

Solution

Probability of winning a prize:

$$p = \frac{1}{4} = 0.25$$

Probability of not winning a prize:

$$q = 1 - p = 1 - \frac{1}{4} = \frac{3}{4}$$

Let H_1 – hypothesis, in which the family did not win any prizes.

Family just ordered three orders of fries, so the probability of not winning the prize after three orders is:

$$P(H_1) = \left(\frac{3}{4}\right)^3 = \left(\frac{27}{64}\right) = 0.42$$

Hence, the required probability is equal to:

$$P = 1 - P(H_1) = 1 - \frac{27}{64} = \frac{37}{64} = 0.58$$

Answer: probability that someone in your family won a prize today is 0.58.