

Animals and Numbers

Teacher's Guide

Grade Level: K-2

Curriculum Focus: Mathematics

Lesson Duration: 1 class period

Program Description

Counting all the wild animals in the world is impossible, but the task seems less daunting when you count them in groups or subsets. Practice counting to 20 forward and backward to illustrate subsets and discuss the importance of the number one.

Discussion Questions

- What is a subset?
 - What is the largest number of animals you have seen at one time?
 - Practice counting to 20, forward and backward.
 - What makes one an important number?
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Lesson Plan

Student Objectives

- Demonstrate an understanding of numerical subsets and simple arithmetic.
- Practice using subsets by dividing 20 objects into smaller groups to count the objects.
- Create a story illustrating their understanding of arithmetic.

Materials

- *Animals and Numbers* video
- Unifix cubes, blocks, or other small moveable objects, 20 per group
- Crayons, markers, and/or colored pencils
- Story paper, one sheet per student (drawing paper with a few lines for writing on it)

Procedures

1. Introduce counting skills by viewing *Animals and Numbers*. Practice counting with your students. What is the highest number they can reach by counting? From what number can they count backward? Can they count to 10 by twos?
2. After watching the program, divide students into groups of 3 or 4 and give each group a set of 20 unifix cubes, blocks, or other small, moveable objects. Allow students a few minutes to play with the objects and then ask them to count the objects. How many does each group have? Make sure that they all count 20 objects.
3. Ask students to use subsets to count their objects. First have them group their objects into subsets of twos. Ask how many groups of two are in 20. Next have them count the group of objects by fours. Ask how many groups of four are there in 20. Finally, ask them to count the group of objects by fives. Ask how many groups of five are there in 20.
4. Once you feel confident that students understand the concept of subsets, have them use their objects to practice solving simple arithmetic problems. Write equations such as $1+1 =$ or $1+2 =$ on whiteboard or chart paper. Have them use their group objects to solve the problems and ask volunteers to give you the answers. Write the correct answers and leave the solved equations on the board for the next part of the lesson. Offer more advanced students some subtraction equations or more difficult addition equations.
5. Have students return to their work areas and tell them that they are going to create an arithmetic story using one of the equations. Demonstrate making an arithmetic story. First, choose an equation to use, for example $1+1 = 2$. Next, come up with a story illustrating this equation and tell it to your students, such as one duckling was swimming in a lake and then its brother joined him, so now there are two ducklings. Draw the ducklings on the lake and write the equation on a piece of story paper. Tell more advanced students to write the story as well as the equation on the lined portion of the story paper.
6. Give each student a piece of story paper and drawing and writing implements, allowing them time to work on their stories. Make sure students understand that they can use any of the equations you have worked with; more advanced students may choose another equation as long as it is correct.
7. After students have completed their stories and drawings, ask volunteers to share them with the class. Display the finished products in the classroom.

Assessment

Use the following three-point rubric to evaluate students' work during this lesson.

- **3 points:** Students were highly engaged in class discussions and group activities; demonstrated a clear understanding of how to use subsets to count large groups; and made colorful, creative and unique arithmetic stories that clearly identified a solved equation.

- **2 points:** Students participated in class discussions and group activities; demonstrated a basic understanding of how to use subsets to count large groups; and made somewhat colorful, creative and unique arithmetic stories that generally identified an arithmetic equation.
- **1 point:** Students participated minimally in class discussions and group activities; were unable to demonstrate a basic understanding of how to use subsets to count large groups; and made incomplete arithmetic stories that did not identify an arithmetic equation.

Vocabulary

count

Definition: To name or list the units of a group or collection one by one to determine a total

Context: It's a long hard journey jumping up the river, but it makes the salmon easier to count.

numbers

Definition: A member of the set of positive integers; one of a series of symbols of unique meaning in a fixed order that can be derived by counting

Context: Adding animals is a great way to practice using numbers.

subset

Definition: A set contained within a set

Context: Counting with subsets of numbers is a nice shortcut when you have to count a large group.

subtract

Definition: To take away; deduct

Context: Let's subtract animals by using what we know about minus one.

Academic Standards

Mid-continent Research for Education and Learning (McREL)

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit

<http://www.mcrel.org/compendium/browse.asp>

This lesson plan addresses the following national standards:

- Mathematics: Understands and applies basic and advanced properties of the concepts of numbers; Uses basic and advanced procedures while performing the processes of computation



DVD Content

This program is available in an interactive DVD format. The following information and activities are specific to the DVD version.

How To Use the DVD

The DVD starting screen has the following options:

Play Video—This plays the video from start to finish. There are no programmed stops, except by using a remote control. With a computer, depending on the particular software player, a pause button is included with the other video controls.

Video Index—Here the video is divided into sections, indicated by video thumbnail icons. Watching all parts in sequence is similar to watching the video from start to finish. Brief descriptions and total running times are noted for each part. To play a particular segment, press Enter on the remote for TV playback; on a computer, click once to highlight a thumbnail and read the accompanying text description and click again to start the video.

Standards Link—Selecting this option displays a single screen that lists the national academic standards the video addresses.

Teacher Resources—This screen gives the technical support number and Web site address.

Video Index

Segment 1. Counting Forward and Backward

There are far too many wild animals to count. But counting sets of animals makes it easier. Test your skills by counting a set of salmon going forward and backward.

Discussion question

Q: What is the highest number you can reach when you count forward?

A: Answers will vary.

Segment 2. Adding and Subtracting by One

Even though it's small, one is a very powerful number. Try a few addition and subtraction equations using the number one.

Discussion question

Q: What happens to a number when you add or subtract one?

A: When you add one to a number the number will increase in value (as in 3 plus 1 equals 4).

When you subtract one from a number the number decreases in value (as in 3 minus 1 equals 2).

Segment 3. Adding and Subtracting by Two

Two is twice as much as one. If you can count by two then you can add and subtract by two.



Discussion question

Q: Practice counting by two. What is the highest number you can reach?

A: Answers will vary.

Segment 4. Subsets: Counting by Fours and Fives

Counting large groups of animals is easier if you use subsets, or smaller groups of numbers. A group of 20 elephants is the same as five groups of four.

Discussion question

Q: What is a subset?

A: A subset is a set contained within a larger set. A number subset is a group of numbers. Counting by subsets of numbers is useful shortcut when you have to count a large group of objects.

Segment 5. The Right Subset: Counting to Seven and Other Numbers

A group of eight cannot be divided into fives, and a group of seven cannot be counted by two. Learn how to choose the right subset to count groups.

Discussion question

Q: What subsets could you use if you were counting a group of 12 animals?

A: You could divide a group of 12 animals into subsets of 1, 2, 3, 4, or 6.

Support Materials

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the [DiscoverySchool.com](http://school.discovery.com) Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>

