



DEER ME



BENCHMARK and TASK

SC.G.1.2.1 The student knows ways that plants, animals, and protists interact.

- The student experiences, through participation in simulations, that each habitat supports a limited population with the limit being set by the food, water, shelter, and space available.

KEY QUESTION

How many animals can a habitat support?

BACKGROUND INFORMATION

Living things need food to give them **energy**. Energy passes from one living thing to another through **food chains**. A **food chain** is a simple way to look at how animals depend upon their **habitats** and other animals to survive. Every food chain begins with the **sun**. Green plants (**producers**) are responsible for making food that animals (**consumers**) eat. An animal that eats the plants is a primary consumer. (A grasshopper is a good example.) A secondary consumer (such as a lizard) eats the primary consumer. This relationship is often referred to as a **predator/prey** relationship, where the predator is the hunter and the prey is the victim.

Food is just one of the things that living creatures need in order to survive. There are other necessities, called components of habitat, which animals require for survival. These other components include water, shelter, and space. Without a sufficient amount of each of the four components, an animal may not survive long enough to reproduce and maintain the **population**.

An animal's **environment** is often called its habitat. A habitat is the place where an animal finds its food, water, shelter, and space. Each habitat is capable of supporting a limited population of animals. The limit is set by the food, water, shelter, and space available. This limit is called the carrying capacity.

MATERIALS

Per class

data collecting chart

Round #	# of Deer
start	
1	
2	
↓	
15	

TEACHING TIPS

1. Create a data-collecting chart to record 15 rounds of play. (See above.)

2. Select a large, open area on the playground for this activity.

ENGAGE

Ask students to think about the essential components of habitats. Ask: *What do all animals need in order to survive?* As students share their ideas about components that are absolutely necessary for survival, try to direct the discussion toward four key components: food, water, shelter, and space. Ask: *What would happen if even one of these four components were missing?*

EXPLORE

1. Take the students and the recording chart outdoors to the area previously selected. Designate $\frac{1}{4}$ of the students to be deer for the beginning round of the game. All other students will be the components of habitat – food, water, shelter, and space.
2. Line up all deer shoulder to shoulder at one end of the playing area. Line up all other students shoulder to shoulder at the opposite end of the area. One line of students should be facing the other line of students across the playing area. (Be sure to record how many deer there are at the start of the game.)
3. Tell the students that are the components of habitat that they will get to decide what component to be for this round. They will show their choices by placing their hands a certain way. Demonstrate hand signals to both groups:
 - food:** place both hands on stomach
 - water:** place both hands over mouth
 - shelter:** place both hands on top of head
4. Tell students that, for this game, it is assumed all animals have the space they need to survive. No one will represent the component of space.
5. Students in both groups should now face away from each other (turn their backs). Each deer will make the hand signal of the component that it wants for this round. All other students will decide what component they want to be and make the appropriate signal, indicating food, water, or shelter. Remind students that once a signal is chosen, it must be kept for the whole round.
6. Ask students to turn around facing the other line while showing their signal.
7. When you make an agreed upon sound, such as a whistle or hands clap, the deer may go quickly (without running), collect a component of the habitat that matches their signal, and bring it back home. (Note: It is assumed for this activity that deer have met all their other needs except the one represented by their displayed hand signal.)
8. Deer who successfully collect the component needed are survivors. They remain deer in round 2. The component (student) they have collected also becomes a deer for round 2, representing a successful breeding season. Record the number of surviving deer and new deer for the end of round 1. Deer who could not meet their need become components of the habitat and join that group.
9. Continue recording data for approximately 15 rounds. If a round ends with no surviving deer, the game will end early. (That won't usually happen unless the habitat component students collaborate and all use the same signal one round!)

EXPLAIN

1. Return to the classroom. Create a graph using the data collected during the game.
2. Discuss results and patterns discovered by students:
What do animals need to survive?

What are some of the limiting factors that affect their survival?

Who is most likely to survive?

What happened when resources got scarce?

3. Examining the data over a 15-year period (15 rounds) will usually provide students with evidence that there is a limit on the number of deer that can be supported by the food supply in a given environment. Ask students what the carrying capacity (limit determined by the amount of space, water, shelter, and food available) of the environment represented in this game seems to be. Rather than a specific number, students should give a *range* of numbers.

EXTEND/APPLY

Introduce a predator, such as a mountain lion, into the habitat. Deer will still have to meet their needs but will need to avoid predators.