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DISTRIBUTIONS

Homework

Please do it in your notebook.

1. The probability that a randomly chosen sales prospect will make a purchase is 0.20. If a salesman calls on six prospects, what is the probability that he will make exactly "four" sales?
(Reply: 0.015)
2. If the probability that a randomly chosen sales prospect will make purchase is 0.20. What is the probability that a salesman who calls on 15 prospects will make fewer than "three" sales?
(Reply: 0.4)
3. If an average of five service calls per hour is received at a machine repair department, what is the probability than fewer than three calls will be received during randomly chosen hour?
(Reply: 0.12)
4. The number of trucks arriving hourly at a warehouse facility has been found to follow the probability distribution in the table below. Calculate (a) the expected number of arrivals (X) per hour and (b) the variance of this probability distribution?
(Reply: (a) 3.15 (b) 2.13)

| | | | | | | | |
|----------------------|------|------|------|------|------|------|------|
| Number of Trucks X | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Probability $P(X)$ | 0.05 | 0.10 | 0.15 | 0.25 | 0.30 | 0.10 | 0.05 |

5. A mail-order firm has a circular which elicits a 10 percent response rate. Suppose 20 of the circulars are mailed as a market test in a new geographic area. Assuming that the 10 percent response rate applicable in the new area, determine the probabilities of

the following events (a) no one responds, (b) exactly two people respond, (c) a majority of the people, (d) less than 20 percent of the people respond.

(Reply: (a) 0.12 (b) 0.28 (c) 0 (d) 0.87) (Use your table)

6. The amount of time required for a certain type of automobile transmission repair at a service garage is normally distributed with the mean $X=45$ minutes and the standard deviation $\sigma=8.0$ minutes. The service manager plans to have work begin on the transmission of a customer's car 10 minutes after the car is dropped off, and he tells the customer that the car will be ready with in one hour total time. What is the probability that he will be wrong? Illustrate the proportion of the area under the normal curve which is relevant in this case. (Reply: 0.27)

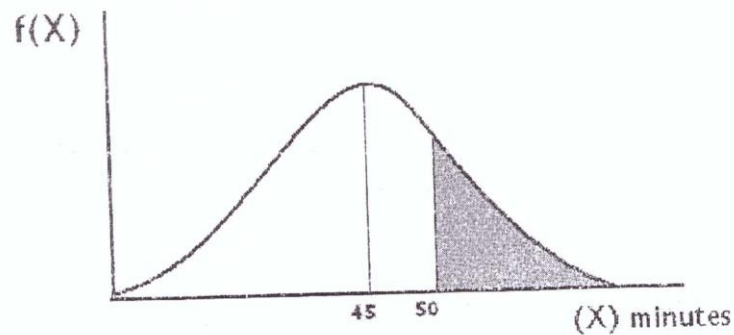


Figure. 7.10

7. An average of 0.5 customer per unite arrives at a checkout stand. What is the probability that "five or more" customers will arrive in a given 5-min interval? (Reply:0.11)