Concept

Counting—or answering the question "How many?"—is an essential foundational skill for comparing and operating. To count accurately, children apply the following skills—rote counting (saying the number list), one-to-one correspondence (one object paired with one number), and cardinality (the last number stated tells how many are in a set).

Activities

Buddy Bear Counting Bags

Place three large teddy bears in a clear bag so the students can see them. State that they will find out how many bears there are. Explain that lining up the teddy bears makes counting easier. Place the bears one at a time in a line, and count out loud. Emphasize these key points with students:

- To make sure each bear is counted only once (none repeated or skipped), touch and move the bears one at a time.
- Count each bear using only one number word.
- The last number you say when counting tell show many there are.

Guide students to do the same with 3 or 4 bears. Prepare small bags of assorted bears. Differentiate the bags by placing three to ten bears in each. Have students practice counting a bag of "Buddy Bears" daily.

Jumbo Unfix Cubes Towers

Give each student the same number of Jumbo Unifix Cubes (three to ten cubes) that are not connected. Tell them to take one cube at a time, count it, and then snap cubes together to make a tower. Confirm the total as a group. Then have students touch and count the cubes again, starting at the bottom and going to the top. Repeat the activity by giving or taking away cubes from each student to count towers of varying totals. Students may also use standard size Unifix Cubes to make and count towers.

Support

To ensure students count all the counters and do not repeat a count, use a number path to support one-to-one correspondence. Guide students to count a set of counters by putting counters one at a time below each number. You can also accomplish this with ten frames and counters.

Extensions

Rather than counting with objects that can be touched and moved to track a count, ask students to count static images such as dice, or the dots in five groups on the back of the Numeral Cards, the Subitizing Cards, or various Number Path Pocket Chart cards.

Invite students to count sets of objects that are increasingly larger (up to 20).

Variations

Set up a counting station with various collections of engaging manipulatives—farm animals, attribute buttons, two-color beans, and so on. Encourage students to create their own collections for counting—blocks, sand toys, crayons, trucks, stamps, and so on.

Concept

In PreK mathematics, part/whole relationships involve breaking a whole set into equal or unequal parts or combining parts to form a whole set. Children will begin to understand that parts are smaller than the whole and that a whole can be composed of different combinations of parts. By composing and decomposing sets, children develop number sense, flexibility, and problem-solving skills. These part/whole relationships also form the basis for addition and subtraction concepts.

Activities

Bear Combinations

Show students five bears of one color—three small and two large. Ask them what they notice. Explain that the five bears are made up of three large bears and two small bears. Repeat the process with another combination of five bears. Give students a pile of bears and invite students to show five bears in a different way. The following are examples of possible combinations:

- One red bear and four yellow bears
- Four medium bears and one small bear
- One red bear, two yellow bears, and two green bears
- One of each bear—green, red, purple, yellow, and blue
- Five large green bears

Summarize by pointing out that numbers are made up of parts, and you can show parts in many different ways

Set up a station with bears (or Farm Animal Counters, or Attribute Buttons) and dice. Student roll the dice and select the number of counters on the dice, noting the parts they see that make up the whole. Then students use the counters to represent the same number (the whole) but with different parts.

Part-Whole Trains

Give students a piece of paper, Numeral Cards (1 to 5 or 1 to 10), and 20 Unifix Cubes in two colors. Tell students that the paper is the train station, and the cubes are the cars of the trains. Ask students to choose a number card and make as many different two-color trains as they can for that number. Guide them to verbalize the parts that make up the whole. For example, say, "The train has two yellow cars and one white car. The train has three cars." Repeat the activity with additional numeral cards.

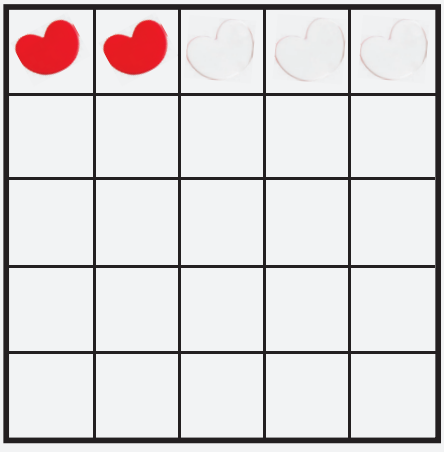
Students may also make trains for a number with more than two colors. This variation helps avoid the later misconception that a whole can be broken into only two parts or that addition is adding only two numbers.

Support

Ask students to select a number of Two-Color Bean Counters and lay the counters white side up in a line. Prompt them to count how many beans there are. Then ask them to turn one bean over to the red side. Ask them how many beans there are—how many white beans and how many red. Repeat the process by turning over one bean at a time. Continue with a different number of beans.

Extensions

Continue activities with numbers through 10 or 20, representing each whole in more than one way with two or more parts.



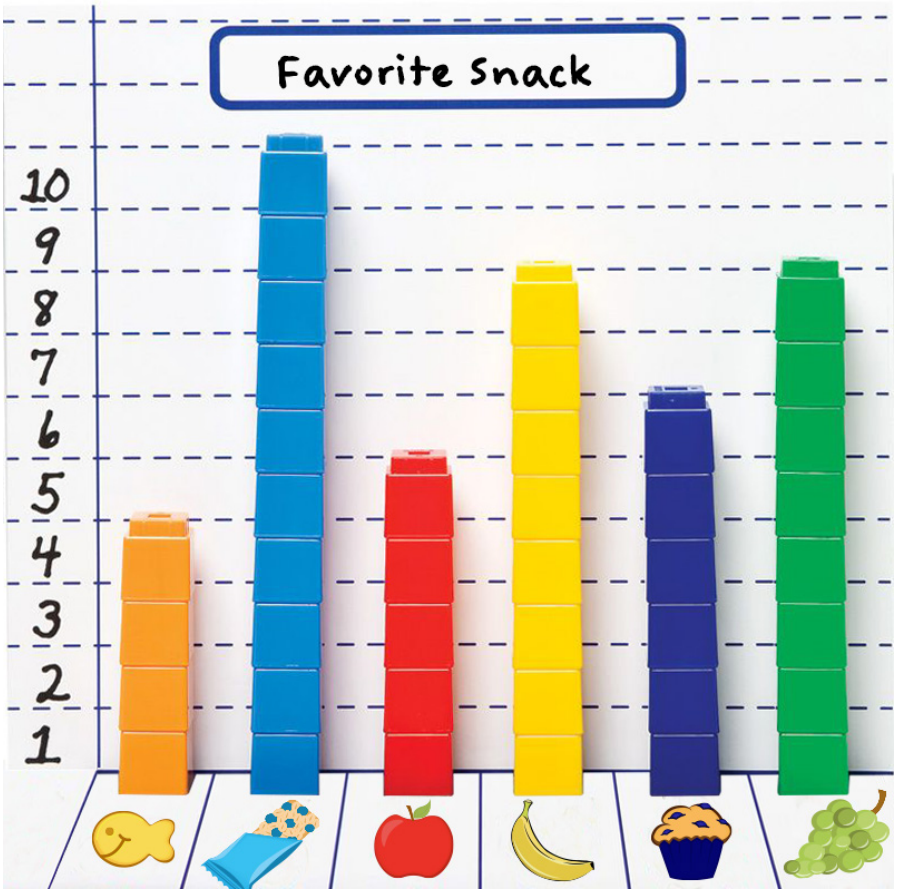
Concept

Counting, sorting, and comparing activities are foundations of basic data collection, organization, and reflection. By engaging in hands-on, real-life data tasks, students can reason about what the information is telling them and answer simple math questions.

Activities

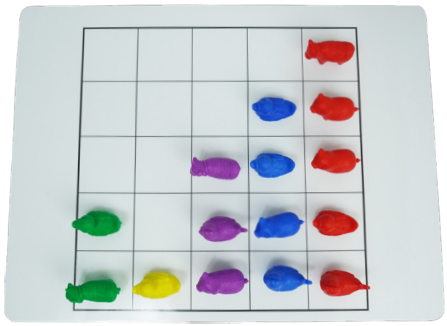
Cube Graph: Surveys

Create a class survey using cubes. For example, students choose a cube that is their favorite color or represents a choice. Support the students in making a graph with the cubes (horizontal or vertical) to represent the student choices (category labels). Invite students to notice and wonder about the representation—such as how many are in each group, which group has the most or least number of animals, and so on. Survey Suggestions: Over a month, graph data points such as the weather, snack choices, types of shoes, recess activity, and so on.

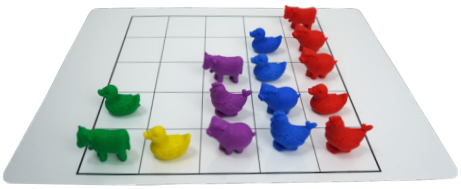


Farm Animal Graph

Prepare sorting bags for pairs of students with no more than five of each color or type of farm animals. Some variation in category totals and no more than 20 total animals is suggested.



Invite students to notice and wonder about the animals and then sort them into three to five groups (based on number of legs, color, type of animal, and so on.) Guide students to verbalize why animals are in a category, using language such as, "These animals are all red, and these are all blue" (using color).



Model how to graph the groups on the array mat by lining up the animals in lines, rows, or columns on the 5 x 5 side of the array mat. Ask students to notice and wonder about the representation, considering characteristics such as how many are in each group, which group has the most or least number of animals, and so on.

Extensions

Show students how to tally shapes on a chart after creating pattern block designs or lacing an attribute button necklace.

Variations

Students may sort and graph Teddy Bear Counter, Pattern Blocks, or Attribute Buttons. They may also use coins, rocks, stamps, or other collections.