

The Coyote Population

Kansas Prairies

Math

Materials

- Two different sizes of paper clips: large for male, small for female
- Graph paper
- Colored pencils or marker
- If you have computers, use one of the following programs:
 - Excel, Word, PowerPoint or Pages to make graphs
- One copy of Worksheet A for each student

Grade Level: 4-6

Time: 45 minutes

**Standards:
Math**

Overview

Students will study the population of coyotes and their resources. Then, they will graph their data from the activity. This exercise may be done with any prairie population.

Objectives

1. Students will list resources that coyotes need in their ecosystem.
2. Students will begin to understand what happens when there are too many coyotes on the prairie.
3. Students will be able to record data in a data table.
4. Students will be able to use their data to make a graph.

Background Information

The coyote often appears in the stories and traditions of Native Americans, usually as a very confident and clever beast. Modern coyotes have displayed their cleverness by adapting to the changing American landscape. Coyotes are members of the dog family, and they once lived primarily in open prairies and deserts, but now they roam the continent's forests and mountains. They have even colonized in cities like Los Angeles and are now found over most of North America. Coyote populations are likely at an all-time high.

These adaptable animals are omnivores, and they will eat almost anything. They hunt rabbits, rodents, fish, frogs, and even deer. They also feast on insects, snakes, fruit, grass, and carrion. Because they sometimes kill lambs, calves, or other livestock, as well as pets, many ranchers and farmers regard them as destructive pests.

Coyotes are formidable in the field, where they enjoy keen vision and a very good sense of smell. They can run up to 40 miles (64 kilometers) an hour.

Coyotes form strong family groups called packs. In the fall and winter, they form packs for more

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effective hunting. In spring, females den and give birth to litters of three to twelve pups. Both parents feed and protect their young and their territory. The pups are able to hunt on their own by the following fall.

Coyotes are smaller than wolves and are sometimes called prairie wolves or brush wolves. They communicate with a distinctive call, which at night often develops into a raucous canine chorus. The average lifespan of a coyote in the wild is up to fourteen years.

*Information adapted from National Geographic's Coyote Profile,
<http://animals.nationalgeographic.com/animals/mammals/coyote.html>*

Instructional Format

1. Share background information with students.
2. This lesson may be done individually, in small groups, or as a class.
3. Upon completing the lesson, students will complete Worksheet A and discuss the activity.

Procedures

1. Begin with two paper clips: one large one for the male coyote and one small one for the female coyote.
2. On Worksheet A, students will record the coyote population of a prairie for five years.
3. Each year, each pair of coyotes gives birth to two pups. Then year two, those two pups will each give birth to two pups. Each time they give birth to a female and a male pup. They will mate with another coyote on the prairie. You can make a factor tree to keep track of births as well as using the paper clips.
4. In the data table on Worksheet A, have students record the new offspring from each new pair of coyotes. Remember that each of the old pairs will also be having offspring, so the population of coyotes would grow much quicker than what you may be recording. *Year one there will be two offspring who will then each have two offspring so that at the end of year two there would be four offspring – population is growing exponentially.*

Conclusion Questions (Assessments)

Students will complete Worksheet A.

Resource

National Geographic. Coyote Profile.

<http://animals.nationalgeographic.com/animals/mammals/coyote.html>

Name:

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Graphing Activity

Determine the coyote population in five years, using the paper clips and the table below. Then, answer the Conclusion Questions.

Year 1	Year 2	Year 3	Year 4	Year 5
2 coyotes				

Conclusion Questions:

1. What is happening to the coyote population?

2. Will there be any limiting factors to the increase in population of the coyotes and what are they?

3. What will happen to the food chain with the increase in coyote population?

4. What will happen to the food chain should the coyotes become diseased and begin to die?

5. Now use your data table to make a graph.