## Answer on Question \#52391 - Math - Statistics and Probability

Customers arrive at a particular store at the rate of 30 customers per hour.
The Poisson distribution with mean $m=30$ per hour $=2.5$ per $5 \mathrm{~min}=10$ per 20 min .

$$
P[k]=e^{-m} \frac{m^{k}}{k!}
$$

a. $P[3]=.2138$ <-------
b. $P[\geq 3]=1-P[\leq 2]=.4562<------$
c. $\mathrm{P}[0]=.0821$

1. What is the probability of 15 customers arriving in an hour?
a. . 500
b. . 001
c. . 617
d. . 100

## Solution

$$
P[15]=e^{-30} \frac{30^{15}}{15!}=0.001
$$

Answer: b. . 001.
2. What is the probability of 10 customers arriving in a 20 -minute interval?
a. . 500
b. .000
c. 125
d. 1.00

## Solution

$$
P[10]=e^{-10} \frac{10^{10}}{10!}=0.125
$$

Answer: c. . 125.
3. What is the probability of at least 2 customers arriving in a 5 -minute interval?
a. . 257
b. . 713
c. . 743
d. 287

## Solution

$$
\begin{gathered}
P[k \geq 2]=1-P[k<2]=1-P[0]-P[1] \\
P[k \geq 2]=1-e^{-2.5} \frac{2.5^{0}}{0!}-e^{-2.5} \frac{2.5^{1}}{1!}=0.713
\end{gathered}
$$

Answer: b. . 713.
4. What is the probability of 3 customers arriving in a 5-minute interval?
a. . 000
b. . 214
c. . 500
d. . 100

## Solution

$$
P[3]=e^{-2.5} \frac{2.5^{3}}{3!}=0.214
$$

Answer: b. . 214.

