Math 310 - Dr. Miller - Homework #10: Analyzing Percent Word Problems

1. (a) Leslie used to make $26,700 and now makes $31,000. What percent raise did she get?

   (b) She bought her current car for $9,800 five years ago. If she trades it in now for $3,500, what percent decrease does that represent?

2. (a) Is marking a price up by 20%, then giving 10% off the purchase price at the register the same as just marking the price up 10% to start with? Explain.

   (b) Is marking a price down by 20%, then giving another 10% off the total at the register the same as just marking the price down 30% to start with? Explain.

   (c) My skirt was on sale for 25% off, then I got another 10% markdown of the sale price at the register. What percent discount did I really get overall?

   (d) I bought a shirt at 10% off, but had to pay 10% sales tax on my purchase. Did I pay more or less than the original price of the shirt?

   (e) Is 15% off of 120% of x the same as 20% off of 115% of x? Explain.

3. (a) Joy bought a blouse and paid a total of $48, including the 6% sales tax. Is it meaningful to apply the percent to the other number shown in this situation? Explain.

   (b) Later, she saw a clerk moving a $90 skirt to the 15% off rack. Is it meaningful to apply the percent to the other number shown in this situation? Explain.

   (c) Orlando makes $26,700 a year at his job. His boss has promised him an 8% raise. Is it meaningful to apply the percent to the other number shown in this situation? Explain.

   (d) Carlo works at the same company and is now earning $26,700 a year after being given an 8% raise. Is it meaningful to apply the percent to the other number shown in this situation? Explain.

   (e) Kayla is buying a new car. The price on the invoice reads $15,450, and that includes the 18.8% total for licensing fees, sales tax, warranty, etc. Is it meaningful to apply the percent to the other number shown in this situation? Explain.

   (f) $15,450 is the insured value of her car, but it will depreciate by 14.6% over the next year. Is it meaningful to apply the percent to the other number shown in this situation? Explain.

4. Arliss owns an antique shop.

   (a) She tries to sell all her best items at a 25% mark-up in order to make a reasonable profit. A customer just picked out a book marked $80. Is it meaningful to apply the percent to the other number shown as one step in finding the book's value before the markup? Explain.

   (b) Some Arliss's really nice items that don't move very quickly only have a 10% markup. The $920 armoire in the front window is a good example. Is it meaningful to apply the percent to the other number shown as one step in finding the value of the armoire before the markup? Explain.

   (c) Some of her inventory is left over from an estate sale she attended two years ago. She really needs to move these remnants to make room for better items, so they are on sale for 60% off. A customer just selected an item marked $35. Is it meaningful to apply the percent to the other number shown as one step in finding what he will pay for it when he checks out? Explain.

   (d) Another customer just bought a figurine from the remnant inventory and paid $10 for it. Is it meaningful to apply the percent to the other number shown as one step in finding the price listed on its price tag? Explain.

1. (a) 16.1%
   (b) 64.3%

2. (a) No, the original combination creates an overall markup of 8%, not 10%.
   (b) No, the conbination corresponds to a 28% mark-down, not 30%.
   (c) I got it at 32.5% off.
   (d) Less: 10% of the decreased price doesn't restore the deduction taken from x.
   (e) No. 15% off of 120% of x is 102% of x while 20% off of 115% of x is 92% of x.

3. (a) No, because $48 is not an older/original amount of money in this setting.
   (b) Yes, because $90 is the original price of the skirt.
   (c) Yes, because $26,700 is his salary before the raise, so it's older.
   (d) No, because $26,700 is the amount AFTER the raise, so it's newer.
   (e) No, because the invoice is showing the price AFTER the taxes were computed, so it's newer.
   (f) Yes, because $15,450 is the value before the depreciation (which hasn't even happened yet).

4. (a) No, because that $80 number is what we see AFTER she has already put her mark-up into it.
   (b) No, because the value before the mark-up would be the older number, not the $920.
   (c) Yes, because the $35 is the price shown on the tag, and he'll pay for it LATER. So the tag price is older.
   (d) No, because the price on the price tag is marked much earlier than when the customer actually buys it. So the $10 is newer, not older.