Watermelon

Created by: Angeli Tempel
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Fall 2015

The Task

A giant watermelon weighed 100 pounds and was 99 percent water. While sitting in the sun, some of the water evaporated. Now, the watermelon is only 98 percent water. How much does the watermelon weigh now?

Big Ideas

- Proportionality is based on relationships and multiplicative reasoning.
- A percent is a special type of ratio where a part is compared to a whole and the whole is 100.
- Percent is relative to the size of the whole.

Standards of Learning for Grades 3-4-5	Standards of Learning for Grades 6-7-8
5.4 – The student will create and solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division with and without remainders of whole numbers. 5.5 – The student will create and solve single-step and multistep practical problems involving decimals. 5.6 – The student will solve single-step and multistep practical problems involving addition and subtraction with fractions and mixed numbers and express answers in simplest form.	6.2 – The student will investigate and describe fractions, decimals, and percents as ratios. 6.7 – The student will solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of decimals. 6.6 – The student will estimate solutions and then solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of fractions. 7.4 – The student will solve single-step and multistep practical problems, using proportional reasoning. 8.3 – The student will a) solve practical problems involving rational numbers, percents, ratios, and proportions; and b) determine the percent increase or decrease for a given situation.

Process Goals

- Problem Solving and Reasoning – Students will apply their understanding of percent and part-whole relationships, as well as use proportional reasoning to solve the problem.
- Connections and Representations – Students will recognize and use the connections between percent, ratios, and fractions to solve the problem. In addition, students will use a variety of representations as they solve the problem and communicate their thinking.
- Communication – Students will justify their findings and present their results to the class with precise mathematical language.

Related Task – Eucalyptus

99% of the trees in our neighborhood are eucalyptus trees. The town planning commission wants to get rid of some of these trees because they spread too quickly. However, the people in my neighborhood like the trees. The commission argues that their new eucalyptus tree removal plan will cut down so few eucalyptus trees that 98% of the trees in our neighborhood will be eucalyptus trees. If the plan only involves removing eucalyptus trees, what percent of the existing tress in my neighborhood would the plan remove?

Related Task – Bubble Gum

Have you ever wondered why gum loses its sweetness so quickly? Does it seem like the gum gets smaller after you chew it? Well, sugar contributes to gum's flavor. During chewing, the sugar is lost, which makes the gum get smaller as it loses sweetness.

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Lesson Plan

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Materials	Facilitating Task
- The Task - Calculators - Grid Paper - Poster Paper (one sheet per group)	- Launch the task by reading it aloud. - Clarify the task as needed by asking students to retell the story and identify what's known and unknown. - Provide individual think time, so students can process and begin solving. - Small groups (4 students maximum) compare strategies and solutions. After reaching consensus, small groups record solution and justification on Poster Paper. - Each group shares their solution and justification. - The teacher asks questions to support students in connecting the strategies shared and the mathematical ideas highlighted.

Misconceptions	Suggested Prompts or Questions
• Students might use an additive approach instead of multiplicative reasoning. For example, students might reason that since 1% of the water is lost, then 1 pound of water is lost. • Students might have difficulty figuring out that the stuff other than water remains constant. In other words, the weight of the stuff other than water stays the same.	• How is this problem similar to other problems you might have solved? • What's staying the same and what's changing? • What percent is not water? How much does the stuff that is not water weigh?

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Solve using pictures, words, tables, graphs, and/or symbols.