



3rd – 5th Grade

Educator's Activity Guide

Connecting People with the Living Earth

3rd – 5th Grade

Educator's Activity Guide

Dear Educator,

We hope you are excited about your Field Trip to Tampa's Lowry Park Zoo, recognized by the State of Florida as a center for wildlife conservation and biodiversity, and also as a center for education and endangered species conservation. The Zoo is an environmental learning center that provides an exciting and interactive location in which all students can make observations, draw conclusions and nurture their genuine interest in the natural world around them.

This guide is set-up to provide a variety of lessons designed to meet your **pre-zoo objectives**, implement during your **in-zoo visit**, and evaluate during **your post-zoo assessment**, all while incorporating a hands-on approach to formal education. The 3rd -5th grade benchmarks that can be met range from differentiating between living and non-living things to identifying the characteristics and attributes found in specific animal classifications.

In order to maximize your visit, please note that Sunshine State Standards and FCAT readiness skills have been integrated into each lesson. For your reference, an interdisciplinary chart highlighting cross-curricular activities is located at the end of this guide.

We hope that you will find this guide a useful tool in preparing for your trip to Tampa's Lowry Park Zoo and to help us achieve our mission of **connecting people with the living Earth**.

The Importance of Zoos – Please check out our web links to see the amazing things that are happening at the Zoo!

http://www.lowryparkzoo.com/zoo_video.php

http://www.lowryparkzoo.com/about_the_zoo.php

<http://www.lowryparkzoo.com/conservation.php>

Registering for a Field Trip, Sleepover, Animal Presentation, Guided Tour, Scavenger Hunt, or Wetlands Connection Program:

<http://www.lowryparkzoo.com/education/register.html>

Email: Jamie.myers@lowryparkzoo.com

Phone contact: (813) 935-8552 ext. 268

Please leave a voicemail to cancel/postpone a program.

Enjoy Learning,

Tampa's Lowry Park Zoo
Education Staff



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Planning a Zoo Field Trip Checklist

The below list will help make your trip to Tampa's Lowry Park Zoo goes smoothly.

Pre-Zoo Classroom Activities Completed

All activities connect with the FL Sunshine State Standards and provide appropriate background for students to explore the Zoo.

Students have, and can be identified by name tags/school shirts/other

Marked maps for each chaperone to coordinate meeting times and key locations

(Download maps at: www.lowryparkzoo.com/zoomap.php)

Chaperones have a list of students' names

Cell phone number exchange with chaperones

Most groups plan to meet up at the Manatee Fountains located at the front entrance – this is where your group will be arriving and departing.

Copy of field trip activities for chaperones

Writing utensils

Discussed lost child plan with students and chaperones

Reviewed Zoo Safety Rules for Students

- Stay on the paths
- Walk instead of run
- No running
- Please no loud voices or yelling
- Keep your hands, body, and objects away from animal enclosures

Snacks/beverages brought from school

Lunch has been pre-ordered through Tampa's Lowry Park Zoo

Kids - Hot Lunch

\$5.95 (plus tax) each - Hot Dog, Cheeseburger, Chicken Nuggets, Tuna Fish.

Kids - Cold Lunch

\$4.50 (plus tax) each - Tuna Fish, Ham and Cheese, Turkey and Cheese

All kids menu items come with Juice Box, Potato Chips and a Cookie. The price below is subject to tax unless a tax exempt certificate is present at the time of order. **Lunches must be ordered a week before your visit date.**

Student Buffet Lunch Option

Group must be **75 people or more**.

Prices*: Child \$6.95 / Adult \$8.95 plus tax. Must be paid in full prior to dining.

Reservations must be made at least 5 days in advance. Cancellations must be no later than 48 hours from the date of service. Groups will be slotted for half hour intervals to attend the buffet and must depart within 40 minutes from the start time. The buffet **may** consist of the following choices: hamburgers, mac and cheese, fruit salad, chips, brownies and fruit punch.

To make hot, cold, or buffet lunch reservations, please contact John Mancuso at (813) 935-8552 ext. 254, or

john.mancuso@lowryparkzoo.com

Lunch will be eaten in the picnic area located near the Lowry Park band shell

Lunch will NOT be eaten during the field trip

Are you pre-ordering or allowing gift shop/snack purchases?

Pre-Ordered Gift Bags - \$3.00 Students can purchase souvenirs without shopping in the Gift Shop, which can be picked up at the Main Gift Shop the day of your visit! Good Bags include: Tampa's Lowry Park Zoo pencil, postcard, Goody Bag surprise (could be keychain, small toy, stickers etc..)

*If you want your gift bag to feature a specific animal and/or want to include a plush animal, this is available at an additional fee.

For more information regarding pricing and available animals, and to order your good bags, call 813-935-8552 ext. 215.



Understanding the Diversity of Endangered Species

Objective: To identify endangered animals in the wild and at zoos that are at risk for extinction

Benchmarks: SC.4.L.16.2, SC.4.L.17.2, SC.4.L.17.4, SC.5.L.15.1, SC.5.L.17.1

Materials: Species Quest sheet - see following document

Recommended

Resources: http://www.lowryparkzoo.com/conservation_in_the_zoo.php
<http://www.aza.org/conservation-commitments-and-impacts/>
<http://www.floridaendangeredspeciesnetwork.org/index.htm>

What's the Difference? An Endangered Animal Subtraction Story, by Suzanne Slade
Can We Save Them? Endangered Species of North America, by David Dobson

Vocabulary: Endangered: in danger of extinction
Extinction: the process by which a group of related organisms dies out
Breeding: the mating and producing of young
Conservation: the preservation, management, and care of natural and cultural resources; the keeping or protecting of something from change, loss, or damage
Species Survival Plan: created by the AZA (Association of Zoos and Aquariums) to manage and conserve a select and typically threatened or endangered species of animals in the wild. SSP species are often "flagship species," well-known animals which arouse strong feelings in the public for the preservation and protection of the species population and their habitat, including the African Elephant, Cheetah, Komodo Dragon, Chimpanzee and Indian & White Rhinos.

Background: In a world of escalating habitat destruction, over-hunting, poaching, pollution of air, soil, and water, increasing human population and the general deterioration of our exosphere, zoological facilities around the world have become a safe haven for the propagation of these endangered species.

Lesson:

1. Review the definition of endangered species.
2. Discuss the role of a zoo in the preservation of endangered species, including education, breeding, and conservation.
3. Use the clues; complete the chart, *"The Hunt for Endangered Species,"* using zoo animals.

Note: there is more than one answer for some clues.

Extension / FCAT:

1. Write new clues for classmates to discover the endangered species.
2. Using every letter of the alphabet, name endangered animals.
3. Research to find names of Florida's endangered reptile species.
4. Some animals migrate from the U.S.A. to Canada. How could problems arrive with the protection of endangered species? Research how laws protecting animals differ in Canada.
5. Research the migration of a protected species of whales. Plot their movement on a map.
6. The zoo will release young panthers or red wolves into the wild, as both species are captive bred. Write a letter taking the side of cattle ranchers who fear loss of property or the part of an environmentalist who is concerned about their extinction.

FIELD TRIP ACTIVITY

Endangered Species' Clues: Can You Find Them at the Zoo?

1. _____ endangered due to loss of forest habitat
2. _____ hunted for fur and persecuted for livestock attacks
3. _____ not seen in natural habitat since 1968
4. _____ nearly all survivors show scars from boating accidents
5. _____ less than 50 survive in Florida
6. _____ habitat destroyed for lumber, housing, and agriculture
7. _____ threatened by trading, hunting, and loss of habitat
8. _____ habitat taken over for agriculture
9. _____ poachers slaughter them for their horns
10. _____ habitat loss due to logging operations
11. _____ extinct in some areas, declining numbers in other regions due to habitat loss and human activity
12. _____ extinct in Florida due to excessive hunting, although there has been recent reintroduction to other states, such as North Carolina

Did you know?

- Flamingos gather in large groups of thousands in the wild called a pat. Since a flamingo is defenseless, other than flight, large pats offer security.
- Manatees are herbivores. The largest and only increasing herd of manatees in the United States is in Crystal River Florida. The water temperature remains at 72 degrees year round. Manatee fossils have been found dating back to 60 million years.
- A bald eagle builds a nest that can weigh up to a ton, is six feet in diameter, and six feet tall. It is located in the top of the tallest trees over a river or lake. Over 600 injured or orphaned raptors are taken to Maitland, Florida each year for rehabilitation, 85% of these injuries are due to human interactions such as poisoning, gunshot wounds, collision with vehicles or power lines and loss of habitat.

Endangered Species' Clues: Can You Find Them at the Zoo? *Instructor's Activity Key*

1. *Endangered due to loss of forest habitat - **Malayan Tapir***
2. *Hunted for fur and persecuted for livestock attacks - **Clouded Leopards***
3. *Not seen in natural habitat since 1968 -**African Elephant***
4. *Nearly all survivors show scars from boating accidents - **West Indian Manatee***
5. *Less than 50 survive in Florida - **Florida Panther***
6. *Habitat destroyed for lumber, housing, and agriculture - **Golden Lion Tamarin***
7. *Threatened by trading, hunting, and loss of habitat- **Chimpanzee***
8. *Habitat taken over for agriculture - **Sumatran Tiger***
9. *Poachers slaughter them for their horns – **White Rhinoceros***
10. *Habitat loss due to logging operations – **Bornean Orangutan***
11. *Extinct in some areas & declining in others due to habitat loss & humans – **Cheetah***
12. *Extinct in Florida due to excessive hunting, although there has been recent reintroduction to other states, such as North Carolina – **Red Wolf***

Which Species Should Survive?

Objective: Students must use Critical Thinking skills to justify which pairs of animals should be taken to *Earth II* to help colonize a new planet for humans

Benchmarks: SC.3.L.15.1, SC.3.L.17.1, SC.4.L.16.2, SC.4.L.16.3, SC. 4.L.17.4, SC.5.L.15.1, SC.5.L.17.1
MA.3.A.6.2, MA.4.G.3.3,

Recommended

Resources: *Would You Survive? Animal and Plant Adaptation*, by John Townsend
How do Animals Adapt? (The Science of Living Things), by Bobbie Kalman
Journey for the Planet: A Kid's Five Week Adventure to Create an Earth-friendly Life,
by David Gershon

Vocabulary: Colonize: to go to and live permanently as part of a settlement in a foreign land that was previously sparsely inhabited; to establish plants or animals, or become established, in a biological colony in a new ecosystem
Ecosystem: a localized group of interdependent organisms together with the environment that they inhabit and depend on
Biosphere: the parts of the Earth's surface and atmosphere where plant and animal life can exist
Environment: all the external factors influencing the life and activities of people, plants, and animals
Ultraviolet Radiation: radiation with ultraviolet wavelengths. Radiation of this kind is a component of sunlight and is the light that makes exposed skin become darker

Advanced

Information: Within Earth's biosphere exists much diversity of life in a variety of colors, sizes and abilities. Each life form serves its own purpose and role within the local ecosystems in which it is found.

This diversity is due to a natural selection of adaptations during the evolution of species within an ecosystem. When a species has lived in an environment for a long period of time, it begins to develop traits that will allow it to survive in the environmental conditions of the ecosystem. These traits may be a color-scheme for camouflage, extremities for food gathering, or specific responses to danger and defense.

Pre-Zoo

Lesson: The year is 2030. The Earth is becoming consumed by pollution and ultraviolet radiation. As a famed zoologist, you have been given the task of choosing 10 pairs of animals to journey with you to the new planet. Although this new planet has the same habitat / climatic ranges as Earth, it is only the size of our Moon, which is 400 times smaller than the sun and about 1/3 the size of Earth.

Your mission while at the zoo is to explore, research, and determine which 10 pairs of animals best justifies the needs of Earth II.

Extension /FCAT:

Points to ponder while touring the Zoo and considering which animals to take.

1. Should only people who are vegetarians be considered for the trip?
2. What are the food needs of the animals? Animal diet is critical, for example, does the animal eat only other animals? Will these be animals you are taking?
3. How can your animal's needs be met? How does this affect your choices?
4. Should only adults or only juvenile animals be chosen?
5. Should a poisonous / venomous species be considered?
6. Consider that there will be no electric power for the first two years of Earth II. What animals may also be helpful?
7. The animals will not be released into the wild, but kept in an area around the new settlement. Housing will need to be built for 7 of the new animal species. How does this affect your choices?
8. There will be 100 adults and 50 children on Earth II during the first year while fresh water sources are found. It is uncertain how much clean water is readily available. Does this affect the choices?
9. An animal's ability to adapt is crucial on Earth II. Which animals would best be suited for sudden climate change?
10. Some smaller animals need frequent feedings. Consider the quantities of food that these animals will require.
11. If there is a readily available supply of insects on Earth II, how will this affect the animal selections?

FIELD TRIP ACTIVITY

Earth II Animal Selections

Directions: Determine which animal pairs you would bring to Earth II. Give the reasons why you chose each animal and what you may have to take into consideration, such as habitat, predators, prey and lifestyle to ensure this animal's survival.

Animal	Reasons Chosen	Considerations
1.		
2.		
3.		
5.		
6.		
7.		
8.		
9.		
10.		

Figuring Out the Food Web

Objective: To understand the food web and how each animal depends on each other for survival.

Benchmarks: SC.3.L.15.1, SC.4.L.16.3, SC.4.L.17.2, SC.4.L.17.3, SC.4.L.17.4, SC.5.L.15.1, SC.5.L.17.L

Recommended

Resources: *Who Eats What? Food Chains and Food Webs (Let's-Read-and-Find-Out Science, Stage 2)*, by Patricia Lauber
Bill Nye The Science Guy: Food Web Classroom Edition (1994) Unrated | Format: DVD
http://teacher.scholastic.com/activities/explorer/ecosystems/be_an_explorer/map/foodweb_play.htm
http://www.sciencebob.com/questions/q-food_chain_web.php

Vocabulary: Food Web: the interlocking food chains within an ecological community
Food Chain: a hierarchy of different living things, each of which feeds on the one below
Carnivore: an animal that eats other animals; somebody who is not a vegetarian and likes to eat meat
Herbivore: an animal that feeds only or mainly on grass and other plants.
Omnivore: an animal that will feed on any type or many different types of food, including both plants and animals.
Insectivore: a small nocturnal mammal that feeds primarily on insects. Moles, shrews, and hedgehogs are all insectivores.

Pre-Zoo Lesson: Read a trade book or watch a video regarding the food web. Discuss the differences between each type of eater: carnivore, herbivore, omnivore, insectivore. Make a list of zoo animals that your class will see at Tampa's Lowry Park Zoo.

1. As a class, complete food web work sheet
2. Create a KWL chart with what you know each animal eats and what you think each animal eats
3. Create individual, or partner food webs. Which animals would be food for the others?

Post-Zoo

Assessment:

1. Complete the KWL chart.
2. Have each student choose from an assortment of animals, including carnivores, herbivores, omnivores and insectivore that they saw at the zoo to create their own food web.
3. Consider what would happen if different animals were to disappear from the food web. What would happen if other resources, such as water, were not available?

IN-CLASS ACTIVITY

Food Web Worksheet

Directions: Draw a line from each animal to show which animals depend on each other for survival in the food web. You may have to draw more than one line from each animal.



Animal Adaptation Adoptions

Objective: Observing a variety of animal species and their adaptations for survival.

Benchmarks: SC.3.L.15.1, SC.4.L.16.3, SC.5.L.17.1

Recommended

Resources: *How do Animals Adapt? (The Science of Living Things)* by Bobbie Kalman
What Do You Know About Animal Adaptations? by Suzanne Slade
Claws, Coats, And Camouflage, by Susan E. Goodman

Vocabulary: Adaptation: the development of physical and behavioral characteristics that allow organisms to survive and reproduce in their habitats
Habitat: the natural conditions and environment in which a plant or animal lives, e.g. forest, desert, or wetlands
Nocturnal: describes animals that are active at night rather than during the day
Diurnal: describes animals that are active during the day rather than at night
Crepuscular: describes fish and land mammals that are active at dusk and dawn, when the light level is low

Materials: Assorted images of animals displaying obvious body part adaptations, e.g.: giraffes, birds, fish, marine mammals, tigers

Pre-Zoo Lesson: Post images of the animals where students can see them, or give small groups one image to use. Have students identify which body part is necessary for each animal to help it survive in its environment. Determine the use for specific body parts.

Discuss animals that may have similar adaptations, e.g.: tigers and zebras have stripes

SAMPLE

Animal	Adaptation	Use
Giraffe	Long Neck	Reach leaves on the tops of trees that other animals cannot, enabling a larger food supply
Whale	Tail or Blow Hole	Tail: enables the whale to swim; Blow Hole: enables whales to breathe without having to lift its entire body out of the water
Tigers	Stripes	Helps camouflage tigers in long grass when catching prey
Zebras	Stripes	Helps camouflage zebras on savannah from predators



FIELD TRIP ACTIVITY

Animal Adaptation Scavenger Hunt

Directions: Using the clues below, search the zoo and see if you can figure out what information is missing for each animal, habitat, or adaptation.

Animal	Habitat	Adaptation
1. Sumatran Tiger	<i>Rainforest</i>	
2.	<i>Rainforest</i>	Compact, streamlined body for pushing through undergrowth
3. Roseate Spoonbill		Spoon-shaped beak to sweep side to side in water to catch fish and shrimp
4.	<i>Freshwater</i>	Aquatic tail and lower body work together for underwater speed
5. American Crocodile	<i>Mangrove Swamp</i>	
6.	<i>Coastal plains, pine and oak forests, marshes and swamps</i>	Preys on animals that offer easy capture, but rarely attacks livestock
7. Wild Turkey		Young stay in egg until eyes are open and are able to walk
8. Chimpanzee		
9.	<i>Lowland rainforest</i>	Longer, stronger arms than legs for easier movement through trees
10. Gopher Tortoise	<i>Underground burrows</i>	
11.	<i>High, dark trees, caves</i>	Uses skills in flight to catch up to 600 insects per hour
12. Dromedary Camel		
13.	<i>Savanna</i>	Dig elaborate burrows to house and protect their social colonies,; stripes useful as camouflage in tall grasses
14. Okapi	<i>Dense Rainforests</i>	Dark stripes on legs, blend with foliage
15. Cheetah	<i>Savanna</i>	
16. African Elephant	<i>Savanna, forests, river valleys</i>	

FIELD TRIP ACTIVITY

Animal Adaptation Scavenger Hunt: Instructor's Activity Key

Directions: Using the clues below, search the zoo and see if you can figure out what information is missing for each animal, habitat, or adaptation.

Animal	Habitat	Adaptation
1. Sumatran Tiger	<i>Rainforest</i>	<i>Eyes located on side of head for wider field of vision</i>
2. Malayan Tapir	<i>Rainforest</i>	Compact, streamlined body for pushing through undergrowth
3. Roseate Spoonbill	<i>Coastal marshes bays, estuaries, mangrove</i>	Spoon-shaped beak to sweep side to side in water to catch fish and shrimp
4. River Otter	<i>Freshwater</i>	Aquatic tail and lower body work together for underwater speed
5. American Crocodile	<i>Mangrove Swamp</i>	<i>Glands in tongue to reduce salt intake</i>
6. Red Wolf	<i>Coastal plains, pine and oak forests, marshes and swamps</i>	Preys on animals that offer easy capture, but rarely attacks livestock
7. Wild Turkey	<i>Woodlands, open forest, dense cover</i>	Young stay in egg until eyes are open and are able to walk
8. Chimpanzee	<i>Humid forests deciduous woodlands mixed savannas</i>	<i>Uses opposable thumbs & sticks to get insects from mounds</i>
9. Bornean Orangutan	<i>Lowland rainforest</i>	Longer, stronger arms than legs for easier movement through trees
10. Gopher Tortoise	<i>Underground burrows</i>	<i>Protection from predators and weather</i>
11. Bats	<i>High, dark trees, caves</i>	Uses skills in flight to catch up to 600 insects per hour
12. Dromedary Camel	<i>Desert</i>	<i>Stores fat in its hump, can drink up to 30 gallons of water in a short amount of time</i>
13. Meerkat	<i>Savanna</i>	Dig elaborate burrows to house and protect their social colonies,; stripes useful as camouflage in tall grasses
14. Okapi	<i>Dense Rainforests</i>	Dark stripes on legs, blend with foliage
15. Cheetah	<i>Savanna</i>	<i>Lean body, long legs promote great speed for chasing prey</i>
16. African Elephant	<i>Savanna, forests, river valleys</i>	<i>Tusks for stripping bark from tree; trunk for digging roots and drinking water</i>

FIELD TRIP ACTIVITY

Who Am I? (Worksheet 1)

DIRECTIONS: Use the word box to choose the best answer for each clue.

Cownose Stingray	Sloth Bear	Warthog	Okapi
Sumatran Tiger	Meerkat	West Indian Manatee	Florida Panther
Siamang	Indian Rhino	American Alligator	Komodo Dragon
River Otter	Marabou Stork	Warthog	Dromedary Camel

1. Bony ridges over eyes that act as sun visors _____
2. Stripes only on legs help to camouflage in dense rainforest _____
3. Broad paddle-like tail for swimming _____
4. Dense layer of fur to repel water _____
5. Gap in upper front teeth for sucking termites from nests _____
6. Tongue covered with tiny hooks for scraping meat off bones _____
7. Bacteria in saliva used to kill prey _____
8. Marks territory with scent glands on forefeet _____
9. Highly developed senses used to detect prey in wetland habitat _____
10. Uses a rotating shoulder joint to travel through trees _____
11. Uses sharp tusk-like teeth for defense in battle _____
12. Mother guards young by carrying them in her mouth _____
13. Wallow in mud for protection from heat and parasites _____
14. Buries self in sand for camouflage _____
15. Black rings around eyes reduce glare from the sun _____
16. Bald head stays clean when scavenging bloody carcasses _____



FIELD TRIP ACTIVITY

Who Am I? (Worksheet 1): *Instructor's Key*

DIRECTIONS: Use the following clues to identify animals you will find at Tampa's Lowry Park Zoo. Use the word box to help you!

Cownose Stingray	Sloth Bear	Warthog	Okapi
Sumatran Tiger	Meerkat	West Indian Manatee	Florida Panther
Siamang Monkey	Indian Rhino	American Alligator	Komodo Dragon
River Otter	Marabou Stork	Dromedary Camel	

- | | |
|---|---------------------|
| 1. Bony ridges over eyes that act as sun visors | Dromedary Camel |
| 2. Stripes only on legs help to camouflage in dense rainforest | Okapi |
| 3. Broad paddle-like tail for swimming | West Indian Manatee |
| 4. Dense layer of fur to repel water | River Otter |
| 5. Gap in upper front teeth for sucking termites from nests | Sloth Bear |
| 6. Tongue covered with tiny hooks for scraping meat off bones | Sumatran Tiger |
| 7. Bacteria in saliva used to kill prey | Komodo Dragon |
| 8. Marks territory with scent glands on forefeet | Black Bear |
| 9. Highly developed senses used to detect prey in wetland habitat | Florida Panther |
| 10. Uses a rotating shoulder joint to travel through trees | Siamang Monkey |
| 11. Uses sharp tusk-like teeth for defense in battle | Indian Rhino |
| 12. Mother guards young by carrying them in her mouth | American Alligator |
| 13. Wallow in mud for protection from heat and parasites | Cownose Stingray |
| 14. Buries self in sand for camouflage by backing in | Warthog |
| 15. Black rings around eyes reduce glare from the sun | Meerkat |
| 16. Bald head stays clean when scavenging bloody carcasses | Marabou Stork |



FIELD TRIP ACTIVITY

Who Am I? (Worksheet 2)

DIRECTIONS: Use the following clues to identify animals you will find at Tampa's Lowry Park Zoo

1. Who has a dense layer of fur to repel water and webbed feet to aid in swimming?
2. Who has a broad paddle-like tail for swimming and clear membranes that cover the eyes while underwater?
3. Who scratches trees to identify territory and signal presence to others?
4. Who has keen sight, sharp talons, and superb flight skills to catch its prey?
5. Who uses sharp tusk-like teeth for defense in battle?
6. Who has a compact streamlined body for pushing through forest undergrowth?
7. Who has body ridges over the eyes that act as sun visors?
8. Whose only defense is flight or gathering in large groups on the ground?
9. Who stays in the egg until their eyes are open and they're able to walk?
10. Who has long, claws on its fingers and toes for looking in tree holes for insects?
11. Whose mother guards her babies by carrying them in her mouth?
12. Who looks like a zebra, but is more closely related to a giraffe?
13. Who is called "greyhound of the cats?"
14. Who preys on animals that are easy to capture and rarely attack livestock?

FIELD TRIP ACTIVITY

Who Am I? (Worksheet 2): *Instructor's Key*

DIRECTIONS: Use the following clues to identify animals you will find at Tampa's Lowry Park Zoo

1. **Who has a dense layer of fur to repel water and webbed feet to aid in swimming?** (*River Otter*)
2. **Who has a broad paddle-like tail for swimming and clear membranes that cover the eyes while underwater?** (*Manatee*)
3. **Who scratches trees to identify territory and signal presence to others?** (*Black Bear*)
4. **Who has keen sight, sharp talons, and superb flight skills to catch its prey?** (*Bald Eagle*)
5. **Who uses sharp tusk-like teeth for defense in battle?** (*Indian Rhinoceros*)
6. **Who has a compact streamlined body for pushing through forest undergrowth?** (*Malayan Tapir*)
7. **Who has body ridges over the eyes that act as sun visors?** (*Bactrian Camel*)
8. **Whose only defense is flight or gathering in large groups on the ground?** (*Flamingo*)
9. **Who stays in the egg until their eyes are open and they're able to walk?** (*Wild Turkey*)
10. **Who has long, claws on its fingers and toes for looking in tree holes for insects?** (*Golden Lion Tamarin*)
11. **Whose mother guards her babies by carrying them in her mouth?** (*American Alligator*)
12. **Who looks like a zebra, but is more closely related to a giraffe?** (*Okapi*)
13. **Who is called "greyhound of the cats?"** (*Cheetah*)
14. **Who preys on animals that are easy to capture and rarely attack livestock?** (*Red Wolf*)

Carousel Calculations

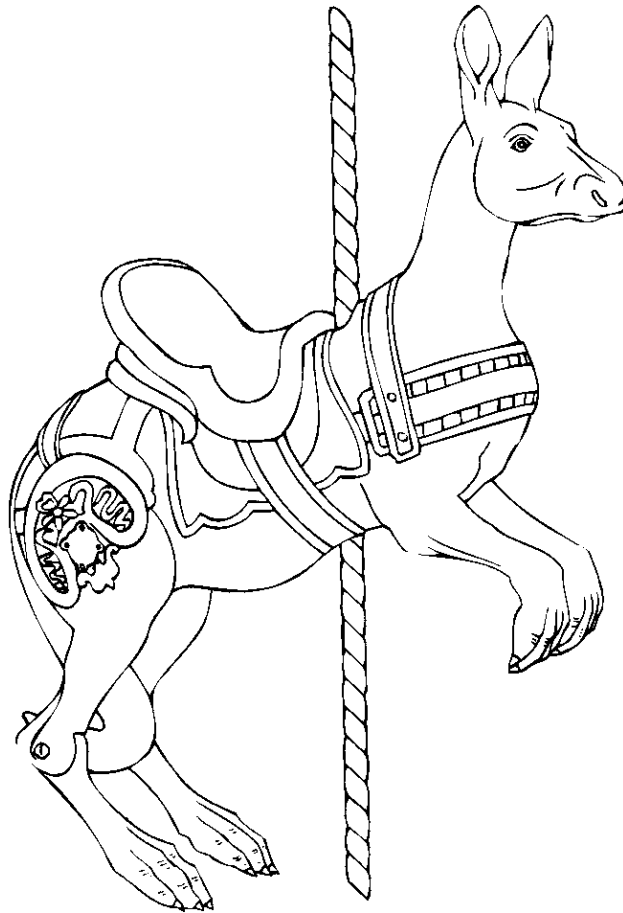
Objective: Observe and calculate using the carousel

Benchmarks: MA.A.3.2.2 MA.B.2.2.1

Vocabulary: Estimate: a judgment, calculation, or educated guess, as of the value, amount, time, size, or weight of something.
Revolution: one full circle or rotation

Materials: Pencils, timer, carousel

In-Zoo Lesson: Have students observe the carousel from the sidewalk to answer the questions on the Carousel Calculations Activity worksheet.

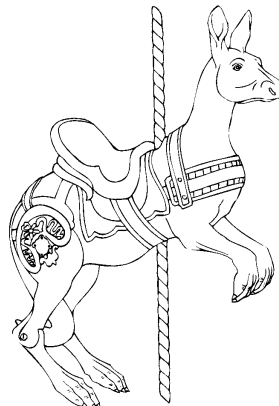


FIELD TRIP ACTIVITY

Carousel Calculations Activity

Directions: Observe the carousel from the sidewalk to answer these questions.

1. How many revolutions does the carousel make after 5 minutes? _____
 2. How many revolutions would that be per hour? _____
 3. Estimate the number of males riding? _____
 4. Estimate the number of females? _____
 5. Total number of males and females? _____
 6. In an hour, will there be more males or females riding the carousel?
_____ Explain your answer:
 7. The carousel has 35 places for riders. How many seats are occupied? _____
 8. What percent is this to the total _____
- Bonus:** If the zoo were to charge \$1.00 per person, how much money would be collected from all the riders on one ride? _____



Using Tampa's Lowry Park Zoo Map

Objective: Demonstrate an understanding of map skills and basic geometry calculations through the use of Tampa's Lowry Park Zoo map and Zoo locations

Benchmarks: MA.4.G.3.3, MA.5.G.5.3
SS.3.G.1.1, SS.3.G.1.2, SS.3.G.1.6, SS.4.G.1.4, SS.5.G.1.4

Vocabulary: Area: Length x Width
Perimeter: sum of all sides
Volume: Length x Width x Height
Circumference: Distance around a circle
Compass Rose: A graduated circle indicating directions north, south, east, and west

Materials: compass, measuring wheel, measuring tape, Tampa's Lowry Park Zoo Map
http://www.lowryparkzoo.com/zoo_map.php

In-Zoo Activity: Use the Tampa's Lowry Park Zoo Map activity worksheet to discuss map skills and basic geometry calculations.



FIELD TRIP ACTIVITY

Tampa's Lowry Park Zoo Map Activity

Directions: Use the Tampa's Lowry Park Zoo Map to find the answers to the questions below.

1. Use a measuring wheel to measure the Florida Boardwalk from Gator Falls to the entrance of the Manatee Building. Give your answer in meters, feet and inches.

_____ meters _____ feet _____ inches

2. Use a compass to identify which direction you would need to travel to get to Primate World from the Jungle Carousel. Circle your answer.

North East South West

3. Use a compass to identify which direction you would need to travel to get to Wallaroo from the Jungle Carousel. Circle your answer.

North East South West

4. Stand at the chimpanzee exhibit. Use a compass and look **SOUTHWEST**. Name 4 animals housed in that direction.

a. _____ c. _____
b. _____ d. _____



5. What is the **CIRCUMFERENCE** of the sidewalk around the carousel?
6. What animal exhibit is located at the **NORTHERN** most point of the zoo?
7. From the Manatee Fountains, in which direction do you have to walk to get to the Aviary?
8. The parking lot has 400 spaces for visitors. Each parking space is approximately 9 ft. by 18 ft.
 - a. What is the **AREA** of the parking lot in feet? _____
 - b. What is the **AREA** in yards? _____
9. Use the elephant transport crate in Africa's Rhino feeding exhibit to find out the following measurements:
 - a. volume _____
 - b. area _____
 - c. perimeter _____
10. Use a compass in Wallaroo Station and answer the following questions:
 - a. As stand in front of the Pony Barn, what animal is **SOUTH**?
 - b. As you stand in front of the Woolshed, what animal is **SOUTHWEST**?
 - c. As you stand in front of the New Guinea Singing Dogs, what animals are **NORTH**?

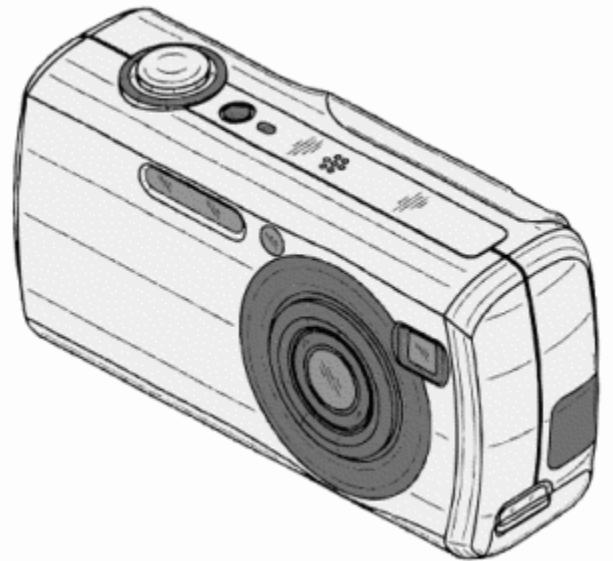


FIELD TRIP ACTIVITY

Camera Scavenger Hunt

Directions: Use the following clues to take pictures at the zoo. Can you find...

1. A person performing a job at the zoo?
2. An animal with lines around its body?
3. An animal that breathes under water?
4. An animal with a color as part of its name?
5. An animal that was injured and now must live at the zoo?
6. A mammal that sheds its fur?
7. An animal with scales?
8. An animal with a mucus coating?
9. An animal with whiskers?
10. An animal that is nocturnal?
11. An animal with stilt-like legs?
12. An animal that uses its arms for locomotion?
13. An animal whose name is similar to red?
14. An animal that lives on the ground?
15. An animal with antlers?
16. An animal whose name means "nose horn?"
17. An animal that is related to the raccoon?
18. The largest mammal at Tampa's Lowry Park Zoo?
19. An animal with spots?



Bonus: Write your own clue here and take a picture!

Vocabulary List

Adaptation: the development of physical and behavioral characteristics that allow organisms to survive and reproduce in their habitats

Area: Length x Width

Biosphere: the parts of the Earth's surface and atmosphere where plant and animal life can exist

Breeding: the mating and producing of young

Carnivore: an animal that eats other animals; somebody who is not a vegetarian and likes to eat meat

Circumference: distance around a circle

Colonize: to go to and live permanently as part of a settlement in a foreign land that was previously sparsely inhabited; to establish plants or animals, or become established, in a biological colony in a new ecosystem

Compass Rose: a graduated circle indicating directions north, south, east, and west

Conservation: the preservation, management, and care of natural and cultural resources; the keeping or protecting of something from change, loss, or damage

Crepuscular: describes fish and land mammals that are active at dusk and dawn, when the light level is low

Diurnal: describes animals that are active during the day rather than at night

Ecosystem: a localized group of interdependent organisms together with the environment that they inhabit and depend on

Endangered: in danger of extinction

Environment: all the external factors influencing the life and activities of people, plants, and animals

Estimate: a judgment, calculation, or educated guess, as of the value, amount, time, size, or weight of something.

Extinction: the process by which a group of related organisms dies out

Food Chain: a hierarchy of different living things, each of which feeds on the one below

Food Web: the interlocking food chains within an ecological community

Habitat: the natural conditions and environment in which a plant or animal lives, e.g. forest, desert, or wetlands

Herbivore: an animal that feeds only or mainly on grass and other plants.

Insectivore: a small nocturnal mammal that feeds primarily on insects. Moles, shrews, and hedgehogs are all insectivores.

Nocturnal: describes animals that are active at night rather than during the day

Omnivore: an animal that will feed on any type or many different types of food, including both plants and animals.

Perimeter: sum of all sides

Revolution: one full circle or rotation

Species Survival Plan: created by the AZA (Association of Zoos and Aquariums) to manage and conserve a select and typically threatened or endangered species of animals in the wild. SSP species are often "flagship species," well-known animals which arouse strong feelings in the public for the preservation and protection of the species population and their habitat, including the African Elephant, Cheetah, Komodo Dragon, Chimpanzee and Indian & White Rhinos.

Ultraviolet Radiation: radiation with ultraviolet wavelengths. Radiation of this kind is a component of sunlight and is the light that makes exposed skin become darker

Volume: Length x Width x Height

Sunshine State Standard Benchmarks

Science Sunshine State Standard Benchmarks	
SC.K.L.14.3	<p>Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: Moderate</u></p>
SC.3.L.15.1	<p>Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: Moderate</u></p>
SC.3.L.17.1	<p>Describe how animals and plants respond to changing seasons.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: Moderate</u></p>
SC.4.L.16.2	<p>Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: High</u></p>
SC.4.L.16.3	<p>Recognize that animal behaviors may be shaped by heredity and learning.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: High</u></p>
SC.4.L.16.4	<p>Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: Moderate</u></p>
SC.4.L.17.2	<p>Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: Moderate</u></p>
SC.4.L.17.3	<p>Trace the flow of energy from the Sun as it is transferred along the food chain through the</p>



	<p>produces to the consumers.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: Moderate</u></p>
SC.4.L.17.4	<p>Recognize ways plants and animals, including humans, can impact the environment.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: High</u></p>
SC.5.L.15.1	<p>Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: High</u></p>
SC.5.L.17.1	<p>Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycle variations, animal behaviors and physical characteristics.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: Moderate</u></p>

Mathematics Sunshine State Standard Benchmarks

MA.3.A.4.1	<p>Create, analyze, and represent patterns and relationships using words, variables, tables, and graphs.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: High</u></p>
MA.3.A.6.1	<p>Represent, compute, estimate, and solve problems using numbers through hundred thousands.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: High</u></p>
MA.3.A.6.2	<p>Solve non-routine problems by making a table, chart, or list and searching for patterns.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: High</u></p>
MA.3.S.7.1	<p>Construct and analyze frequency tables, bar graphs, pictographs, and line plots from data, including data collected through observations, surveys, and experiments.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating: High</u></p>



MA.3.G.3.3	Select and use appropriate units, both customary and metric, strategies, and measuring tools to estimate and solve real-world area problems. <u>Cognitive Complexity/Depth of Knowledge Rating: Moderate</u>
MA.5.G.5.3	Solve problems requiring attention to approximation, selection of appropriate measuring tools, and precision of measurement. <u>Cognitive Complexity/Depth of Knowledge Rating: High</u>

Social Studies Sunshine State Standard Benchmarks	
SS.3.G.1.1	Use thematic maps, tables, charts, graphs, and photos to analyze geographic information. <u>Cognitive Complexity/Depth of Knowledge Rating: N/A</u>
SS.3.G.1.2	Review basic map elements (coordinate grid, cardinal and intermediate directions, title, compass, rose, scale, key/legend with symbols). <u>Cognitive Complexity/Depth of Knowledge Rating: N/A</u>
SS.3.G.1.6	Use maps to identify different types of scale to measure distances between two places. <u>Cognitive Complexity/Depth of Knowledge Rating: N/A</u>
SS.4.G.1.4	Interpret political and physical maps using map elements (title, compass, rose, cardinal, directions, intermediate directions, symbols, legend, scale longitude, latitude). <u>Cognitive Complexity/Depth of Knowledge Rating: N/A</u>
SS.5.G.1.4	Construct maps, chats, and graphs to display geographic information. <u>Cognitive Complexity/Depth of Knowledge Rating: N/A</u>

