

MATH EXTENSION—PROBLEM OF THE WEEK

Investigation 1: Separating Mixtures

A boy had a box of animal crackers. He counted them out and found 20 cookies:

- 7 elephants
- 6 tigers
- 5 monkeys
- 2 zebras

Suppose the boy put all the animal crackers back into the box and took one out without looking. What is the probability of his choosing

- a. an elephant?
- b. a tiger?
- c. a monkey?
- d. a zebra?

Does the sum of the probabilities a, b, c, and d equal 1?

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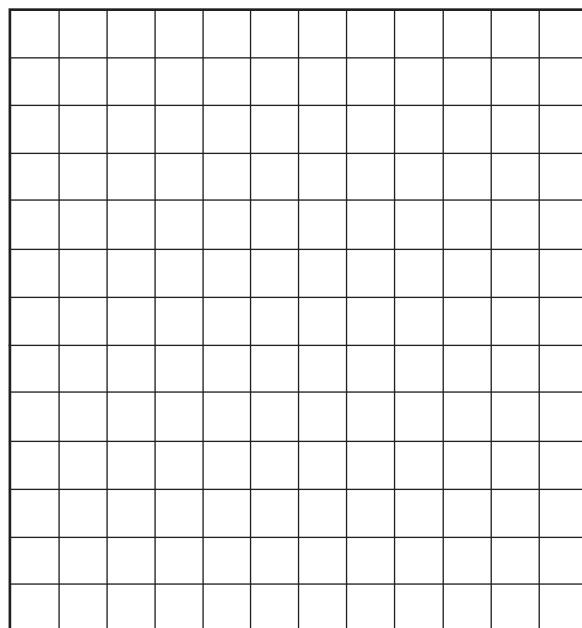
Investigation 2: Concentration

Students in Mrs. Lorenzo’s class decided to sell fruit drinks after school to raise money for a field trip. In order to know what flavors to sell, they surveyed students to find out what flavors were their favorites. Here are the results.

Flavor	Cherry	Grape	Orange	Berry
Room 14				
Boys	4	3	2	8
Girls	7	2	1	3
Room 15				
Boys	3	2	2	7
Girls	6	3	0	5
Room 16				
Boys	6	3	0	7
Girls	6	2	2	5

Graph the results. Answer the questions.

- Which flavor did students prefer?
- Which flavor did girls prefer?
- Which flavor did boys prefer?
- Which flavors would you recommend selling after school? Why?



Bonus question: What percentage of the students preferred each flavor?

Cherry _____% Grape _____% Orange _____% Berry _____%

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Investigation 3: Reaching Saturation

A science class was doing an experiment to find out how much salt it takes to saturate 50 mL of water. Here are the class results.

Group 1 — 14 g

Group 2 — 16 g

Group 3 — 15 g

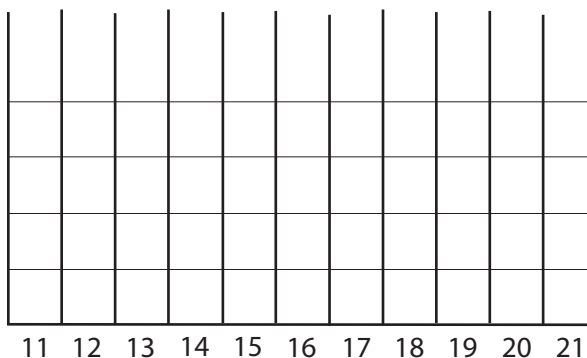
Group 4 — 14 g

Group 5 — 15 g

Group 6 — 12 g

Group 7 — 14 g

Group 8 — 20 g



Make a line plot of the class results.

Review the data and the line plot to determine these numbers.

Mean

Median

Mode

Range

Definitions

Mean is the sum of the items of data divided by the number of items. Mean is the same as average.

Median is the number that is in the exact middle when the numbers are arranged from least to greatest.

Mode is the number that occurs most often.

Range is the greatest number minus the least number.

Line plot is a vertical bar graph with no spaces between bars. It is used to show frequency data in statistics. The data must be frequency of a number event.

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.....**Investigation 4: Fizz Quiz**

My cousin was interested in reactions that produce carbon dioxide gas. She wondered if there was some way to predict how much gas a reaction would produce. She did a series of seven experiments and measured the amount of carbon dioxide released by each one.

Baking soda (spoons)	Calcium chloride (spoons)	Carbon dioxide (milliliters)
1	1	800
1	2	1600
1	3	1600
2	1	800
2	2	1600
2	3	2400
3	1	800

Based on my cousin's experimental results, answer these questions.

1. How many mL of gas would be produced if 3 spoons of baking soda reacted with 3 spoons of calcium chloride?
2. How many mL of gas would be produced if 2 spoons of baking soda reacted with 1.5 spoons of calcium chloride?
3. My cousin wanted to produce exactly 2000 mL of carbon dioxide. How much baking soda and calcium chloride should she use?