The Scoop on Ice Cream

Reporting Category   Computation and Estimation

Topic   Solving problems involving percent, ratios, and proportions

Primary SOL   8.3a   The student will solve practical problems involving rational numbers, percents, ratios, and proportions.

Materials
- The-Scoop-on-Ice-Cream Planning Sheet (attached)

Vocabulary
ratio, proportion, equivalence (earlier grades)

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)
1. Distribute copies of The-Scoop-on-Ice-Cream Planning Sheet, and review the information about the three favorite ice cream flavors. Also, review the essential measurement equivalents that students must use to solve the problems.
2. Go over the problems with the class, and answer questions, as necessary.
3. Have the students work in pairs to solve the problems.
4. When students are finished, have them share their solutions and strategies for solving.

Assessment
- **Questions**
  - What would happen to your results if chocolate chip ice cream were included and half the people who picked vanilla were to switch to chocolate chip?
  - What would happen if 50 visitors to town were also to show up to get free ice cream?
- **Journal/Writing Prompts**
  - Explain the relationship between percents and proportions.

Extensions and Connections (for all students)
- Have students compile data about their own interests and use those percents in calculations.
- Have the class participate in an ice cream taste test to determine the percents to use.
- Have students complete the problem on the attached Making Ice Cream activity sheet.

Strategies for Differentiation
- Adjust the percents to be easier to work with (e.g., 20%, 10%).
- Review measurement equivalents (i.e., cups, quarts, gallons, grams, pounds) before the lesson.
- Base the lesson on instant pudding flavors instead of ice cream flavors.

The Scoop-on-Ice-Cream Planning Sheet

Name _____ **Date** _____

The Three Favorite Flavors of Ice Cream*

Flavor	Percent of Those Polled
Vanilla	55%
Chocolate	29%
Strawberry	16%

Scrumptious Scoops is a very popular ice cream parlor in Smalltown, Virginia. To celebrate the Fourth of July, the store's owner decided to serve free single scoops of the three most popular flavors to the audience at the Independence Day outdoor band concert. Mr. Scrumptious decided he could determine how much ice cream he would need by using data provided by the International Ice Cream Association. The town estimates that approximately 650 residents will attend the concert.

Assuming everyone will want a free scoop of ice cream, how many people do you expect to prefer chocolate?

How many half-gallons of chocolate ice cream should Mr. Scrumptious plan to have on hand to serve to those people?

If the representatives from Scrumptious Scoops serve everyone at the concert a scoop of ice cream, how many half-gallons of ice cream will they serve? How many pounds will that be?

Essential Measurement Equivalents

A gallon of ice cream weighs about 5 pounds and contains 4 quarts.

One scoop of ice cream is $\frac{1}{2}$ cup, or about 68 grams.

One gallon contains 16 cups, so one half-gallon contains 8 cups.

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*International Ice Cream Association Data

Making Ice Cream

Name _____ **Date** _____

Materials
- Quart- and gallon-size zip-top bags
- Sugar
- Vanilla extract
- Measuring cup
- Milk
- Cookie pieces or fruit (optional)
- Ice
- Rock salt

Recipe
Make ice cream in plastic zip-top bags, according to the following recipe:

1. Combine 3 tablespoons of sugar, a few drops of vanilla extract, and 1 cup of milk in a one-quart zip-top bag, and seal the bag tightly. You might add cookie pieces or well-drained fruit to your ice cream mixture, if you wish.
2. Put about 2 cups of ice (small ice cubes or crushed ice) and 1/2 cup of rock salt in a one-gallon zip-lock bag.
3. Put the smaller bag into the larger bag, and seal the larger bag tightly. Then shake the larger bag until the ice cream mixture freezes. This will take some time.

Questions/Problems

1. Why do you think this method for making ice cream works?

2. Following the recipe above, how many batches of ice cream could you make if you had 8 cups of sugar and 4 gallons of milk available to use? To solve this problem, you will need to use these essential measurement equivalents: 1 cup = 16 tbsp., 1 gallon = 16 cups. Show your calculations below.

3. For the problem above, would there be any ingredients left over? If so, what and how much? Show your reasoning below.