

Wildlife Prairie State Park
Predators—They're Part of the Picture

Teacher's Packet

Grades: 5th-6th

Abstract:

From insect eating bats to fish-gulping eagles, predators are something special! Take a look at amazing adaptations predators have to help them catch a meal. Many predators are in peril, and this packet explores why they are so important to our natural world, and how we can help.

Meets Illinois State Learning Standards for Science:

11.A.2b: Collect data for investigations using scientific process skills including observing, estimating, and measuring.

12.B.2a: Describe relationships among various organisms in their environments (e.g. predator/prey, parasite/host, food chains and food webs).

12.B.2b: Identify physical features of plants and animals that help them live in different environments (e.g. specialized teeth for eating certain foods, thorns for protection, insulation for cold temperature)

13.A.2c: Explain why keeping accurate and detailed records are important.

Objectives:

Students will:

- ❖ learn the tactics that predators use to catch prey.
- ❖ learn ways to help protect our native predators.
- ❖ recognize the role that predators play in the ecosystem.

The goal of all environmental education programs at Wildlife Prairie State Park is to help students become environmentally knowledgeable, skilled, dedicated citizens who are willing to work individually and collectively toward achieving and maintaining a dynamic equilibrium between the quality of life and the quality of the environment.

In this packet, you should have

Student Preparation

Background Information-Carnivore Characteristics

Jaw measurements and illustrations

Activity-complete a jaw

Activity-Clock a Carnivore

Activity-Portrait of a Predator and Answer Key

STUDENT PREPARATION

Before coming to Wildlife Prairie State Park, please familiarize your class with the following vocabulary words. In addition, students should participate in at least one of the included pre-trip activities.

- carnivore:** An animal that eats meat.
- omnivore:** An animal that eats a wide variety of foods—from fruits and roots, to carrion and fresh meat.
- herbivore:** An animal that eats plants.
- insectivore:** An animal that eats insects and other small invertebrates.
- camouflage:** Coloration and/or shape of animals that make them difficult to see while in their natural surroundings.
- habitat:** The place where an animal finds food, shelter, water, and space to live.
- predator:** An animal that hunts and eats other animals.
- prey:** An animal that is eaten by other animals.
- endangered species:** Any breeding species which is in danger of extinction (dying out completely) throughout a section of its range.
- extinct:** An animal or plant species that is no longer available to create future generations (ex. Dinosaurs are extinct).
- extirpated:** An animal or plant that no longer inhabits a former range (ex. Wolves are extirpated from Illinois). The animal or plant may or may not be endangered or threatened in other areas.
- threatened:** An animal or plant that is under advisement in that it may become endangered in the future (ex. Bald Eagles are threatened in Illinois).
- incisors:** Teeth in the front of the mouth the carnivores mostly use for nipping and biting.
- canines:** Teeth next to the incisors.
- molars:** Teeth in back of the mouth used for grinding.
- carnassial teeth:** Cheek teeth that cut like scissors.
- retractile claws:** Claws that can be pulled back or sheathed when not being used. Common in the cat family.
- Plantigrade:** Animal that walks flat on its feet, such as humans and black bear.
- Digitigrade:** Animal that walks on its toes, such as those in the cat and dog family.
- Status:** How a particular species is ranked in relation to other species or its past populations (ex. Status rankings are Endangered, Threatened, Extirpated, Rare, Extinct)

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Background Information

Carnivore Characteristics

1. **Carnivores** eat meat. Many hunt and kill their own prey; others rely on carrion (dead meat) as their main source of meat. Although all of the mammals in this group are descended from strict meat eaters, some are **omnivorous**, and a few feed almost entirely on plants. For example, raccoons eat everything from crayfish to persimmons.
2. One thing all carnivores have in common is a mix of specialized teeth. For example, most carnivores have long, pointed canines that they use to stab and kill their prey. And unlike all other mammals, they have **carnassial teeth**. Carnassials are sharp cheek teeth that cut like scissors when the animal closes its jaws. Cats, wolves, and other carnivores with primarily “all meat” diets, have very sharp carnassial teeth. Carnivores that have omnivorous diets, such as bears and raccoons, normally have flatter, less scissor-like carnassial teeth. Omnivores also tend to have larger rear **molars**, which help grind food.
3. Almost all carnivores have claws, but use their claws in different ways. They may use them to hold their prey, dig for food, dig dens or burrows, climb trees, and so on. Most cats and some other carnivores have sharp, **retractile claws**. That means they can be sheathed or pulled back. When the claws are sheathed, a special ligament holds each claw and the toe bone it is attached to out of the way. When an animal needs to use its claws, muscles straighten out the toe bones and unsheathe the claws. Many other carnivores, such as wolves, have **non-retractile claws**, and some animals have only partially retractile claws (ex. Cheetah).
4. Smell is one of the most important and well-developed senses in carnivores. These mammals use their powerful noses to detect prey. They also communicate with each other by producing special scents. Different scents help outline territorial boundaries, and may even identify individuals by sex, age, and general health. Some carnivores have a sense of smell that is a hundred times more sensitive than that of humans.

Smell isn’t the only sense that’s well developed in carnivores. Most also have keen hearing and sharp eyesight. All carnivores have eyes that face forward, giving them excellent depth perception, and many are adapted to seeing well in the dark.

Teeth play a vital role in the struggle for survival of a predator. Dentition (tooth arrangement) varies according to the needs of a species.

There are three specific types of teeth, each having a function. Incisors, in the front of the mouth are used for cutting; canines, next to the incisors, are used for tearing and shredding meat; and molars, in the back of the mouth, are used for grinding.

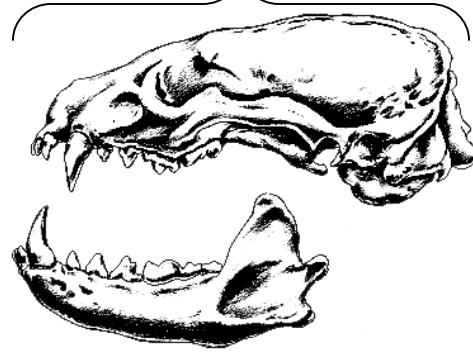
Carnivores, animals that eat meat, depend only marginally on their incisors for nipping and biting, but their success as hunters is dependent on sharpened molars for cutting and tearing their food. The dagger-like canines are also very important for grabbing, puncturing, and holding onto prey.

Powerful sets of muscles control the jaws and provide the force for the use of these specialized sharp teeth.

All members of the cat family are carnivorous, as are most members of the dog family. Red Foxes and black bears are omnivorous (eat both plant and animal matter).

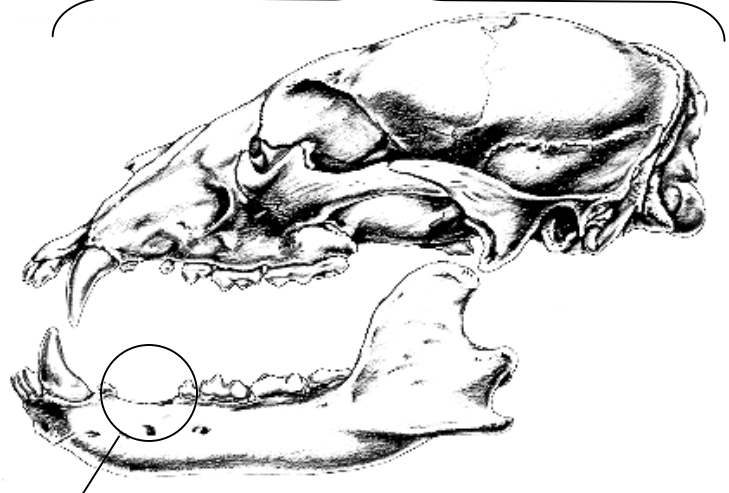
BADGER

4 ¼ - 5 1/8 in. 10.7 - 12.7 cm



BLACK BEAR

10 - 13 ¼ in. 25.4 - 33.6 cm



Large space between teeth

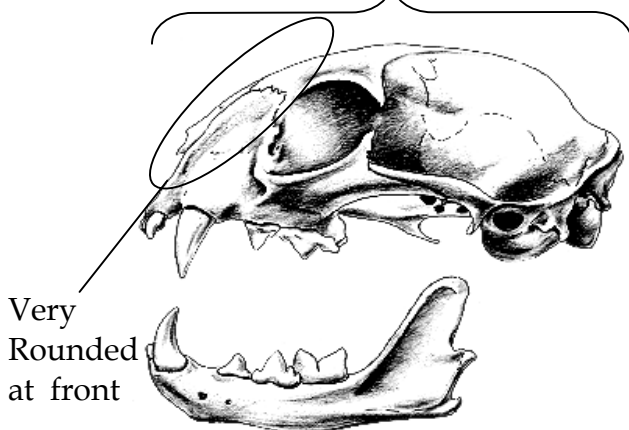
COUGAR

6 1/8 - 9 ¾ in. 15.5 - 23.4 cm



BOBCCAT

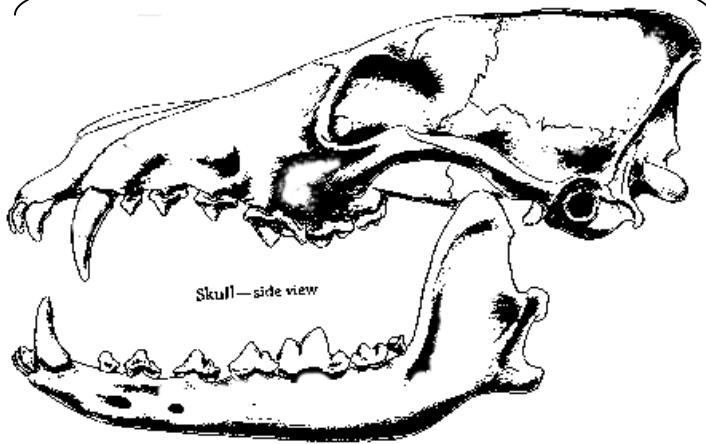
4 - 5 ½ in 10.1 - 13.9 cm



Very Rounded at front

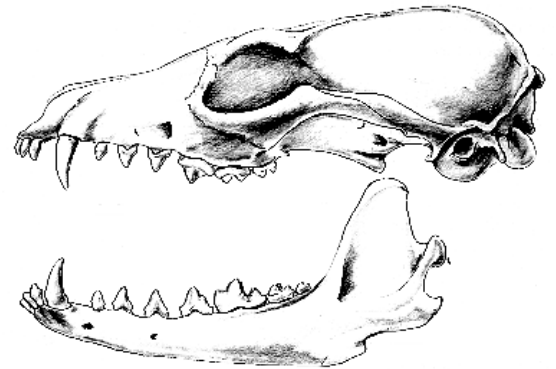
COYOTE

6 3/4 - 8 5/8 in 17.1 - 21.9 cm



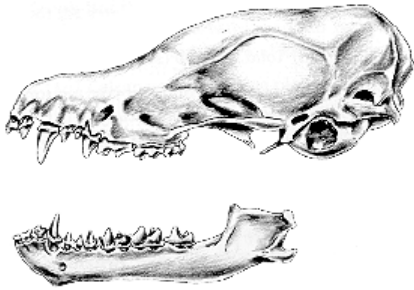
GRAY FOX

4 3/4 - 5 1/8 in 12 - 13 cm



LITTLE BROWN BAT

5/8 in 1.5 cm



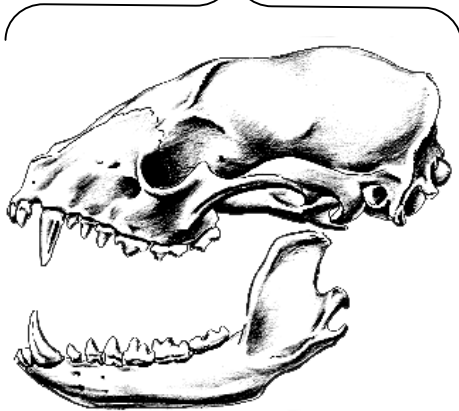
OPOSSUM

3 1/8 - 5 in 7.9 - 12.7 cm



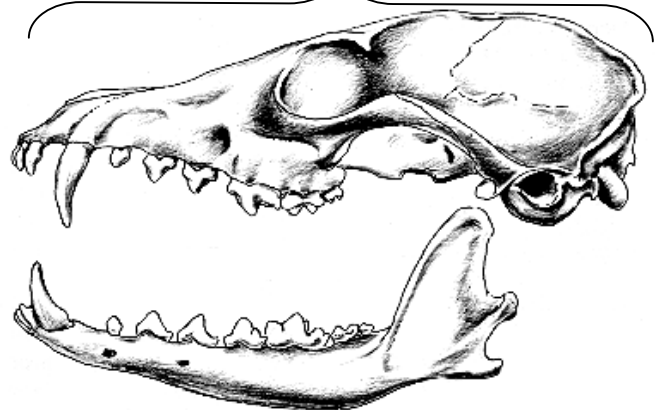
RACCOON

4 1/4 - 5 in 10.7 - 12.7 cm



RED FOX

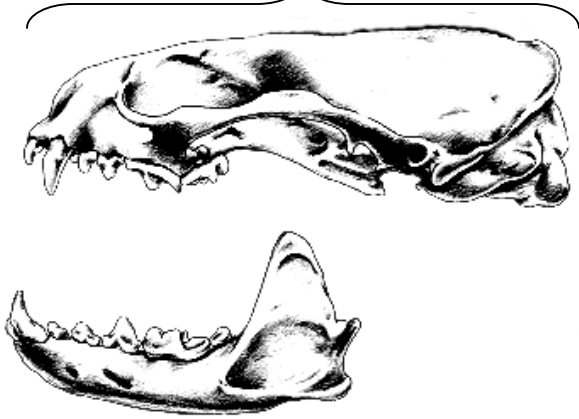
5 1/4 - 6 1/4 in 13.3 - 15.8 cm



RIVER OTTER

3 7/8 - 4 1/4 in

9.8 - 10.7 cm



STRIPED SKUNK

2 1/4 - 3 1/8 in

5.7 - 7.9 cm



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Pre-Trip Activity

Complete a Jaw

Objective: To design a set of teeth to fit a particular carnivore.

Materials:

- ✓ Pieces of strong cardboard
- ✓ Clay
- ✓ Pictures or models of different predator skulls and teeth (drawn or copied to scale)
- ✓ Brads or rivets

Procedure:

1. Give each pair or group of students a strong piece of cardboard.
2. Assign each group a particular carnivore to make a model of.
3. Have students draw to scale on the cardboard piece, the shape of both top and bottom jaw bones.
4. Have students cut out the shapes and attach them together with a brad or rivet (see diagram).
5. Have students use clay pieces to model teeth shape, and place them in the correct position on both top and bottom jaw pieces.

Diagram



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Pre-Trip Activity

Clock a Carnivore

Objective: Describe the behavior of a carnivore.

Procedure:

Have your group become “behavioral scientists” to learn about carnivore behavior. Before you get started, copy the “Carnivore Activities” listed on the next page onto a chalkboard or large sheet of easel paper. Then start by reviewing the characteristics that make carnivores different from other kinds of mammals (reference materials).

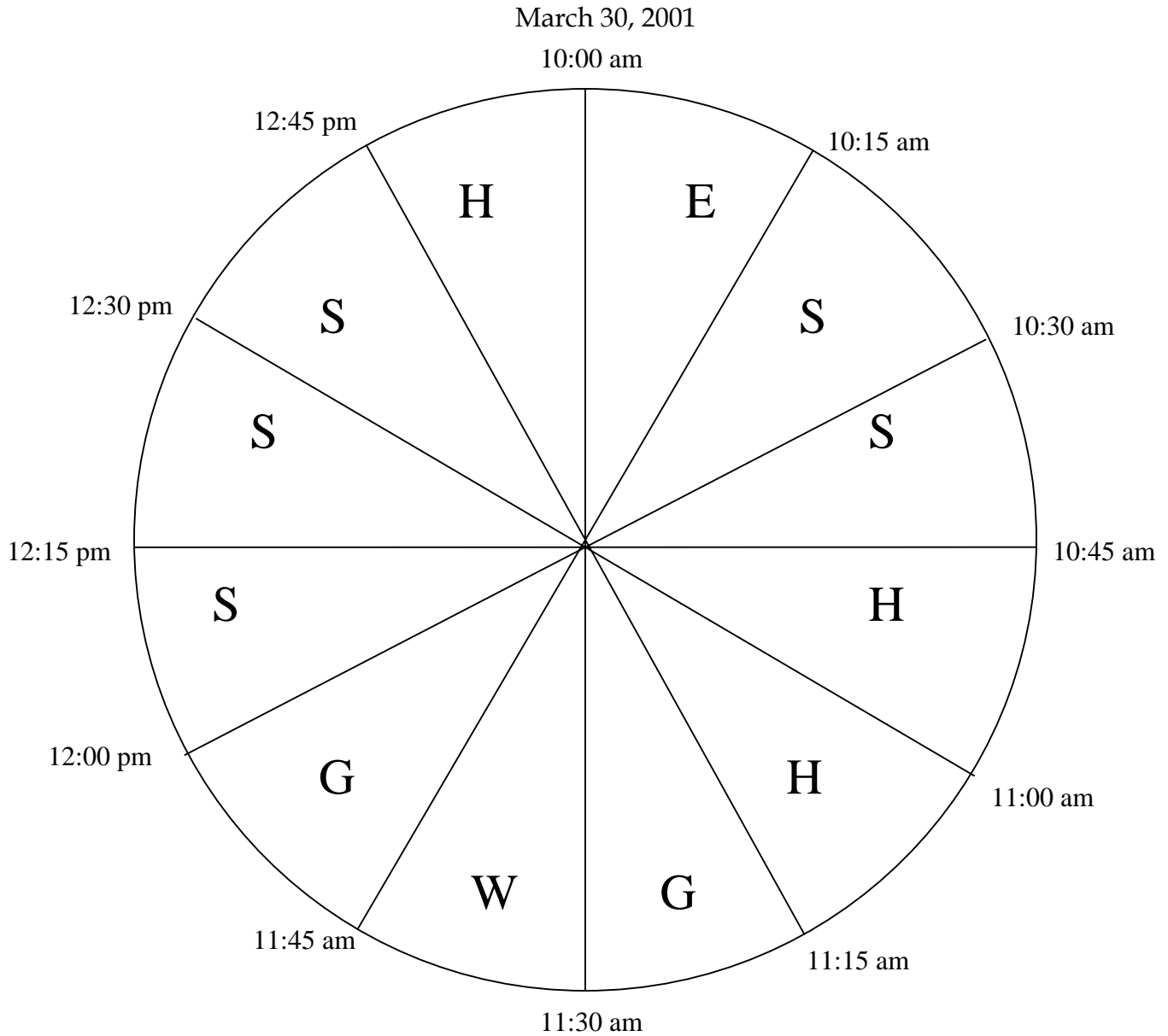
Ask the children if any of them have a pet carnivore (cat or dog). What kinds of activities have they noticed their pets or other neighborhood carnivores doing? (eating, playing, sleeping, etc). As they list behaviors, write them on the chalkboard or easel paper. Then show the kids the list of activities you copied earlier. Combine the two lists by fitting as many of the students’ suggestions into the original list as you can. If the students have any ideas that don’t fit into one of the existing categories, add them to the list and give them a new letter code.

Now ask what activity they think their pet carnivore does most of the time. Write their ideas on the chalkboard or easel paper. Tell them that they’re going to test their ideas by using the list of coded activities to chart the behavior of a carnivore.

Draw a circle divided into 12 parts on the chalkboard or easel paper. Pass out pencils and blank sheets of paper and have the students copy it (see example next page). If they would like to make it look like a cat or dog, have them draw a face and ears on the circle. Also have them copy the list of carnivore activities onto the same sheet. Explain that the clock represents three hours and each division represents 15 minutes. Here’s what they must do:

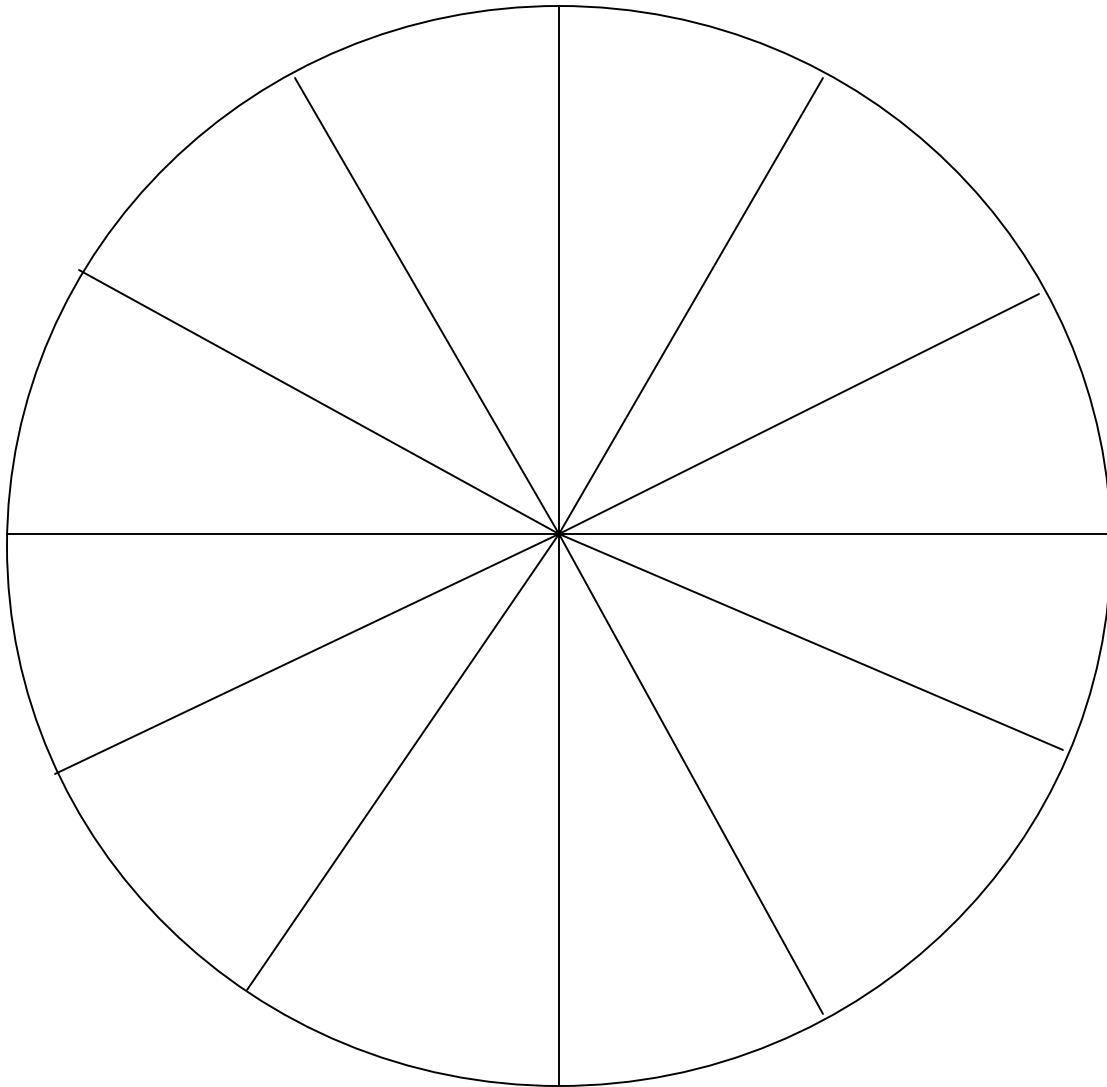
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Pre-Trip Activity

Clock a Carnivore - Sample Clock



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Clock A Carnivore



Find a time when your pet carnivore (or neighborhood carnivore) is usually active and you have some time free for carnivore spying. Write the date and time you start watching at the top of your carnivore clock.

- Watch your carnivore every fifteen minutes, for about two to three minutes, and write down the code for what the carnivore was doing each time you observed its behavior. For example, if your carnivore was *eating* the first time you watched it, write “E” in the first section of the clock. But if it took a few bites of food, then *groomed* itself for most of the time, write “G” on the clock.
- For the next round, write down the time of day, and then watch your carnivore again for about two or three minutes. Choose an activity code from the list and write it in the next space on the clock. Keep doing this every fifteen minutes until you have filled up the clock. If your carnivore does something that is not on the list, add the behavior to the list, and give it a new letter code.
- *Note:* If your class is at a nature center, you may have students observe a wild carnivore instead of a pet.
- Afterward, have the students bring in their carnivore clocks and talk about their data. Did each student’s carnivore spend most of its time doing what he or she thought it would? Ask them if they think they can make any generalizations about the behavior of their carnivores after having clocked them for a few hours. Explain that scientists have to make a lot of observations before they can make generalizations about the behavior of wild animals. They also have to watch more behavior of a particular species. If the students wanted to know what an animal does most of the time, or something else about its behavior, they’d have to observe it for many days, weeks, and months.
- If you like, have the students clock their carnivores for several days in a row. Afterward, they can compare what they learned after several days of observation with what they learned after just three hours (You may have them stagger observation times to observe how time of day influences behavior as well).

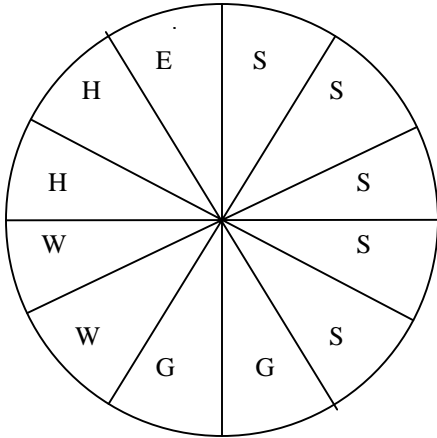
Carnivore Activities

C-Climbing
E-Eating
G-Grooming
H-Human contact (playing, getting petted)
B-Going to the bathroom
P-Chasing or catching prey
R-Running
S-Sleeping
W-Walking around

Math Extension

Cut out pieces of the clock.

Group same activities together, and rearrange them to make a pie graph



Sleeping=5/12
Grooming=2/12
Eating=1/12
Human contact=2/12
Walking around=2/12