MATHCOUNTS® Problem of the Week Archive

Gourmet Candies – November 7, 2022

Problems & Solutions

Sugar Shack gourmet candy shop's signature candy mixture contains Sour Drops, Chocolate Chews and Tangy Twists in the ratio 2:3:4, respectively. How many more pounds of Tangy Twists than Sour Drops are in a 45-pound batch of this signature candy mixture?

Since Sour Drops, Chocolate Chews and Tangy Twists are in the ratio 2:3:4, respectively, it follows that Sour Drops account for 2/9 and Tangy Twists account for 4/9 of the candy mixture. So, Sour Drops make up (2/9)(45) = 2 × 5 = 10 pounds, while Tangy Twists make up (4/9)(45) = 4 × 5 = 20 pounds of the 45-pound candy mixture. Therefore, there are 20 – 10 = ***10*** *pounds more Tangy Twists than Sour Drops. Alternatively, the given ratio means that Tangy Twists account for 4/9 – 2/9 = 2/9 more of the candy mixture than Sour Drops do. So, in a 45-pound batch of the candy mixture, there would be (2/9)(45) = 2 × 5 =* ***10*** *pounds more Tangy Twists than Sour Drops.*

Nyelle purchases some Sour Drops, Chocolate Chews and Tangy Twists to combine into her personal batch of the Sugar Shack's signature candy mixture using the same proportions as the previous problem. If the prices per pound for the candies are $6.00 for Sour Drops, $3.50 for Chocolate Chews and $4.25 for Tangy Twists, what is the total cost (not including tax) to purchase the exact amounts of all three candies required to make 4.5 pounds of this signature candy mixture?

*Again, since Sour Drops, Chocolate Chews and Tangy Twists are in the ratio 2:3:4, respectively, it follows that Sour Drops, Chocolate Chews and Tangy Twists account for 2/9, 3/9 = 1/3 and 4/9 of the candy mixture, respectively. So, to make 4.5 pounds of this candy mixture, Nyelle needs (2/9)(4.5) = 2 × 0.5 = 1 pound of Sour Drops, (1/3)(4.5) = 1.5 pounds of Chocolate Chews and (4/9)(4.5) = 4 × 0.5 = 2 pounds of Tangy Twists. At the given prices per pound, we calculate Nyelle's total cost to be 1(6.00) + 1.5(3.50) + 2(4.25) = 6 + 5.25 + 8.50 = $****19.75****.*

Rae purchases 4.5 pounds of the signature candy mixture when it goes on sale at the Sugar Shack for $4.00 per pound. What is the absolute difference between Nyelle's and Rae's total costs (not including tax) to get 4.5 pounds of the signature candy mixture?

*At a sale price of $4.00 per pound, 4.5 pounds of the candy mixture would cost Rae 4.5(4.00) = $18.00. From the previous problem, we know that Nyelle's total cost was $19.75. Therefore, the absolute difference between Nyelle's and Rae's total costs is 19.75 – 18.00 = $****1.75****.*

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