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Percents

Group Members:

1. Sally and Sam work for Acme Co. They started at the same time with the same salary. Their payroll history for the first two years went as follows.
 - At the end of Sally's first year at Acme Co. she received a 10% raise, and at the end of her second year she received a 10% reduction in salary.
 - At the end of Sam's first year at Acme Co. he received a 10% reduction in salary, and at the end of his second year he received a 10% raise.
- (a) If they both make \$40,000 in their first year. How much will each person be making in their second year?
- (b) How much will each person be making in their third year?
- (c) Which option is better, Sally's or Sam's? Why?
- (d) Suppose you don't know their starting salary. Will Sally and Sam have the same salary in their third year? How do you know?
- (e) Suppose you don't know their starting salary. Which option is better, Sally's or Sam's? Why?

2. For each of the following problems explain why the method used is correct.

- (a) Joe is in Target and he sees a shirt he wants that costs \$12. He notices that it is on sale for 25% off, so he computes the amount he will save in his head by dividing 12 by 4. Thus he will get \$3 dollars off.
- (b) Joe now wants to buy a CD player that costs \$150 dollars, but it is on sale for 20% off. In his head he finds 20% of 100 and 20% of 50 and gets 20 and 10 respectively. Thus he will save \$30 on the cd player.
- (c) Joe is almost done shopping and he sees The Wiggles' Greatest Hits CD which costs \$24. However it is on sale for 15% off. He finds 10% of 24, which is 2.4 and then takes half of that, which is 1.2. Thus he will save \$3.60 on the CD.
- (d) Joe is in Target again, but this time he has his calculator. It is a good thing because he sees a pair of pants that cost \$24.99 and they are on sale for 22% off. So he punches $.78$ times 24.99 in his calculator and gets 19.4922. Thus the shirt is on sale for \$19.49.
- (e) Joe wants to buy a book that is \$18.95. Sales tax in his county is 7.25%. To find the total price he punches 1.0725×18.95 into his calculator and gets \$20.32.

3. (a) Is 30% of 40 equal to 40% of 30?

(b) Is this true in general? In other words, is $A\%$ of B equal to $B\%$ of A ? If so, prove it. If not, find a counterexample.

4. Write a word problem whose answer is 95%.

5. Write a word problem whose answer is 105%.