

Answer on Question#54699 - Math - Statistics and Probability

A sales man knows that, on each visit to a customer, the probability of a sale is one fifth. Each day he makes three independent visits to customers.

Calculate the probability that, on a randomly selected day:

- (a) all three visits result in sales. (5 marks)
- (b) exactly two visits results in sales. (5 marks)
- (c) less than two visits results in sales

Solution:

- (a) Since the probability of a sale is $\frac{1}{5}$, the probability of all three visits result in sales is:

$$\frac{1}{5} \cdot \frac{1}{5} \cdot \frac{1}{5} = \frac{1}{125} = 0.008$$

- (b) Since the probability of a sale to fail is $\frac{4}{5}$, the probability of exactly two visits results in sales is:

$$\frac{4}{5} \cdot \frac{1}{5} \cdot \frac{1}{5} = \frac{4}{125} = 0.032$$

- (c) Less than two means one visit, therefore other two result in fail. The probability of such case is:

$$\frac{1}{5} \cdot \frac{4}{5} \cdot \frac{4}{5} = \frac{16}{125} = 0.128$$

Answer:

- (a) 0.008
- (b) 0.032
- (c) 0.128