

# Lesson Plan: Calorie Countdown (grades K-4)

## Student Learning Outcome:

Students will examine how zoo diets simulate animals' diets in the wild

## Materials:

- *Calorie Countdown* activity sheet
- Examples of various food groups in the human food pyramid (use either pictures or actual food items) – e.g.:
  - Breads/pasta/cereals/grains
  - Fruits/vegetables
  - Fish/meat/beans/dairy foods
  - Sugars/fats

## Procedure:

1. Ask students, "What do we eat in a day to stay healthy?" Invite students to share what they know about healthy foods. Ask them which of these foods are their favorites.
2. Display examples of foods from each level of the food pyramid, and introduce the concept that most of the foods we eat should come from the lower levels of the pyramid. Explain that scientists called nutritionists are sometimes called upon to plan meals and help people choose healthy foods.
3. Ask the students about the diet needs of other animals. Where on the pyramid do carnivores eat? Herbivores? Omnivores? How do these animals get the foods they need? What about animals in zoos? Nutritionists working in zoos get information from studies made of animals in the wild, studies made of domestic animals, and studies done in zoos to plan diets that contain everything each animal needs to stay healthy. Since in many cases it is impossible for a zoo to obtain the food the animal would eat in the wild, the wild diet is carefully analyzed and a substitute diet is designed to consist of the same nutrients. The nutritionist also makes sure that the animal is given the right amount of food. Tell the students that the food is measured out in calories; the calories relate how much energy the food provides to the animal. Foods with lots of calories can provide a lot of energy. Many animals also need low-energy foods that provide fiber, vitamins, and other nutrients for a balanced diet. In a zoo, each animal's food is measured out as precisely as possible.
4. To help students explore the concept that energy and calories, complete the *Calorie Countdown* activity. In this activity, students will be analyzing the diets of three animals. Before you analyze the diets, briefly discuss the animals (some information is provided below).
5. As a class, read each animal's diet from the *Calorie Countdown* sheet. You might need to explain some of the items, especially the prepared foods listed. Compare these items to the food pyramid discussed at the beginning of the lesson.
  - **Hi-Fiber Monkey Biscuits** contain beet pulp, apple, soybean, corn meal, and alfalfa
  - **Zu/Preem Primate Can** contains rice, alfalfa, whole egg, ground wheat, soy grits, and skim milk
  - **Zu/Preem Marmoset Tin** contains cracked wheat, soybean, rice, a whole egg, and a higher vitamin D3 content than the Primate Can
  - **Dry Dog Food** contains soybean, meal, meat-by-products, and chicken

**Answers:** Proboscis monkey: 50.2 ounces and 1,479 calories. Leopard: 40 ounces and 1,900 calories. Tamandua (also called the lesser anteater): 4.65 ounces and 368.5 calories.

**As a concluding activity, have the students compare the energy needs of the three animals. How does their lifestyle relate? Have the students compare their diets with the animals' diets.**

***Background Information***

<b>Leopard</b>	<b>Proboscis Monkey</b>	<b>Tamandua</b>
<p><b>Weight:</b> 80-175 lbs.  <b>Diet:</b> mammals and birds</p> <ul style="list-style-type: none"> <li>• Although some are black and some are spotted, all are the same species.</li> <li>• Leopards are solitary animals that are crepuscular: they hunt at dawn and dusk.</li> </ul>	<p><b>Weight:</b> 15-50 lbs.  <b>Diet:</b> mainly mangrove leaves, but some fruit and flowers</p> <ul style="list-style-type: none"> <li>• Named for the male's long, trunk-like nose.</li> <li>• Eats so much that the content of its stomach can be over a fourth of its body weight.</li> </ul>	<p><b>Weight:</b> 4.5 – 15.5 lbs.  <b>Diet:</b> termites, ants, bees, and their honey</p> <ul style="list-style-type: none"> <li>• Nocturnal animals that spend most of the day asleep in the trees.</li> <li>• Having no teeth, they use their sticky tongues (up to 16 inches long) to obtain food.</li> </ul>

## CALORIE COUNTDOWN ACTIVITY SHEET

Add up the daily amount of food eaten and energy taken in by each animal.

<b>PROBOSCIS MONKEY</b>		
	<b>Ounces</b>	<b>Calories</b>
Hi-Fiber Monkey Biscuits	1.8	140
Cooked Brown Rice	1.8	59
Raw Tan	3.5	125
Raw Plantain	1.8	61
Cooked Chicken Egg	1.8	79
Zu/Preem Primate Can	7.0	342
Zu/Preem Marmoset Tin	7.0	348
Raw Spinach	4.4	28
Raw Kale	4.4	63
Bok Choy	4.4	26
Fresh Mulberry Leaves	4.4	124
Sunflower Sprouts	4.4	53
<b>TOTALS</b>		

<b>TAMANDUA</b>		
	<b>Ounces</b>	<b>Calories</b>
Dry Dog Food	3.5	329
½ of Cooked Chicken Egg	0.9	39.5
Ground Crab Shell	0.25	0
<b>TOTALS</b>		

<b>LEOPARD</b>		
	<b>Ounces</b>	<b>Calories</b>
Frozen Feline Diet (mostly horsemeat)	40	1,900
<b>TOTALS</b>		