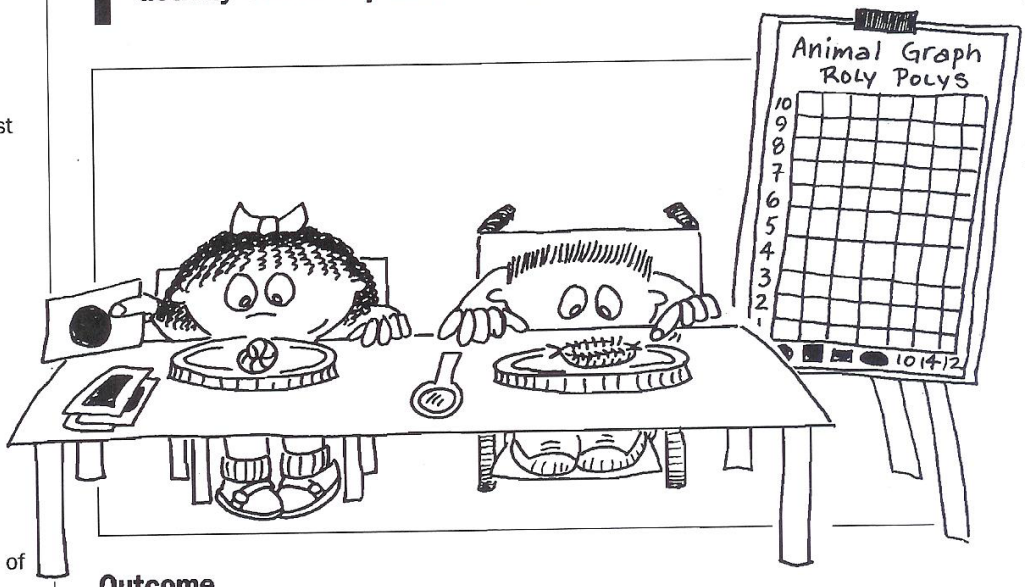
Animal Math

Students determine the shape of a small garden animal, count its body parts and colors, and graph the results. This model activity can be repeated with each animal the class explores.



Indoor

Time
30 minutes, or until students lose interest

Related Subject
Math

Process Skills
Observing
Comparing

Materials
For the Class:
(6–8 students at a time)
- 10–12 individuals of the animal to be investigated
- 6–8 magnifying lenses
- 6–8 plastic lids from cottage cheese, margarine, or yogurt tubs
- 1 marking pen
- 1 tub of unifix cubes
- an assortment of crayons or markers

For Each Group of 6–8
- copy of Animal Graph Blackline Master, p. 278

Outcome

Students become aware of animal body parts while practicing math skills.

For the Teacher

In this activity, your students will observe characteristics of a garden animal and then graph the results of their observations. The result: A unique class portrait of the animal—in numbers!

Some arthropods, such as spiders and insects, are divided into parts that are as well defined as a sunflower's leaves, stem, roots, and flower. The differences between the parts of other arthropods are not so easy to observe. For example, students may confuse the antennae of a sow bug with its legs. All arthropods have an exoskeleton (a hard external coat that serves as a skeleton), and their legs and antennae are always in pairs and jointed. You will find insects to have three distinct body parts: a head, thorax, and abdomen; while spiders have two: a head (really a fused head-thorax called a *cephalothorax*) and an abdomen. Check under the specific descriptions of individual animals, starting on p. 211, for additional individual characteristics.

Once again, the purpose of this activity is to develop the student's observation skills. Accept different interpretations of numbers of legs, colors, and shapes, and naming of body parts. Accurate naming of parts is not key to this lesson, but directed exploration and careful observation is.

Teacher to Teacher

Students got a lot of practice counting and comparing while looking at the roly-polies. There was a great difference in the number of legs they came up with, but most counted more than ten. Often by the time they got to counting the last few legs the roly-polies had rolled over, so they had to start counting again. I was amazed by the subtle colors the students noticed. All the groups noticed at least four colors in an animal that appears totally gray at first glance.

–Dorothy Castellane, E. C. Blum School, Brooklyn, NY

Preparation

1. Duplicate the Animal Graph Blackline Master, p. 278, so that there are 2 for each group plus a few extras.

2. Put the graph grid, crayons, and unifix cubes on the table.

3. Teach in teacher-directed groups of 6–8 students.

Getting Started

Engage students in a discussion about what their animal looks like.

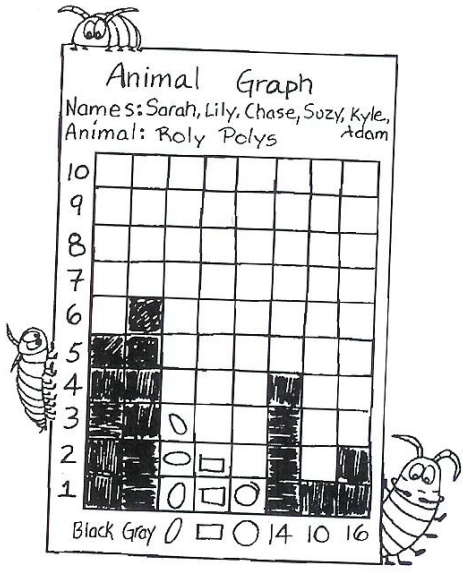
How does a_____ look? Do you and the animal have the same body parts? What are some of the same body parts? What parts are different? How can we find out more about the animal's body?

Action

1. Give each student a magnifying lens and one of the animals on a plastic lid.

2. Ask students what colors the animal is. **How many colors can you count?** Label a column on the graph grid with each color the students find. Ask students to color a square in the appropriate column for each color they named. For example, 6 children may say the animal is gray. Each colors a square in the gray column, resulting in 6 gray squares running up the graph. Five of the 6 students may say the animal is also black. They color in 5 squares in the black column, and so on.

3. Ask students to name some shapes. Draw a picture of the shapes they name, and label each one on the sheet of paper. If students have trouble coming up with shapes, draw a circle and ask them what shape it is. Add other shapes to the ones students name, so that they can see examples of a circle, square, triangle, rectangle, diamond, and oval.



4. Ask the children which shapes their animal most resembles. Label a graph column with the picture of each shape they point out. Ask students to draw the shape they named in the appropriate column. Thus, you may have a column with 3 ovals, another with 2 rectangles, and a third with 1 circle.

5. Ask students to guess how many legs their animal has. Let everyone make a guess. **How can we find out how many legs our animal has?** Demonstrate how to turn the animal on its back to count the legs. Suggest students use the unifix cubes to record the number of legs.

6. Encourage students to share the results of their leg counts and help each other recount if they want to. Label columns on the graph grid with the numbers they settle on. Ask each student to color a square in the column labeled with the number of legs they counted.

7. Challenge students to count other body parts of the animals, such as antennae or body sections. Compare and graph the findings.

Assessment

Review the graph portrait of the animal with the group. **What colors did most of us find? How many colors did we find? What are the colors? What shape do most people think the animal is? How many people think it is that shape? What new things did you discover about the animal? What other things about the animal could we look at and graph?**

Digging Deeper

- Let students make models of the animal out of clay, toothpicks, and other objects.
- Make a class graph on butcher paper of the animal. Combine the information from the different groups, and encourage students to practice interpreting it.

Teacher Reflections

- Were students able to use the graph they made to get information?
- Did they help each other count?
- Did students notice colors and shapes that were really there?
- Were students able to use the unifix cubes to record their findings?
- Did they observe details about the animal?

Animal Math

Animal Graph

Names _____

Animal _____

10								
9								
8								
7								
6								
5								
4								
3								
2								
1								
0								