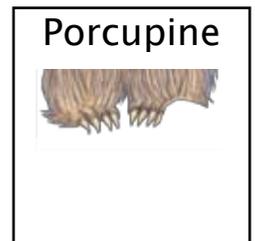
3. My feet are very wide so I don't sink into snow when I walk. I even have fur on the bottom of my feet to keep me warm!



4. I have long, sharp, curved claws to help me climb trees and to strip bark from trees so I can eat.

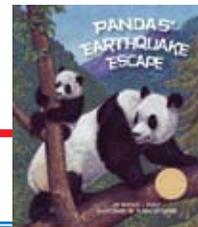


5. My back feet have webs to help me swim, my front feet do not have webs for jumping on land.



6. I have webbed feet to help me swim.





endangered

my definition

my drawing

loss of habitat

my definition

my drawing

earthquake

my definition

my drawing

aftershock

my definition

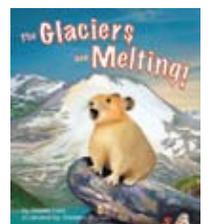
my drawing

True or False?

Objective: This section is frequently used to try to address common misconceptions about the subject matter of the book.

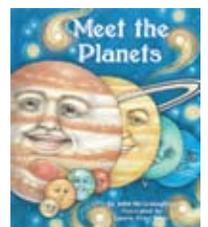
Circle whether you think the statement is true or false:

1. T/F Glaciers are like a frozen lake and form over a few really cold nights.
2. T/F Glaciers are sometimes called rivers of ice because they form when rivers freeze.
3. T/F Rocks carried by glaciers caved out valleys.
4. T/F Rocks and sediment carried by glaciers built up some areas of land (moraines).
5. T/F The sea level could rise as glaciers melt.
6. T/F Most of the earth's fresh water (the water we drink and need to live) is frozen in glaciers.
7. T/F Most of the earth's fresh water (the water we drink and need to live) is in the ocean.
8. T/F Glaciers form anywhere it snows.
9. T/F Glacial ice is the same as ice cubes we get out of our freezers.
10. T/F Moving glaciers can make noises.

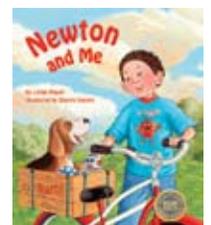


Circle whether you think the statement is true or false:

1. T/F The sun, moon, and other planets all revolve around the Earth.
2. T/F The Earth is the largest planet in the solar system.
3. T/F Our month comes from the length of time it takes the Earth to revolve around the moon.
4. T/F All inner planets are rocky and have oceans.
5. T/F All outer planets are rocky and have rings.
6. T/F Humans could probably live on Mars.
7. T/F Not all planets have moons.
8. T/F Planets, their moons, and the sun are the only thing in the solar system.
9. T/F The sun is a star that gives us heat and light.
10. T/F Our year comes from the amount of time it takes the Earth to rotate around the Sun.



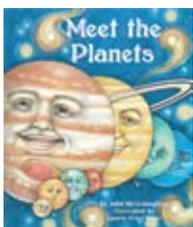
1. _____ The only “natural” motion is for an object to be at rest.
2. _____ If an object is at rest, no forces are acting on the object.
3. _____ Objects can move in different directions and at different speeds.
4. _____ Motion is the change in an object’s direction and speed relative to objects around it (reference points).
5. _____ Frictional forces are due to irregularities in surfaces moving past each other.
6. _____ Objects move in straight, round, or back-and-forth motions.
7. _____ An object’s position can be compared to other objects or to the background.
8. _____ Large objects exert a greater force than small objects.
9. _____ An object’s motion can be described by tracing and measuring its position over time.
10. _____ A force is a push or a pull that changes the motion, direction, or shape of an object.
11. _____ A pull moves something towards you.
12. _____ A rigid solid cannot be compressed or stretched.
13. _____ Only animate objects can exert a force. Thus, if an object is at rest on a table, no forces are acting upon it.
14. _____ A push moves something away from you.
15. _____ The position and motion of objects can be changed by pushing/pulling. The size of change depends on the strength of push or pull.
16. _____ Force is a property of an object. An object has force and when it runs out of force, it stops moving.
17. _____ The motion of an object is always in the direction of the net force applied to the object.
18. _____ A force is needed to keep an object moving with a constant speed.
19. _____ Friction always hinders motion. Thus, you always want to eliminate friction.
20. _____ Friction is a force that slows or stops motion.
21. _____ Time is defined in terms of its measurement.
22. _____ The location of an object can be described by stating its distance from a given point (ignoring direction).



Which Planet?

Can you identify the planets? The information is found in the book:

1. Which planet is so light it could float?
2. Which planet has winds swirling at over 1,000 mph (note that hurricane force winds start at 74 mph...).
3. Which planet is tilted sideways?
4. Which planet looks red from its iron-rich soil?
5. Which planet has given life to everything from dinosaurs to daisies?
6. Which planet has a red spot the size of two Earths?
7. Which planet is often mistaken for a star?
8. Which planet is not too hot, not too cold, it's just right?
9. Which planet is slanted?
10. Which planet's existence was predicted by mathematicians before it was seen through a telescope?
11. Which planet is named after the Roman god of agriculture (hint: one of our weekend days was named after this same god)?
12. Which planet is named after the speedy messenger of the Roman gods?
13. Which planet is named after the Roman god of war?
14. Which planet was named after the Roman king of the gods?
15. Which planet is named after the Roman god who was Jupiter's grandfather and Saturn's father?



Wind Charts

There are two different scales that relate to wind and wind speed.

The Beaufort Wind Force Scale was created by British Rear-Admiral Sir Francis Beaufort in 1805. Before that time, one sailor might describe wind speeds as “breezy” while another sailor might describe the same winds as “a strong breeze.” Since they didn’t have anemometers (a tool used to measure wind speeds), the original scale allowed sailors to measure speeds equally according to the effects of the wind on the sea and land. The original scale stopped as soon as there were hurricane force winds.

The Saffir-Simpson Scale was created by Herbert Saffir (an engineer) and Bob Simpson (the director of the US National Hurricane Center) and put into use in the early 1970s. This scale breaks hurricanes into five separate categories and describes the potential damage that may occur.

If you can feel wind felt on exposed skin and leaves rustle, the wind speed is probably between ? kilometers and miles per hour.

What is the wind speed for a gale?

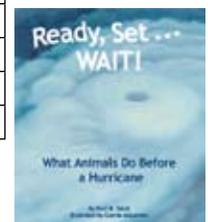
Are the winds in a gale higher than or less than the winds in a hurricane?

Are winds in a storm higher than or less than the winds in a gale?

If the wind speed is a “strong breeze,” what is the wind speed in kilometers per hour and miles per hour?

What is the minimum wind speed per hour (kilometers and miles) for a hurricane?

| Scale | # | Description | Sustained Wind speed | |
|----------------------|----|-------------------------------------|----------------------|-----------|
| | | | km/h | mph |
| Beaufort Scale | 0 | Calm | < 1 | < 1 |
| Beaufort Scale | 1 | Light air | 1 - 5 | 1 - 3 |
| Beaufort Scale | 2 | Light breeze | 6 - 11 | 3 - 7 |
| Beaufort Scale | 3 | Gentle breeze | 12 - 19 | 8 - 12 |
| Beaufort Scale | 4 | Moderate breeze | 20 - 28 | 13 - 17 |
| Beaufort Scale | 5 | Fresh breeze | 29 - 38 | 18 - 24 |
| Beaufort Scale | 6 | Strong breeze | 39 - 49 | 25 - 30 |
| Beaufort Scale | 7 | High wind, Moderate gale, Near gale | 50 - 61 | 31 - 38 |
| Beaufort Scale | 8 | Gale, Fresh gale | 62 - 74 | 39 - 46 |
| Beaufort Scale | 9 | Strong gale | 75 - 88 | 47 - 54 |
| Beaufort Scale | 10 | Storm, Whole gale | 89 - 102 | 55 - 63 |
| Beaufort Scale | 11 | Violent storm | 103 - 117 | 64 - 72 |
| Beaufort Scale | 12 | Hurricane | ≥ 118 | ≥ 73 |
| Saffir-Simpson Scale | 1 | Category 1 Hurricane | 119-153 | 74 - 95 |
| Saffir-Simpson Scale | 2 | Category 2 Hurricane | 154-177 | 96 - 110 |
| Saffir-Simpson Scale | 3 | Category 3 Hurricane | 178 - 209 | 111 - 130 |
| Saffir-Simpson Scale | 4 | Category 4 Hurricane | 210 - 249 | 131 - 155 |
| Saffir-Simpson Scale | 5 | Category 5 Hurricane | > 249 | > 155 |

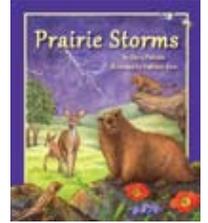


Weather, Climate & Seasons

Weather is the the condition at a certain place and time: precipitation, temperature, wind, and barometric pressure. Weather can change quickly: rain or snow can start or stop, temperatures move up and down, wind can change speed and direction, and the barametric pressure (air pressure) changes.

Climate is the average weather condition at a place over a period of years based on temperature, wind velocity and precipitation

A **season** is one of the four natural weather divisions of the year: spring, summer, fall, and winter. Each season has an average weather condition different than the other seasons.



Do the following statements refer to weather, climate, or season?

1. Grasslands have an average of 20 to 50 inches (51 to 127 cm) of precipitation per year. Most of the precipitation in 6 or 8 months with long periods of drought during which fires may occur.



2. Expect temperatures to reach 80F (upper 20s C) today.



3. Look for rain showers turning to sleet in the evening.

4. On average, deserts receive less than 10 to 12 inches of precipitation each year and rainforest receive more than 60 inches.



5. Leaves turn bright colors and fall off trees.



6. Thunderstorms are expected to develop in the afternoon.

7. Most precipitation during this time of year is sleet or snow.



8. A hail stone fell that was the size of a baseball.



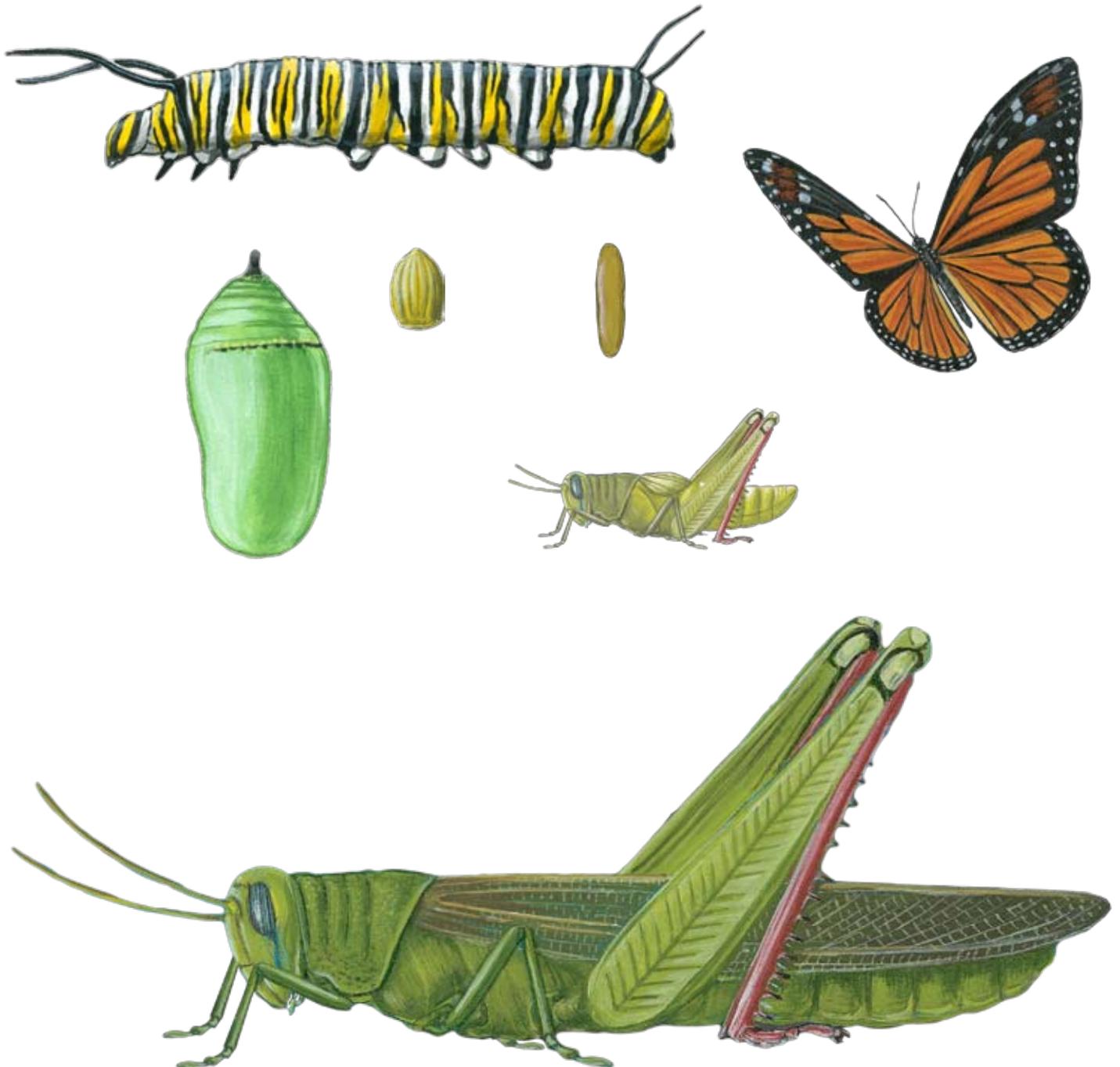
9. Early-morning fog is expected to lift and we should have a sunny sky by early afternoon.

10. Some mountain tops have snow all year round.

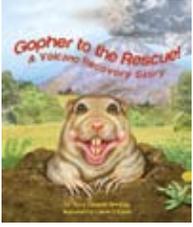
Metamorphosis Life Cycle Sequencing

Print and cut out the different parts of the two metamorphosis life cycles, decide whether it represents a complete or incomplete (gradual) metamorphosis, and put into order.

Objective: understanding sequencing, life cycle, metamorphosis



Tools and Technology



Objective: Science: Recognize that scientists perform different kinds of investigations

Explain how technology is used in science for a variety of purposes

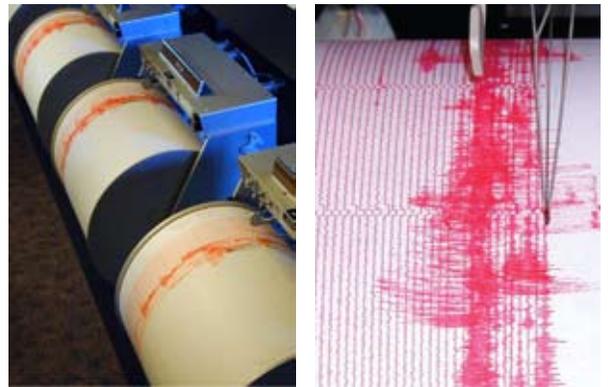
Scientists who study volcanoes are called volcanologists. If they can predict an eruption, they can warn people to leave the area. In recent years, scientists have saved thousands of lives by predicting volcanic eruptions.



Photo credit: Tim Plucinski and the Alaska Volcano Observatory / U.S. Geological Survey

Steam or smoke coming out of a volcano may be one of the first signs that it is “waking up” or becoming active.

Earthquakes are another early sign that a volcano is coming to life. Some earthquakes may be too small to feel but will show up on a seismograph—a special machine that records the earth vibrations. Seismographs measure the size of earthquakes.



Seismograph photo credits: Hawaiian Volcano Observatory / U.S. Geological Survey

As the magma gets closer to the Earth’s surface, the land itself might bulge or swell. But these changes might not be visible to us by just looking. Tiltmeters use bubbles to show changes in the land’s slope. GPS satellite imaging shows changes in land using the same technology as the GPS your parents might use for driving directions.

Gases in the air and water around the volcano are monitored too. Scientists look for increases in the amount of gas. The type of gases can affect the strength of the eruption. Machines can be set up in or around volcanic vents to measure gases from a safe distance.

Math: Measuring (compare & contrast)

Objective Core Mathematics Measurement:

Measurement & Data, Describe measurable attributes of objects, such as length or weight.

Describe several measurable attributes of a single object.

Compare the lengths of two objects indirectly by using a third object.

Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length

Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

What standard measuring tool would you use to measure something in:

Inches or centimeters

Feet or meters

Pounds or kilograms



Try to imagine how big or small something is compared to something you know.

What are some other things about the same size?

What is something that weighs about the same?

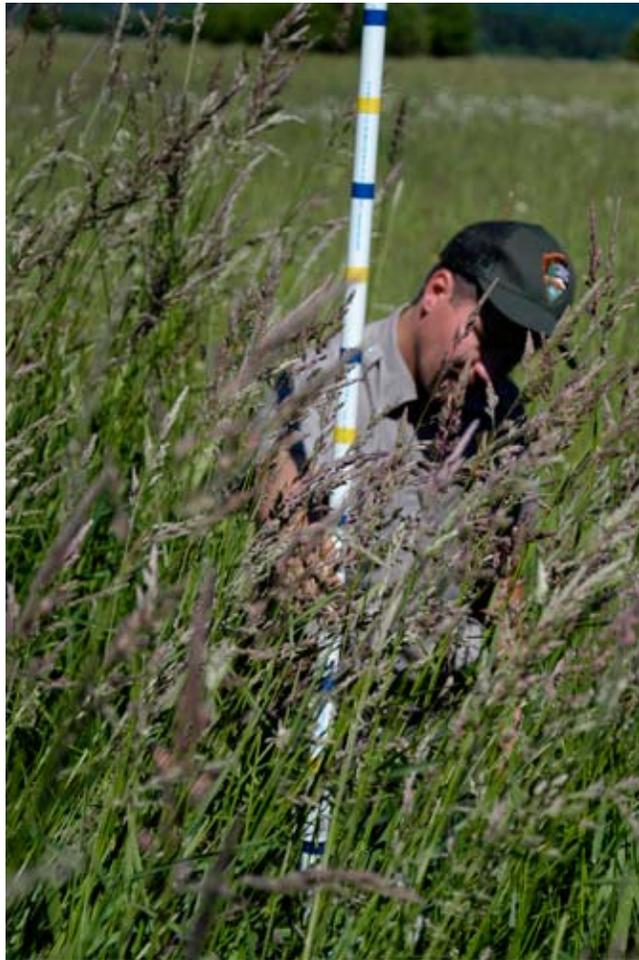
How big is it?

Using the right measuring tool (yard stick or measuring tape) and chalk, mark off how big something is on the playground, sidewalk, or driveway.

If you were to lie down on or next to the line, how many times would you have to lie down in order to equal the size?



Tall grasses can grow as tall as ten feet and average a height of six to eight feet.



Some prairie plants have roots that go 12 feet below ground.



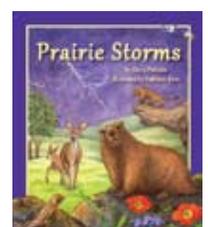
What are some things around you that are six feet tall?

What are some things around you that are ten feet?

Describe the roots compared to the height of the plants shown above.

If you were in a field of tall grass that averages six feet in height, would you be able to see around you?

Do you think all grass could grow to ten feet? Why or why not?



Wingspan and Armspan

Wingspan and armspan are measured from the tip of wings/fingers across to the other.

What standard measuring tool would you use to measure something in:

Inches or centimeters

Feet or meters

Pounds or kilograms

Try to imagine how big or small the wingspan is compared to something you know:

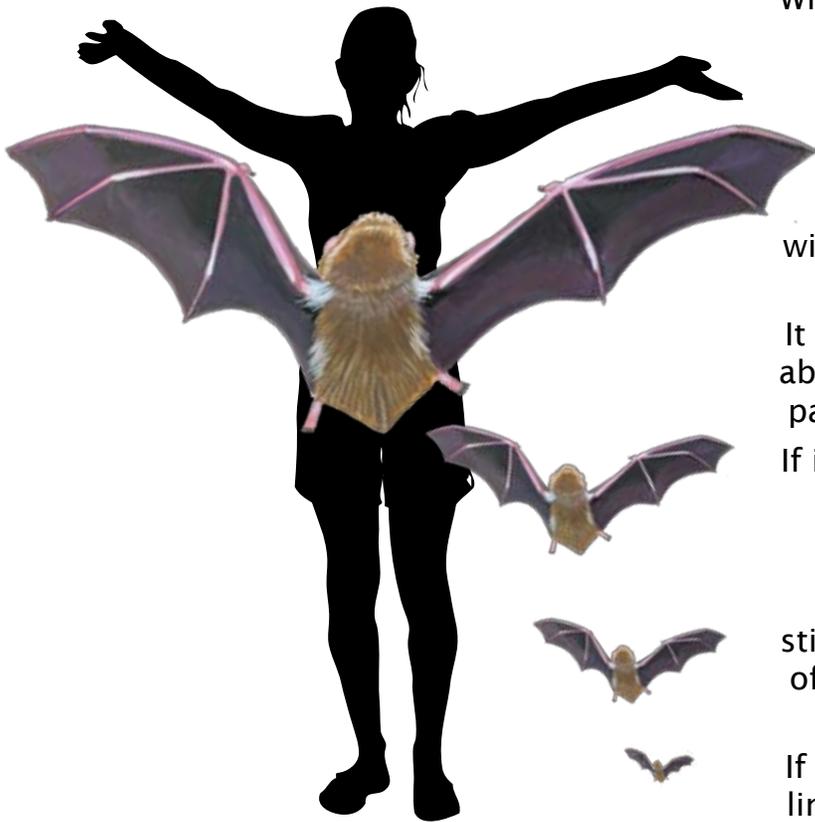
If it is small, what are some other things about the same size? How many pennies, paperclips, quarters, hands, shoes, etc.)

If it is very big, how many “things” would equal it?

How big is that 6-foot wingspan?

Using the right measuring tool (yard stick or measuring tape) and chalk, mark off how big 6 feet is on the playground, sidewalk, or driveway.

If you were to lie down on or next to the line, how many times would you have to lie down in order to equal the size of the wingspan?



| wingspan/armspan | inches/feet | centimeters/meters |
|---------------------------|-------------------|-----------------------|
| Old world flying fox | up to 6 feet | up to 1.8 meters |
| red bat | up to 13 inches | up to 33 centimeters |
| bumblebee bat | up to 6.7 inches | up to 170 millimeters |
| common vampire bat | up to 15.8 inches | up to 40 centimeters |
| you | | |
| an adult (parent/teacher) | | |

Which bat has the biggest wingspan?

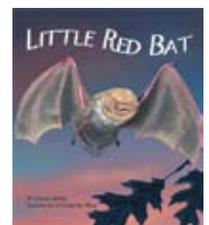
Which bat has the smallest wingspan?

Which bat has a wingspan closest to your armspan?

Which bat has a wingspan closest to an adult’s armspan?

Can you put the bats in order of wingspan from smallest to biggest?

Find items around the house/school that are similar in size to the bats’ wingspans.



Read the Chart!

The one thing all deserts have in common is that they are dry. On average, a desert gets less than 10 to 12 inches of rain a year. Using the chart on the following page, answer the these questions.

Choose one of the cities from the chart on the next page.

What is the average annual precipitation?

What is precipitation and why don't we use the word "rain?"

Based on this amount, is this city a desert? Explain why or why not.

Which city in your state receives the most precipitation on average per year?

Which city in your state receives the least precipitation on average per year?

Which city in the chart (US cities) receives the most precipitation per year?

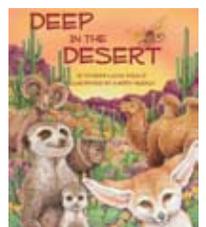
Which city in the chart (US cities) received the least precipitation per year?

Which U.S. Cities receive, on average, less than 10 inches of precipitation per year?

In what states are these cities?

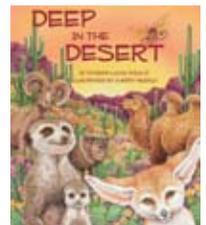
Find and color the states in the U.S. Map (Appendix C).

What do you notice about the location of these states?



US cities with less than 10 inches annual precipitation:

| City | State | Average Precipitation (inches) |
|-----------------|-------|--------------------------------|
| Henderson | NV | 4.13 |
| Las Vegas | NV | 4.13 |
| North Las Vegas | NV | 4.13 |
| Bakersfield | CA | 5.72 |
| Lancaster | CA | 6.92 |
| Palmdale | CA | 6.92 |
| Reno | NV | 7.53 |
| Glendale | AZ | 7.66 |
| Peoria | AZ | 7.66 |
| Phoenix | AZ | 7.66 |
| Scottsdale | AZ | 7.66 |
| Mesa | AZ | 8.5 |
| El Paso | TX | 8.81 |
| Tempe | AZ | 8.88 |
| Albuquerque | NM | 8.88 |
| Chandler | AZ | 9.04 |
| Gilbert Town | AZ | 9.04 |
| Chula Vista | CA | 9.34 |
| Riverside | CA | 9.58 |
| San Diego | CA | 9.9 |



Data for this chart was obtained from the US Census (<http://www.census.gov/statab/ccdb/cit7140r.txt>) based on a 30-year average.

Math Cards

Math, Operations & Algebraic Thinking: Add and subtract within 10, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums

Math, Operations & Algebraic Thinking: Fluently add and subtract within 10 using mental strategies.

Math, Operations & Algebraic Thinking, Relate counting to addition and subtraction

Math, Measurement & Data: Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (up to 10)

Math, Counting & Cardinality: Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (up to 10)

Math, Counting & Cardinality: Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Math, Counting & Cardinality: Understand that each successive number name refers to a quantity that is one larger.

Math, Counting & Cardinality: Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

Math, Counting & Cardinality: Understand the relationship between numbers and quantities; connect counting to cardinality.

Math, Operations & Algebraic Thinking, Represent addition and subtraction with objects, fingers, mental images, drawings (≤ 10), sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

Math, Operations & Algebraic Thinking, Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

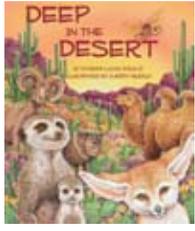
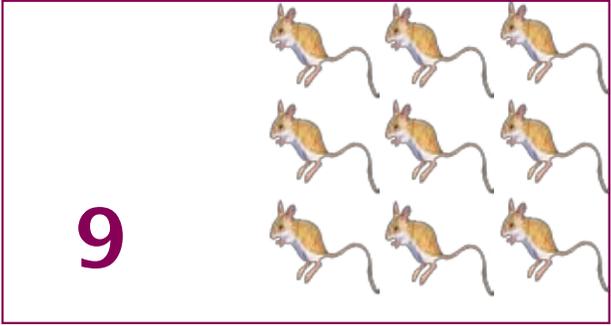
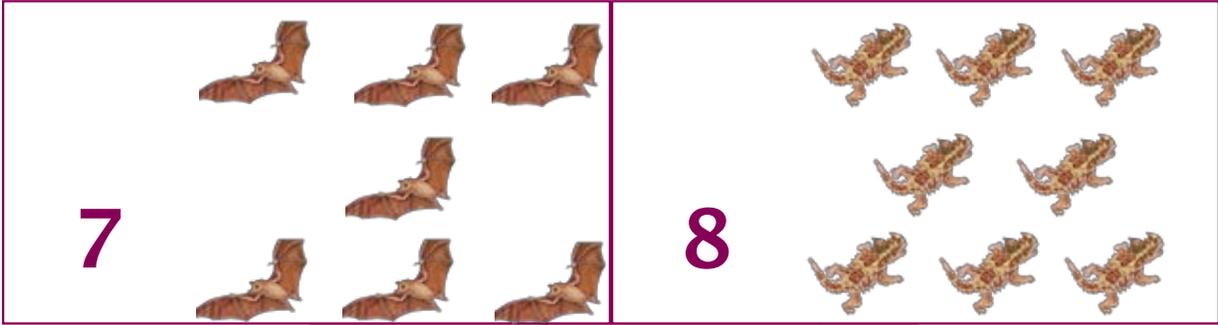
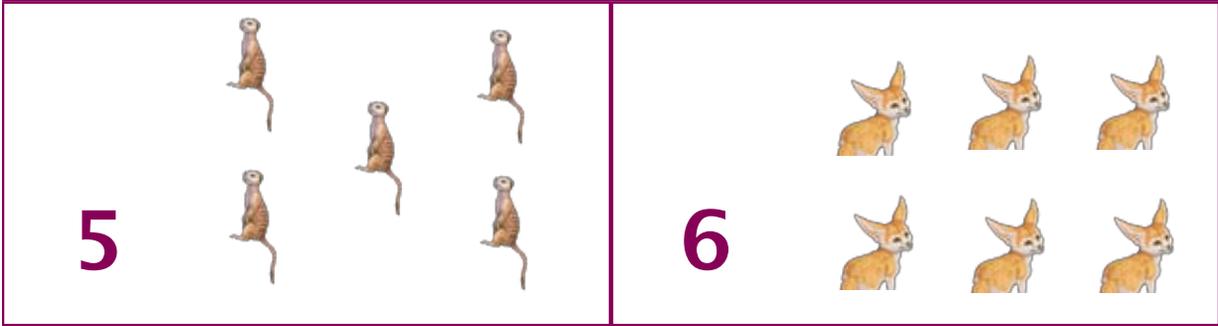
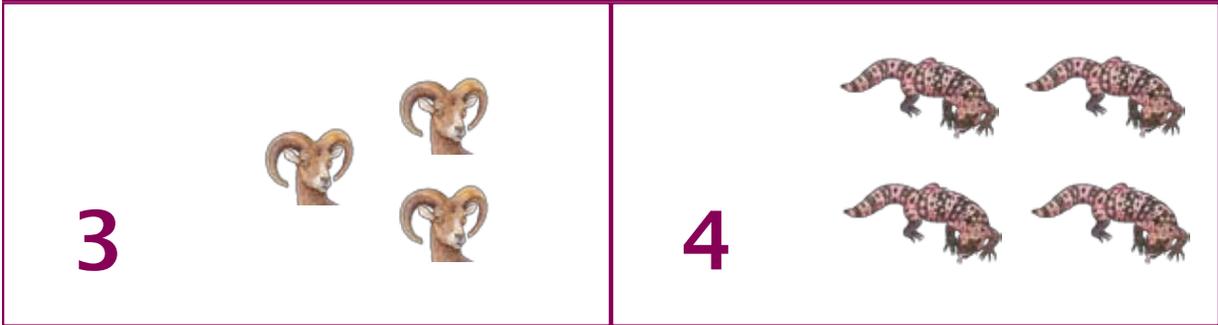
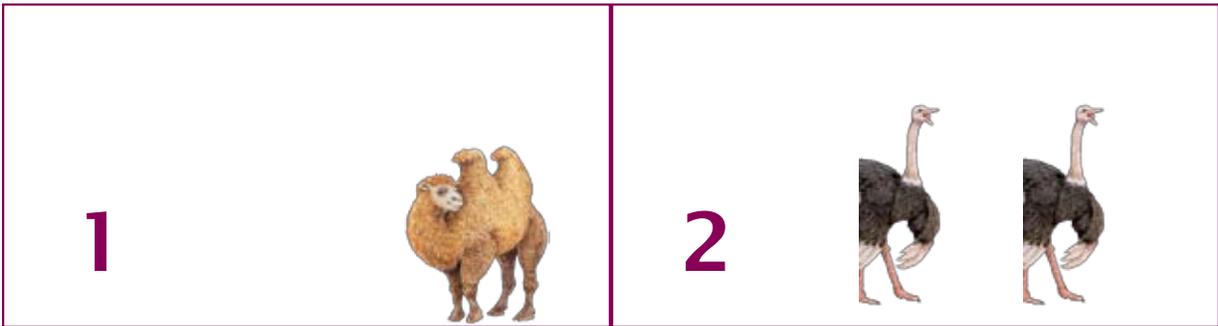
(Make four copies of the math cards to play these games):

Tens Make Friends Memory Game is a combination of a memory and adding game.

- Play like the memory game, above.
- If the animal numbers add up to 10, the child keeps the pair and takes another turn.
- If they do not add up to ten, the player should turn the cards back over and it is another player’s turn.

Go Fish for Fact Families is a twist on “Go Fish.”

- Shuffle cards and deal five cards to each player. Put the remaining cards face down in a draw pile.
- If the player has three cards that make a fact family, he/she places them on the table and recites the four facts related to the family. For example, if someone has a 2, 3, and 5, the facts are: $2 + 3 = 5$, $3 + 2 = 5$, $5 - 2 = 3$, $5 - 3 = 2$.
- The player then asks another player for a specific card rank. For example: “Sue, please give me a 6.”
- If the other player has the requested card, she must give the person her card.
- If the person asked doesn’t have that card, he/she says, “Go fish.”
- The player then draws the top card from the draw pile.
- If he/she happens to draw the requested card, he/she shows it to the other players and can put the fact family on the table. Otherwise, play goes to the next person.
- Play continues until either someone has no cards left in his/her hand or the draw pile runs out. The winner is the player who then has the most sets of fact families.



Tens Make Friends



Color the squares in two different numbers so the numbers add to 10.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Match the Season to the Calendar

Objective: Math: time can be measured. uses time to describe and compare situations

Math: Time can be shown graphically on calendars and timelines

Math: Identify months of the year

Science: Understand specific weather phenomena, including thunderstorms, tornadoes, and hurricanes

Science: Understand changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.

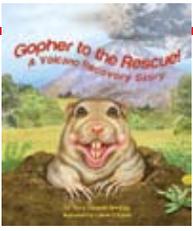
Color in the month block to show the various storm seasons throughout the year:



- Hurricane Season runs from June 1 to November 30 with the peak in September.
- Hurricane Season runs late May/early June to late October/early November with the peak in late August/early September.
- Severe cyclonic storm Two seasons a year: April to June with a peak in May, and again from late September to early December with a peak in November.
- Severe tropical cyclone Season runs from June 1 to November 30 with the peak in September.
- Tropical cyclone Season runs from late October/early November to May with two peaks: one in mid-January and the second in mid-February.
- Severe tropical cyclone Season runs from late October/early November to early May with a peak in late February/early March.
- Typhoons can happen at any time of year, but most happen between July and November with a peak in late August/early September.

| | January | February | March | April | May | June | July | August | September | October | November | December |
|--------------------------------|---------|----------|-------|-------|-----|------|------|--------|-----------|---------|----------|----------|
| Atlantic Hurricane Season | | | | | | | | | | | | |
| Pacific Hurricane Season | | | | | | | | | | | | |
| Severe Cyclonic Storm Seasons | | | | | | | | | | | | |
| Severe Tropical Cyclone Season | | | | | | | | | | | | |
| Tropical Cyclone Season | | | | | | | | | | | | |
| Severe Tropical Cyclone Season | | | | | | | | | | | | |
| Typhoon Season | | | | | | | | | | | | |

Elapsed Time of Recovery



Objective: elapsed time, sequencing

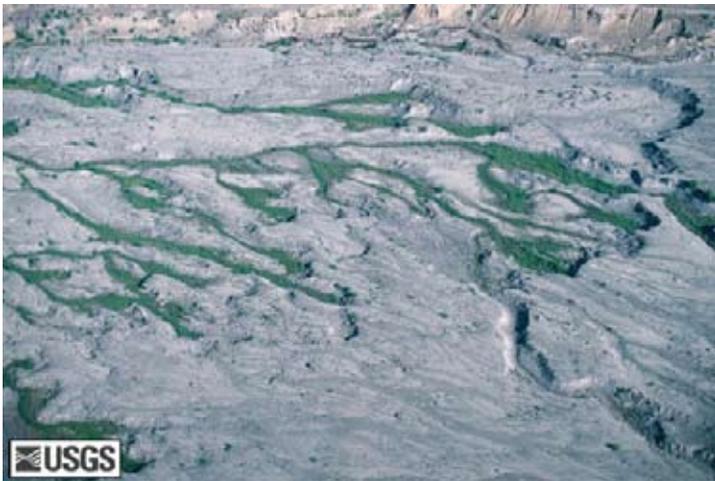
Thanks to the USGS/Cascades Volcano Observatory for the use of these photos.

How long after the eruption was the photo taken?
Print and cut out the photos or download high-quality images from <http://vulcan.wr.usgs.gov/Volcanoes/MSH/Images/recovery.html>.

Put the photos in time order or on a timeline of the recovery.



May 18, 1980 eruption



Date of Photo: May 15, 1989
Plants growing through ash



Date of Photo: June 18, 1980
tree protected by snowbank



Date of Photo: June 25, 1980
Revegetation on the northwest flank



Date of Photo: October 1980
bear tracks in ash

Multiplication and skip counting

Learning to multiply is just a quick way of adding by the same number or skip counting.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|-------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10... |
|---|---|---|---|---|---|---|---|---|-------|

Multiplying by 1 is easy! The answer's right in front of you—the number you're multiplying, times one.

| | | | | | | | | | |
|---|---|---|---|----|----|----|----|----|----|
| 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
|---|---|---|---|----|----|----|----|----|----|

When you multiply by 2, simply add the number to itself. ($5 + 5 = 10$). It is skip counting by 2! Will the answer (product) be even or odd?

| | | | | | | | | | |
|---|---|---|----|----|----|----|----|----|----|
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
|---|---|---|----|----|----|----|----|----|----|

To multiply by 3, add the number three times. ($4 + 4 + 4 = 12$). It is skip counting by 3!

| | | | | | | | | | |
|---|---|----|----|----|----|----|----|----|----|
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
|---|---|----|----|----|----|----|----|----|----|

To multiply by 4, double your number. Then double it again! $8 \times 2 = 16$ $16 \times 2 = 32$

| | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|
| 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|----|----|----|----|----|----|----|----|----|

To multiply by 5, simply skip count by 5's.

| | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|
| 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
|---|----|----|----|----|----|----|----|----|----|

To multiply by 6, first multiply by 3, then double your answer. $4 \times 3 = 12$ $12 \times 2 = 24$

| | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|
| 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
|---|----|----|----|----|----|----|----|----|----|

To multiply by 7, multiply the number by 5 and multiply the number times 2, then add those two numbers together. $8 \times 5 = 40$ $8 \times 2 = 16$ $40 + 16 = 56$

| | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
|---|----|----|----|----|----|----|----|----|----|

To multiply by 8, double your number 3 times. $3 \times 2 = 6$ $6 \times 2 = 12$ $12 \times 2 = 24$

| | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|
| 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
|---|----|----|----|----|----|----|----|----|----|

To multiply by 9, put a zero on the end, then subtract the number you are multiplying.

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|----|----|----|----|----|----|----|----|----|-----|

Multiplying by 10 couldn't be easier. Just put a zero on the end!



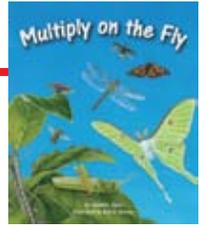
Skip Counting Chart



Pick a number and color or mark (M&Ms or small candies work well and can then be eaten) a pattern (skip counting or another number pattern). Have someone else guess the pattern.

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 38 | 29 |
| 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 |
| 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 |
| 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 |
| 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 |
| 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 |

Multiplication Table



Pick a number and color or mark (M&Ms or small candies work well and can then be eaten) a pattern (skip counting or another number pattern). Have someone else guess the pattern.

| X | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

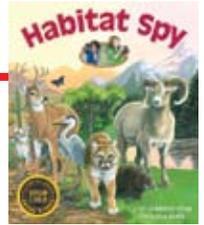
Square Numbers



Numbers make fun patterns. What do you notice about a pattern when a number is multiplied by itself?

| X | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

Map Activity



Using these maps as a reference, color the areas where these birds live on the blank map (in appendix).

Which birds live in the same area as you?

Which bird has the smallest range and distribution?

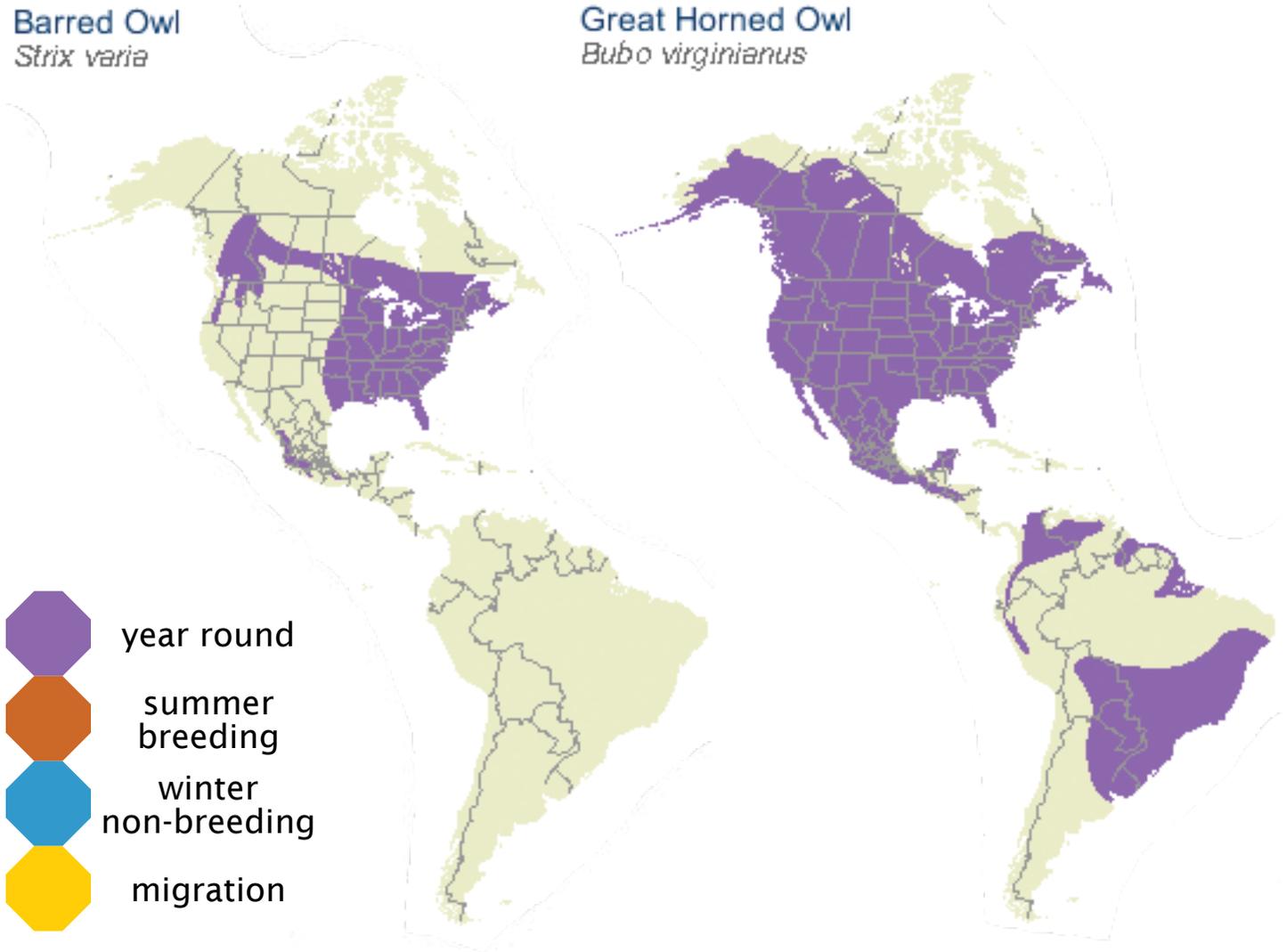
Which birds have the biggest range and distribution?

By looking at the maps, can you tell which birds migrate and which don't?

Thanks to Cornell Lab of Ornithology's All About Birds for the maps:
www.allaboutbirds.org.

Barred Owl
Strix varia

Great Horned Owl
Bubo virginianus



Thanks to Cornell Lab of Ornithology's All About Birds for the maps:
www.allaboutbirds.org.

Using these maps as a reference, color the areas where these animals live on the blank map (in appendix).

If desired, click on the animal name to go to the source of the map.

Do any animals live in the same state or province as you?



Bighorn Sheep



Black Bears



Clark's Nutcracker



Great Gray Owl



Yellow Bellied Marmot



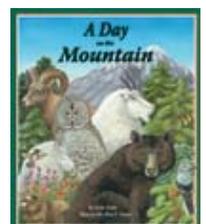
Mountain Goats



Broad tailed hummingbird



Long-toed salamander



Bison Map Activity

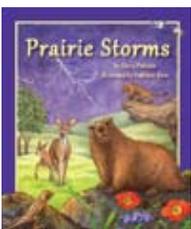
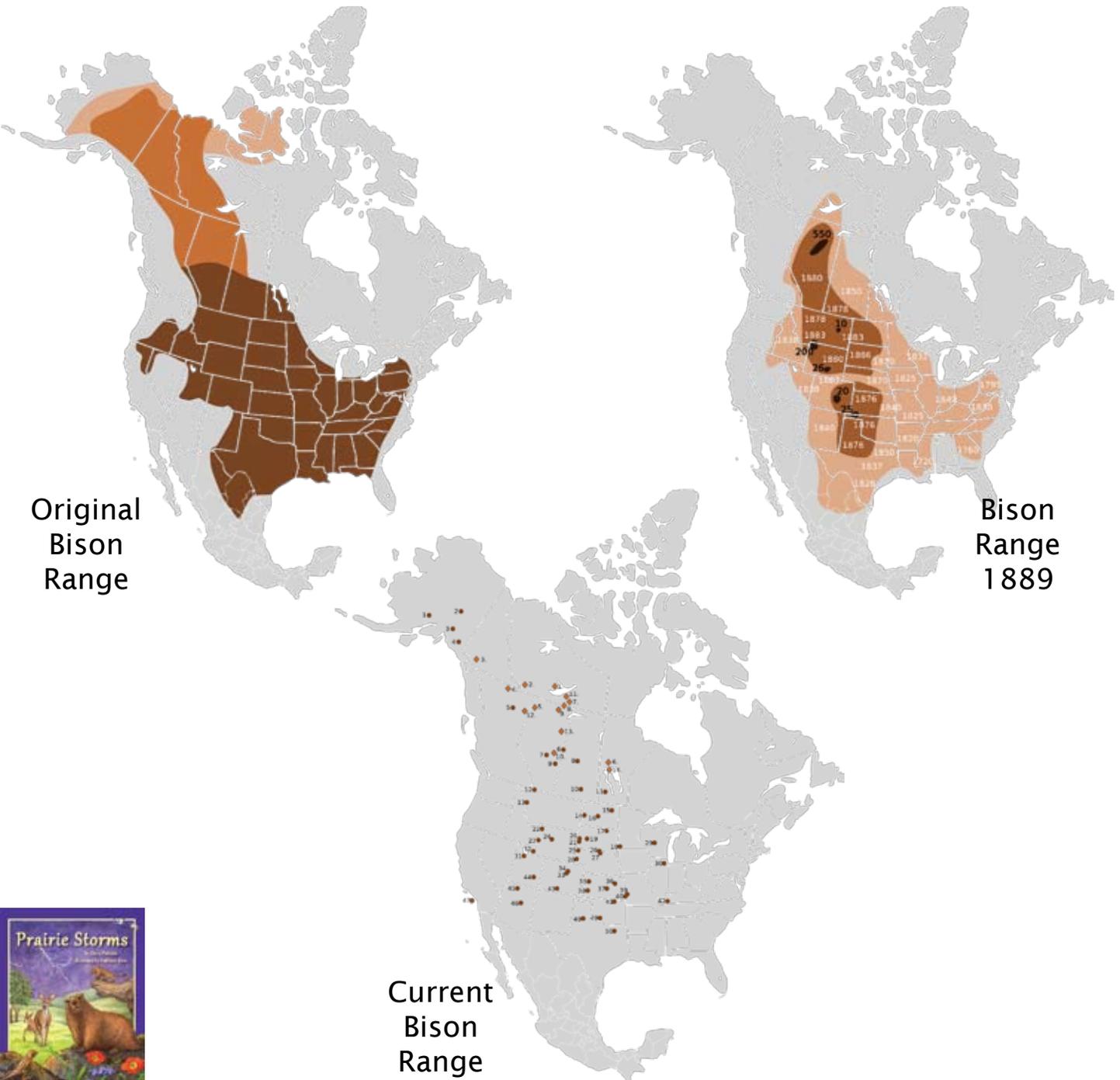
Using these maps as a reference, color the areas where these animals once lived on the blank map (in appendix).

Did they ever live in your area?

If so, which type of bison?

Do they live there now?

| |
|----------------|
| Holocene bison |
| wood bison |
| plain bison |



Character

Objective Core Language Arts, Reading Standards for Literature, Key Ideas and Details (2): Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.

- Trustworthiness
- Respect
- Responsibility: Do what you are supposed to do
- Fairness
- Caring about others/Citizenship
- Persevere: keep on trying!
- Always do your best
- Use self-control
- Be self-disciplined
- Think before you act — consider the consequences
- Be accountable for your choices

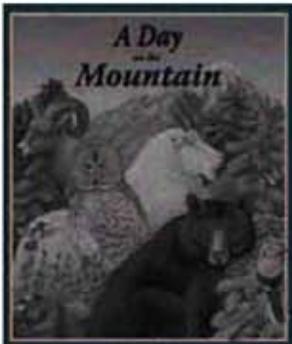
How did Sophia show that she cared about the animals that had lost their “coats” in the wind?

What did she do when the animals were not happy wearing her clothes?

Do you think it was easy for Sophia to make all the different animal coats?

Which of the good character traits did she have?





Hummingbirds, butterflies and wildflowers

from *A Day on the Mountain*

written by Kevin Kurtz, illustrated by Erin E. Hunter

© 2010 Sylvan Dell Publishing

Glossary: sample pages

| Word | Definition | Part of Speech | Spanish |
|------------|--|----------------|---------------------|
| biologist | a scientist who studies living organisms | noun | biólogo/a |
| botanist | a biologist specializing in the study of plants | noun | botánico |
| ecosystem | a community of living organisms and how they relate interact with their living and non-living (rocks, soil) environment | noun | ecosistema |
| egg | the roundish reproductive object produced by bird, reptile, and a few mammal females | noun | huevo |
| food chain | a series of plants and animals linked together by their food relationships | noun | cadena alimenticia. |
| food web | a group of interconnected food chains in an ecosystem | noun | red alimenticia |
| habitat | an address: a combination of the physical environment - the rocks and land and water - as well as all of the organisms that live in the same place | noun | hábitat |
| nest | a place used by birds, insects, fishes, turtles, rabbits, etc, for depositing their eggs or raising young | noun | nido |
| sun | the star closest to Earth, the center of our solar system; a ball of hot, glowing gases giving Earth heat and light. | noun | sol |
| antelope | a brown animal with long legs and horns that can run very fast. Mostly found in Africa and Asia | noun: animal | antílopes |

| Word | Definition | Part of Speech | Spanish |
|--------------------|--|-----------------------|--|
| bald eagle | a type of bird of prey; recovered from endangered listing, the U.S. national symbol | noun: animal | águila (feminine noun) |
| barred owl | a large owl forest-living owl known for its "who-cooks-for-you, who-cooks-for-you-all" hooting | noun: animal | Búhu listado |
| bat | a flying, nocturnal mammal (the only mammal to fly) | noun: animal | murciélago |
| beaver | a small north american animal with thick fur and a flat tail that cuts down trees with its teeth | noun: animal | castor |
| beetle | a winged insect with a hard smooth back | noun: animal | escarabajo |
| bighorn sheep | mountainous sheep with big, curly horns. | noun: animal | musmón, borrego cimarrón |
| blackbird | a bird found in America and Europe with a black body and orange beak | noun: animal | mirlo |
| bottlenose dolphin | the most well known of the dolphin (marine mammal) family | noun: animal | delfín nariz de botella (latin America) / delfín mular (Spain) / delfín de tursión |
| bumblebee | a common yellow and black, hairy bee that can sting more than once (unlike a honeybee) | noun: animal | abejorro, moscardón |
| butterfly(ies) | a type of insect--hundreds of different types | noun: animal | mariposa |
| cactus wren | a bird that lives in cactus in the deserts of north america and mexico | noun: animal | chochines de cactus |
| cave swallow | a bird that makes its nest out of mud on the walls of a cave | noun: animal | Golondrina de cuevas |

Answers

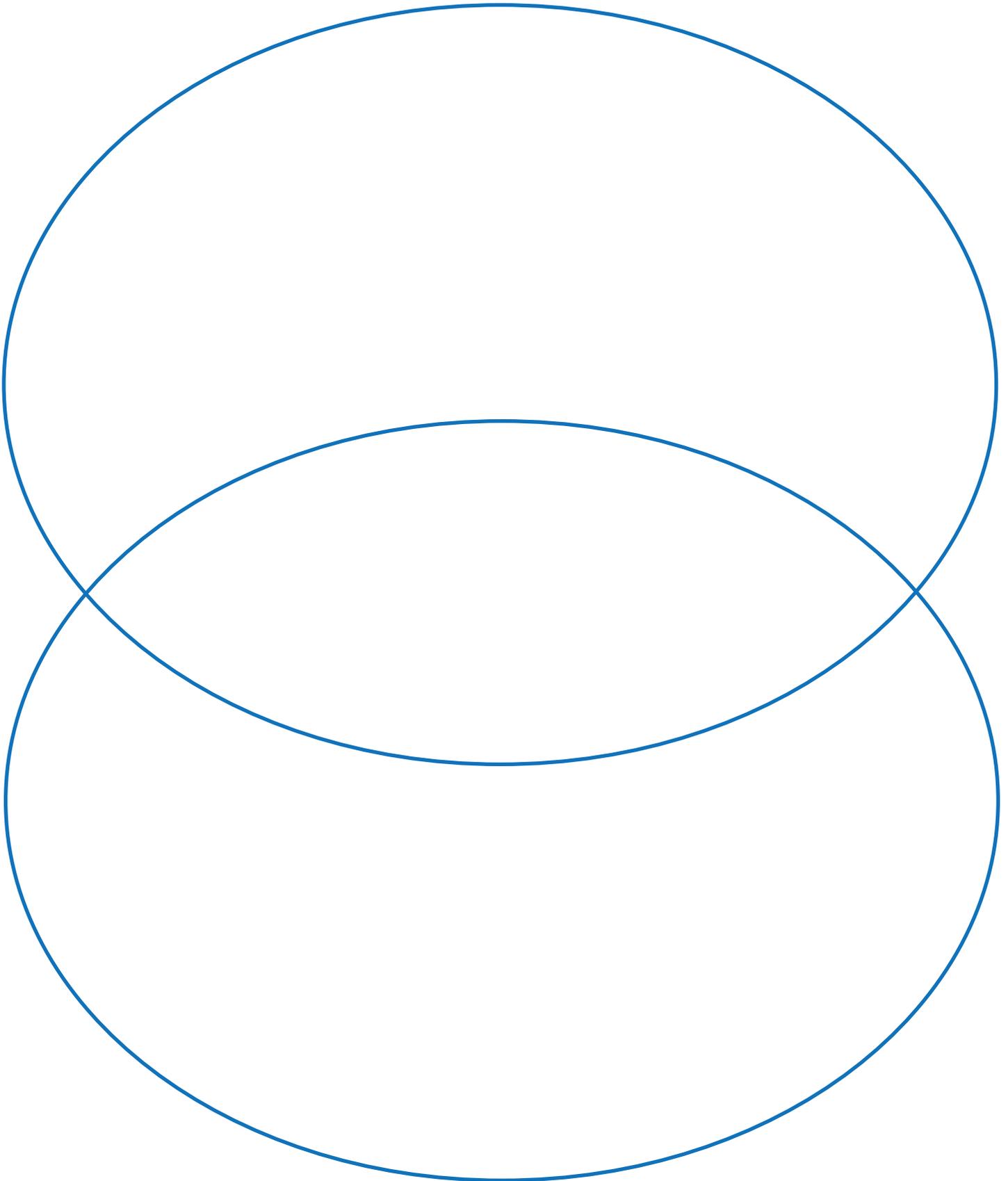
Answers provided in actual teaching activities

Appendix A—“What Children Know” Cards

| | |
|---|---|
| <p>Question:</p> <p>My answer:</p> <p>This information is correct! This information is not correct; can you find the correct information?</p> | <p>Question:</p> <p>My answer:</p> <p>This information is correct! This information is not correct; can you find the correct information?</p> |
| <p>Question:</p> <p>My answer:</p> <p>This information is correct! This information is not correct; can you find the correct information?</p> | <p>Question:</p> <p>My answer:</p> <p>This information is correct! This information is not correct; can you find the correct information?</p> |

Appendix B—Venn Diagram

Compare and contrast



Appendix C—U.S. Map



Appendix D—North America Map



Appendix E—World Map

