Math 1050 Multiple Discounts Assignment Name Joe Benedict

It's time to celebrate that A on your first Math 1050 exam! You've been looking at a new pair of running shoes for several months and today's newspaper has a $15 off coupon for purchases over $50 at *Runners Are Us.* The sales clerk is helpful in locating the chartreuse design with aqua trim you've had your eye on, and is kind enough to advise you of the current 20% off sale the store is running on shoe purchases. The price of the shoes is $100, not too bad for good quality running shoes. All is good until you get to the cash register and want to get the best possible price using the $15 coupon discount along with the 20% sale discount. Should you request the 20% discount first, or use your $15 coupon before the 20% is deducted? Does the order in which discounts are taken make any difference?

1. What will you pay for the shoes (before taxes) if the 20% discount is applied first?

$100(0.2) = 20$ so $100 - 20 = 80$

$80 - 15 = 65$

So it would be $65.00

2. What will you pay for the shoes (before taxes) if the $15 discount is applied first?

$100 - 15 = 85$

$85(.2) = 17$

$85 - 17 = 68$

So it would be $68.00

3. Does applying one discount before the other make a difference? If it does, which discount would you prefer that the sales clerk apply first?

Yes, I would take the 20% off first.

4. Letting x represent the original price of the shoes, find a function $P(x)$ that calculates the amount you pay for the shoes after a 20% discount (before taxes).

$P(x) = x - x(.2)$

$x(1 - .2)$

$P(x) = 0.8x$

5. Letting x represent the original price of the shoes, find a function $D(x)$ that calculates the amount you pay for the shoes after a $15 discount (before taxes).

$D(x) = x - 15$

Math 1050 Multiple Discounts Assignment Name Joe Benedict

6. Letting x represent the original price of the shoes, find and simplify the composite function $P_F(x)$ that calculates the amount you will pay, before taxes, if a 20% discount is applied first, followed by a $15 discount.

$P_F(x) = 0.8x - 15$

7. Letting x represent the original price of the shoes, find and simplify the composite function $D_F(x)$ that calculates the amount you will pay, before taxes, if a $15 discount is applied first, followed by a 20% discount.

$D_F(x) = 0.8(x-15)$

8. Using the composite functions $P_F(x)$ and $D_F(x)$, determine the order of discounts that is more beneficial to the customer when one discount is 15% and the other is $20?

$P_F(x) = 0.85x - 20$ is more beneficial

9. What order of discounts is more beneficial to the customer if both discounts are percentages (for example, 15% and 20%)? Support your answer.

i.e. $.8(100(.85)) = 68$

$.85(100(.8)) = 68$

They are equal

10. a) If you are offered the choice of either a $20 discount or a 20% discount on the purchase of a pair of shoes that have already been discounted to $120, would you choose $20 or 20%?

I would choose 20% discount because is over $100

$120(.8) = 96$ which is $100

b) If the discounted shoes are $60, would you choose an additional discount of $20 or 20%?

I would choose $20 discount because it is less than $100

$60 - 20 = 40$ $60(.8) = 48$

c) For what price of shoes would the discounts be equivalent?

At a price of $100