MATHCOUNTS® Problem of the Week Archive

Thanksgiving Dinner Preparation – November 20, 2023

Problems & Solutions

In preparation for Thanksgiving dinner, Mrs. Cobble decided to get a new tablecloth for the dining room table. Her rectangular table measures 3.5 feet by 6 feet, and she would like the tablecloth to hang exactly 9 inches over each side. What is the area, in square feet, of the ideal tablecloth for Mrs. Cobble?

If Mrs. Cobble would like the tablecloth to hang exactly 9 inches over each side of the rectangular table, then she will need to add 18 inches to both the width and the length of the table's dimensions. The table is 3.5 feet by 6 feet, and we are asked to give the answer in square feet. Therefore, let's change 18 inches into its equivalent in feet. We can calculate that 18 inches is 18 ÷ 12 = 1.5 feet. The dimensions of the tablecloth will then be 3.5 + 1.5 = 5 feet by 6 + 1.5 = 7.5 feet. This rectangle has an area of 5 × 7.5 = ***37.5*** *square feet.*

Now Mrs. Cobble will turn her attention to the actual meal. According to an article she read, she should purchase 1¼ pounds of turkey per person. She figures this is a good amount for an adult, but a child would need only 2/3 of this amount. There will be 8 adults and 6 children at Thanksgiving dinner. According to Mrs. Cobble's logic, how many pounds of turkey should she purchase?

We know that an adult will require 1¼ pounds of turkey. (We can use 1¼ or 5/4 or 1.25 as we proceed.) We are told that each child is only going to get 2/3 of this amount of turkey. So, we need to calculate 2/3 of 5/4. To do this, we find the product of the two fractions and see that each child will require 10/12 = 5/6 of a pound of turkey. Now we have eight adults each requiring 5/4 pounds and six children each requiring 5/6 of a pound. Mrs. Cobble will then need to buy a turkey that is 8(5/4) + 6(5/6) = 10 + 5 = ***15*** *pounds.*

When Thanksgiving has finally arrived, the whole family sits down to a Thanksgiving dinner that includes turkey, mashed potatoes, dressing, cranberry sauce and gravy. Uncle Bob's favorite part of the meal, though, is the olive tray. Mrs. Cobble put the same number of green olives and black olives on the tray, and Uncle Bob was the first person to select from the tray. After Uncle Bob took eight green olives, the ratio of green olives to black olives was 3:5. How many total olives were on the tray before Uncle Bob took his olives?

We know that there used to be the same number of green olives and black olives, but after Uncle bob took 8 green olives, the ratio is then 3:5. This means that in every group of 8 olives, 3 of them are green and 5 of them are black. To bring this group of 8 olives back to "even," Uncle Bob would need to put back 2 of his green olives, which would give us a total of 10 olives (5 green; 5 black). If it takes 2 olives for Uncle Bob to complete every uneven group of 8 olives, he could fix 4 groups of uneven olives with his 8 olives. Each of these 4 groups would then be 10 olives big, for a total of ***40 olives****.*

Another way of looking at this…

The ratio of 3 green olives to 5 black olives leads us to believe that the number of olives now is a multiple of 8. So, there are now 8x olives. The ratio before Uncle Bob took his olives was 5 green olives to 5 black olives, or a total of 10x olives. There is a difference of 10x – 8x = 2x olives. So, the 8 olives he took is our 2x. We see 2x = 8 results in x = 4. So, there are now 8(4) = 32 olives, and there were originally 10(4) = ***40 olives****.*

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