Problems & Solutions

Nona went shopping to buy some new school clothes. At the first store she bought two pairs of pants, each originally priced $30. Nona used a coupon that reduced the price of each item by 15%, and then a 5% sales tax was applied to the new subtotal. What was the total purchase price?

A 15% discount means that the sale price of each pair of pants was 85% of the original price, or \(0.85 \times 30 = 25.50\), making the new subtotal was \(25.50 \times 2 = 51.00\). Applying a 5% sales tax means the total purchase price is 105% of this subtotal, or \((1.05)(51) = 53.55\).

At the next store Nona bought a $50 dress and used two coupons, one for 20% off and one for 10% off. How much more would Nona have saved by using a single coupon for 30% off compared to using the 20% coupon and the 10% coupon?

The sale price of an item discounted 20% would be 80% of the original price. The sale price of an item discounted 10% would be 90% of the original price. Applying the 20% coupon and the 10% coupon results in a sale price that is \(0.90 \times 0.80 = 0.72\) = 72% of the original price. The sale price of an item discounted 30% would be 70% of the original price. Applying a single 30% coupon results in a sale price that is 70% of the original price. Therefore, by using a single 30% coupon, Nona would have saved an additional \(72 - 70 = 2\%\), or \(0.02 \times 50 = $1.00\) compared to using the 20% coupon and the 10% coupon.

After making a few more stops and a few more purchases, Nona went home. After putting away her new purchases, Nona noticed that she had 9 pairs of pants, 12 shirts and 3 belts. How many possible outfits can Nona make, each consisting of a pair of pants and a shirt and that may, or may not, include a belt?

There are \((9)(12) = 108\) combinations consisting of a pair of pants and a shirt. There are 3 belts but an outfit may, or may not, include a belt, thus there are 4 options. Therefore, the total number of possible outfits Nona can make with the clothes in her closet is \(108(4) = 432\) outfits.
Problems
Nona went shopping to buy some new school clothes. At the first store she bought two pairs of pants, each originally priced $30. Nona used a coupon that reduced the price of each item by 15%, and then a 5% sales tax was applied to the new subtotal. What was the total purchase price?

At the next store Nona bought a $50 dress and used two coupons, one for 20% off and one for 10% off. How much more would Nona have saved by using a single coupon for 30% off compared to using the 20% coupon and the 10% coupon?

After making a few more stops and a few more purchases, Nona went home. After putting away her new purchases, Nona noticed that she had 9 pairs of pants, 12 shirts and 3 belts. How many possible outfits can Nona make, each consisting of a pair of pants and a shirt and that may, or may not, include a belt?