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Task.

Choose from 1st barrel : 5 out of 50 balls plus also then choose from a second barrel 2 out of 11 balls. Probability is = $50 \times 49 \times 48 \times 47 \times 46 \times 11 \times 10 = 27$ billion but stated odds are 116 million.....which is correct?

Solution. Both are incorrect, probability is a number not greater than 1. Consider events: $A = \{ \text{to choose 5 out of 50 balls from 1}^{\text{st}} \text{ barrel} \}$, $B = \{ \text{to choose 2 out of 11 balls from second barrel} \}$, $C = \{ \text{to choose 5 out of 50 balls from 1}^{\text{st}} \text{ barrel and then to choose 2 out of 11 balls from second barrel} \}$. By classical definition of probability find the probability of event A and B: $p(A) = \frac{5}{50}$, $p(B) = \frac{2}{11}$. These events are successive and independent, and unknown probability is

$$p(C) = \frac{5}{50} * \frac{2}{11} = \frac{1}{55} \approx 0.018.$$