name:	date:	#:

Sharing Vanilla Wafers

Background: For Caiden's birthday, he brought in Vanilla Wafers to share with his class. Use play-doh to build and represent the cookies and answer the questions below (unless you have real ones). Draw a picture to show your thinking. Everything MUST be shared equally.

Part 1:

1) There are four cookies for each group of two students. How many cookies does each student get? Is there another way to write this?

2) There are four cookies for each group of three students. How many cookies does each student get? Is there another way to write this?

3) There are three cookies for each group of four students. How many cookies does each student get? Is there another way to write this?

4) There are five cookies for each group of five students. How many cookies does each student get? Is there another way to write this?

5) There are five cookies for each group of two students. How many cookies does each student get? Is there another way to write this?

6) There are five cookies for each group of three students. How many cookies does each student get? Is there another way to write this?

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7) There are five cookies for each group of four students. How many cookies does each student get? Is there another way to write this?

8) There are three cookies for each group of five students. How many cookies does each student get? Is there another way to write this?

9) There are four cookies for each group of five students. How many cookies does each student get? Is there another way to write this?

10) There are seven cookies for each group of three students. How many cookies does each student get? Is there another way to write this?

Part 2: Working Backwards

11) What does it mean to get $\frac{5}{3}$ of a cookie? Explain and draw a picture.

12) What does it mean to get $\frac{3}{5}$ of a cookie? Explain and draw a picture.

13) On the day Caiden brought the Vanilla Wafers, each student in each group got $\frac{4}{5}$ of a cookie. How many cookies did he bring for each group and how many students were in the group?

14) On the day Caiden brought the Vanilla Wafers, each student in each group got $\frac{5}{4}$ of a cookie. How many cookies did he bring for each group and how many students were in the group?

Teacher Directions: Sharing Vanilla Wafers

Materials:

- Play-Doh (1 can per person or pair)
- Plastic Knives or Dental Floss (1 per person or pair) to cut Play-Doh
- Optional: Plates on Which to Place the Play-Doh (1 per person or pair)
- Optional: Vanilla Wafers to Enact Scenarios (will be messy!)

Objective:

In this lesson, students will build on their understanding of division as equal shares using Play-Doh to divide amounts that do not partition evenly. They will understand and describe fractions as division of whole numbers as well as explain the meaning of the numerator and denominator in context.

Directions:

Explain the scenario to the class: Caiden choose to bring in an approved healthier snack for his birthday, but he did not count out the Vanilla Wafers to pass out before he came. The class's task is to figure out how many cookies each student would get based upon different scenarios.

Pass out Play-Doh, plastic knives, and plates to each student or pair. Explain that they will model the cookies with the Play-Doh and then draw a picture to represent each scenario. Give the class 5-7 minutes to complete the first two problems and then bring the class back together. Have a volunteer share #1, and ask if any one solved it differently. Repeat the same process for #2, where you should have a variety of explanations how to solve, as well as at least two ways to record (see below).

2) $\frac{4}{3}$ or $1\frac{1}{3}$

Possible Method #1: Give each student 1 cookie and then divide remaining cookie into 3 equal parts, so everyone gets 1 whole and one-third.

Possible Method #2: Divide all the cookies into 3 equal parts and pass out the one-thirds. Each student gets four one-thirds of a cookie.

Have a discussion about what $\frac{4}{3}$ means. Help students explain and see it as four "one-third" pieces and connect this to a drawing/model. Have a class discussion as to what $1\frac{1}{3}$ means. Help students explain and see it as one whole plus one-third.

If students are doing well, give them about 20 minutes to work through scenarios 3-10, encouraging them to build with Play-Doh, draw a picture, and list the answer two ways when applicable. Bring the class back together and choose students to come share and explain their thinking, making sure to always seek alternate methods, explanations, or answers.

Part 2 is meant as formative assessment. Numbers 13 and 14 are especially challenging, but will reveal deep understanding, if present! For #11, you should be looking for wording such as "each whole (or wafer or cookie) is divided into 3 equal parts and each person gets 5 of those one-thirds. For #12, look for language that explains the whole is divided into 5 equal parts and each student gets 3 of those parts. Problems 13 and 14 can have multiple, correct answers.

ANSWER KEY:

1) $4 \div 2 = \frac{4}{2}$ or 2

2) $4 \div 3 = \frac{4}{3}$ or $1\frac{1}{3}$

3) $3 \div 4 = \frac{3}{4}$

4) $5 \div 5 = \frac{5}{5}$ or 1

5) $5 \div 2 = \frac{5}{2}$ or $2\frac{1}{2}$

6) $5 \div 3 = \frac{5}{3}$ or $1\frac{2}{3}$

7) $5 \div 4 = \frac{5}{4}$ or $1\frac{1}{4}$

8) $3 \div 5 = \frac{3}{5}$

9) $4 \div 5 = \frac{4}{5}$

10) $7 \div 3 = \frac{7}{3}$ or $2\frac{1}{3}$

11) It means there were 5 cookies and 3 people had to share them equally.

12) It means there were 3 cookies and 5 people had to share them equally.

13) He brought 4 cookies for a group of 5 students (or 8c for 10s, 12c for 15s, etc.).

14) He brought 5 cookies for a group of 4 students (or 10c for 8s, 15c for 12s, etc.).