

Q-QUIZ JUNE 2019 - ANSWERS



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It is very important to drink more on hot days. This is why we dedicate this Q-QUIZ to a bottle filling system and associated beverages.

1. Based on a normally distributed filling volume with an average of 1000 ml and a variation of 1 ml, the probability of blind-drawing a bottle whose filling volume is between 1001 and 1002 ml is about 13.6 %.
2. The standard deviation of the filling volume with two significant points $G(1001 \text{ ml}) = 50 \%$ und $G(1002 \text{ ml}) = 84.1345 \%$ amounts to 1.
3. The fact that the chart of data collected after the maintenance is significantly steeper than the chart of the first sample indicates that the maintenance reduced the variation (standard deviation).

4. The s-shaped chart of the data plotted in a normal probability plot shows that data from different populations were combined.

5. The data of the filling volumes skewed to the right indicate that the data come from a not normally distributed population.
6. There are four possible results (code - code, no code - no code, code - no code, no code - code). The probability of achieving one of these results is $0.5 \times 0.5 = 0.25$. Since there are two results leading to a single win code, the probability amounts to 50 per cent.
7. The probability that a sample of 10 running meters shows exactly 1 misprint is about 16.4 per cent. This calculation is based on the average $\mu = 2/100 \times 10 = 0.2$ and the probability function of the Poisson distribution.
8. The probability of blind-drawing one out of five bottles of orange juice from a bag of 20 bottles is $5/20 = 1/4$ or 25 per cent.