

Kristy Mall  
Predators vs. Prey  
Lesson Plan for 6<sup>th</sup> grade science  
This correlates with Tennessee state standard

6.2.2 Examine the competitive relationships among organisms within an ecosystem.

a. Distinguish between predators and prey.

**Introduction:** What defines a predator? What defines prey? What are characteristics of each?

### **Lesson**

Animals in the zoo are divided into classes: predators and prey. Predators are animals that consume other animals. Examples of some of the predators found at the zoo include the cougar, Bengal tiger, clouded leopard, and golden eagle. There are several things that distinguish predators from prey. Have students try to identify characteristics of those animals that would make them successful as predators.

First, predators have eyes that are positioned forward so that they can spot and hunt their prey. Another characteristic is sharp talons or sharp teeth for trapping and tearing/killing. Many are larger than the animals that they prey upon, and strength and agility are definitely keys to success. Another key to success would be intelligence. Predators also must be able to outsmart their prey in order to defeat them.

Prey, on the other hand, have eyes that are positioned on the sides of the head so that they can see predators approaching. They are usually smaller and are usually equipped with speed or other defense mechanisms to escape their predator when it approaches. Defense mechanisms can include bad odor, poisonous excretions, camouflage, or even playing dead.

Examples of prey at the zoo include antelope (equipped with speed and horns to ward off predators), millipedes (they give off a cyanide excretion), turtles (have a protective shell), ostriches (one of the fastest land animals), and giraffes (camouflage coloring and speed).

### **Conclusion**

Predators and prey have distinguishable characteristics that can be identified as a predatory or prey mechanism.

Pam Hammond  
Volume of the Silos  
Lesson Plan for Geometry Class  
This correlates with Tennessee standards

State Standard:

4.2c – To apply measurement concepts and relationships in algebraic and geometric problem-solving situations. Determine the volume or surface area of a rectangular solid or cylinder in a real-world situation.

Introduction: Show a cylinder and a sphere and talk about the characteristics of each of the shapes. Look at pictures of farms and identify all of the shapes seen on a farm. Bring a play farm set and show pictures of Cripple Creek farm and other farms around the area.

Lesson: Review the formula for the volume of the cylinder and the sphere. Work through several exercises to check to make sure everyone understands the concept of composite figures and how to find the volume of composite figures.

Background Information: The volume of a composite space figure is the sum of the volumes of the figures that are combined.

Find the volume of the grain silo at the left. The silo combines a cylinder and a hemisphere.

The characteristics of the silo include the radius of the hemisphere is 10 ft. The diameter of the silo is 20 ft. The height of the silo is 40 feet.

## A Day on/in the Stones River

### Introduction

If you were to close your eyes and think of a time long ago, you may be able to visualize the activities of “Huck” Finn, and some of his adventures along the river. As with “Huck”, I say on/in the river because some of our group were in canoes and some were out of the canoes and upside-down in the water. All of the persons in our group had fun and learned several things about our environment and the life in and along the river. We traveled the river in canoes and made several stops along the way to get into the water to catch samples of the aquatic life in that particular part of the river.

### Objectives:

1. The student will learn how our environment is affected by industrial and residential growth.
2. The student will learn how the river reacts to pollutants introduced into the water.
3. The student will learn how the aquatic life responds to the changes in the water.

### Instruction:

Ask students to create a list of things about a natural stream of water that they are familiar with. If they haven't actually been around a stream, they may use things they have seen on TV. As the students generate their list, observe their thought process. Most students will probably look toward the recreational side of water. This lesson is directed toward the environmental issues of the stream.

One of the largest pollution generators in rural areas are agricultural processes. The daily activities of the farming operation may cause pollution of water sources. From the waste of livestock, erosion of the soil, clear cutting of forest, to the applications of fertilizers, agricultural processes can cause problems if not managed properly.

The storm water run off in the urban areas care the pollutants from the streets and parking lots. The industrial and residential areas also may contribute to the pollution if not managed and monitored well.

All of these pollutants eventually are collected in our streams and lakes. These pollutants create changes in the water, which causes changes in the animal life in and along the water. Usually nature will clean itself over a period of time, and the animals will return as well.

### Conclusion:

Over the generations of life along the river, we as humans have introduced large amounts of pollutants into our water supplies. Some of this was intentional and some was simply because we didn't know any better. With the continued study of water, plants, and animals we learn from our mistakes and improve our processes in agriculture and industry. Education has been and will continue be the way for us to correct our errors and prevent further harm.

### Solution to the problem:

- Volume of the cylinder =  $\pi r^2 h = \pi (10)^2 (40) = 4000\pi$

- Volume of the hemisphere =  $\frac{1}{2}((\frac{4}{3})\pi r^3) = \frac{2}{3} \pi (10)^3 = \underline{2000\pi}$
- Volume of the composite figure =  $4000\pi + \frac{2000\pi}{3}$
- The volume of the silo is about 14,700 ft<sup>3</sup>