Field Trip Fun

Objective

Students develop their understanding of quantities and their relationships. They experiment with strategies that help them be efficient rather than counting by ones.

Students gather, organize, and analyze data of a representative sample and explore probability by making predictions based on their data.

Materials

- ❑ One candy bar (optional) Juice boxes—one per student (optional)
- ❑ Individual-size boxes or bags of crackers or cookies—one per student
- ❑ Ice chest or cardboard box (large enough to hold all or most of the juice boxes)
- ❑ Pencils and paper

Background

In this exercise, students help prepare for an imaginary field trip. (Or, use this exercise next time you have a class field trip planned.) Depending on the developmental level of your students, you can lead the class in problem solving, form cooperative learning groups to complete the exercises, or ask students to complete exercises independently. Ask students or cooperative learning groups to report back to the class on how they came up with their answers to each question.

Action

1. Tell students you are going to pretend that your class is going on a whale-watching field trip. Before you go, you need to raise money to pay for the field trip. You also need to pack snacks and drinks for the class.
2. Read the exercises on pages 2-3 aloud to your students. Do the exercises with your students, either as a class or in cooperative learning groups.
3. After each exercise, ask a representative from each group to share with the rest of the class how they worked out an answer.

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Exercise #1

To raise money for the trip, we'll sell candy bars. (SHOW CANDY BAR.) For each candy bar we sell, we earn $1. The whale-watching boat costs $3 per student. How many candy bars does our class need to sell? (FOR GRADES 2-3) The bus to go to the whale-watching boat costs $200. How many candy bars does the class have to sell to be able to hire the bus? How many candy bars per person is that?

Exercise #2

We'll brings snacks and drinks on our field trip. How many juice boxes do we need to bring so that everyone has one? Can you organize the juice boxes in some way so that your friends can tell how many juice boxes there are without counting by ones? PLACE ONE LEVEL OF JUICE BOXES IN THE ICE CHEST, COUNTING THEM WITH STUDENTS. WHEN THE FIRST LAYER IS IN THE ICE CHEST, ASK Can you estimate how many juice boxes the ice chest will hold when full? Do we need a bigger ice chest or a smaller ice chest to bring drinks for the class? (FOR GRADES 2-3, USE THE JUICE BOXES AS MANIPULATIVES.) Sketch various shapes of ice chests that would hold the right number of juice boxes for our class. Use number sentences to communicate how many juice boxes are in the ice chest.

Exercise #3

DISTRIBUTE INDIVIDUAL-SIZE BAGS OF CRACKERS TO STUDENTS. We'll also bring bring bags of crackers for a snack. SELECT A STUDENT TO OPEN A BAG AND COUNT THE NUMBER OF CRACKERS INSIDE. ASK THE OTHER STUDENTS— Predict how many crackers are inside your own bag. WRITE THEIR PREDICTIONS ON THE BOARD. SELECT ANOTHER STUDENT TO OPEN A BAG AND COUNT THE CRACKERS INSIDE. Is this number greater than, less than, or the same as the first student's number of crackers? Does anyone want to change their prediction? (IF SO, MAKE CHANGES TO THE NUMBERS YOU HAVE RECORDED ON THE BOARD.) REPEAT WITH A THIRD AND FOURTH STUDENT —EACH TIME ALLOWING STUDENTS TO REVISE THEIR PREDICTIONS. What is the range of actual numbers of crackers inside the four bags? What is the range of predictions? FINALLY, ALL STUDENTS OPEN THEIR BAGS AND COUNT THE CRACKERS INSIDE. RECORD THE ACTUAL NUMBERS NEXT TO EACH STUDENT'S PREDICTION. How many predictions were higher than the actual number? How many were lower? Were you able to predict better after four bags were open than after just one bag? Why? (FOR GRADES 2-3, RECORD IN A FREQUENCY DIAGRAM HOW MANY CRACKERS WERE IN EACH BAG. FINALLY, SHOW STUDENTS ONE MORE BAG OF CRACKERS.) Based on what you know about the other bags of crackers, how many crackers do you think might be in this bag? What would some reasonable guesses be? What would some unreasonable guesses be? OPEN THE BAG AND COUNT THE CRACKERS. How well did you predict?

Exercise #4

WRITE THE FOLLOWING NUMBERS

ON THE BOARD: 3, 30, 1/2, 200.

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Excersise #4 continued

ASK STUDENTS TO CONSIDER THE FOLLOWING:

Which of these numbers might describe the number of seats on a school bus? Which might describe the number of hours we will spend driving to the whale-watching boat? Which might describe the number of hours we will be on the whalewatching boat? Which might describe the number of cars we will see on our drive to the whale-watching boat?

Answers

Exercise #1

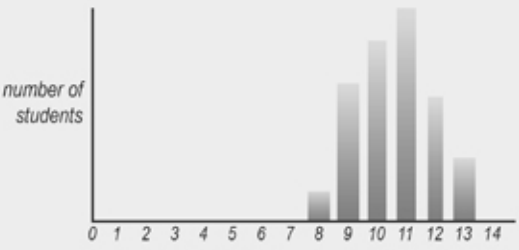
How many candy bars does the class need to sell? 3 X (number of students) How many candy bars does the class have to sell to be able to hire the bus? If the whale-watching boat costs $200, your class must sell 200 candy bars. How many candy bars per person is that? That's 200 ÷ (number of students) = ? candy bars per person.

Exercise #2

How many juice boxes do we need to bring? 1 X (number of students) Can you organize the juice boxes in some way so that your friends can tell how many juice boxes there are without counting by ones? Students may suggest you organize the juice boxes in stacks of two's, five's or ten's. For example, if you need to bring 20 juice boxes, students may design boxes that hold — 1x20 = 20, 2x10 = 20, 5x4 = 20

Exercise #3

Were the students able to predict better after four bags were open than after just one bag? Students should be able to predict better with more data (more bags of crackers opened). Record in a frequency diagram how many crackers were in each bag. See example below. For this example , reasonable guesses would be 8, 9, 10, 11, 12, or 13 crackers. Unreasonable guesses would be any guess less than 8 or greater than 13.



sample frequency diagram
(Your data will be different.)

Exercise #4

Which of these numbers might describe the number of seats on a school bus? 30 seats on a school bus Which of these numbers might describe the number of hours we will spend driving to the whale-watching boat? 1/2 hour driving to the boat Which of these numbers might describe the number of hours we will be on the whale-watching boat? 3 hours on a whale-watching boat Which of these numbers might describe the number of cars we will see on our drive to the whale-watching boat? 200 cars on the road

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