eTech Math Mess Educator's Guide

Segment Title: The Really Big Shoe Sale

Alignment to Common Core Clusters	*6.RP Ratios and Proportional Relationships*
Critical Focus Area(s) and Rationale	*6.RP.3 Use ratio and rate reasoning to solve real-world mathematical problems.* *6.RP.3.c Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, or finding the part of the whole.* The concept of percent is a challenge for many students and adults. The problem of multiple percent discounts can cause confusion, as it does when portrayed in this video.
Focus for Media Interaction / Suggested Classroom Activities	Prior to viewing, tell the students that they are going to witness a shopping discussion that could happen on any day at a clearance sale. Tell them there is a problem that they will be left to solve, and that all of the important information they need is contained in the video.
Suggested Extension Activities & Resources	After viewing the video, ask students if they agree with the cashier's interpretation of the sale, or with Carla's. Ask them to choose who's right and justify it with their explanation. Can they both be right? If so, why is there a disagreement on the cost of the shoes? The question of whether adding percents is the same as combining successive percents is the point of confusion. Provide students with additional practice, using problems that work out 'nicely'. Beginning with a base cost of $100 or $200 is a good way to emphasize percent as 'parts of 100'.
Suggested Formative Assessment Probe	Ask students what the sale signs would have to say for Carla to be correct in her interpretation. What did Carla do to misinterpret the meaning? Use an Exit Slip or a Quick-write asking students to write a similar problem, and to predict the mistake that a consumer could make. Students who understand will be able to write a similar problem, using different prices and different percentages. Choose several examples of strong work and read

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	the problems to the class the next day for practice. Ask students to discuss ways that the problems are similar. Show students the Barron's GRE Test Prep site that specifically discusses the challenges of these types of problems. This will underscore that these problems can present big misconceptions. http://barronstestprep.com/gre/math-facts/Be-careful-solving-percentage-of-a-percentage-problems.php
One Proposed Solution to the Math Mess	An alternate way to explain this problem is to look at 40% off as paying 60% of the original price. So 40% off $100 is $60. The problem that Carla has, is that she thinks the next 60% is applied to the original price, not the sale price. If we look at 60% off as paying only 40% of the previous sale cost, the cashier correctly calculates a final cost of $24.00. The issue of **_PRECISION OF LANGUAGE_** is critical in Common Core mathematics. Had the blue tag or gold tag said "TAKE AN ADDITIONAL 60% OFF OUR SALE PRICES", the misunderstanding could have been avoided. So not only is this Math Mess an exercise in percents, it's also an exercise in using language precisely.

ONE DAY ONLY!

**BIG
SHOE SALE**

**Take an
additional
60% OFF
EVERYTHING!**

Original Price
$100

Now 40% Off

YOUR COST
$60
Today Only
Take another 60%
off!