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Practice Questions for Probability Distributions

1) Investment Advisors agree that near retirees, defined as people aged 55 to 65, should have balanced portfolios. Most advisors suggest that the near –retirees have no more 50% of their investments in stocks. However, during the huge decline in the stock market in 2008, 22% of near –retirees had 90% or more of their investments in stocks. Suppose you have a random sample of 10 people who have labeled as near –retirees in 2008. What is the probability that during 2008.

a) Zero had 90% or more of their investments in stocks?
b) Exactly one had 90% or more of his investments in stocks?
c) Two or fewer had 90% or more of their investment in stocks?
d) Three or more had 90% or more of their investments in stocks

2) Assume that number of network errors experienced in a day on a local area network (LAN) is distributed as a Poisson random variable. The mean number of network errors experienced in a day is 2.4. What is the probability that in any given day
   a) Zero network errors will occur?
   b) Exactly one network error will occur?
   c) Two or more network error will occur?
   d) Fewer than three network errors will occur?

3) The quality control manager of Marilyn's cookies is inspecting a batch of chocolate –chip cookies that has been just baked. If the production process is in control the mean number of chips parts per cookie is 6.0. What is the probability that in any particular cookie being inspected :
   a) Fewer than five chips part will be found?
   b) Exactly five chips parts will be found?
   c) Five or more chips part will be found?
   d) Either four or five chips part will be found?

4) In a recent year, about two thirds of US households purchased ground coffee. Consider the annual ground coffee expenditures for households purchasing ground coffee assuming that

these expenditures are approximately distributed as a normal random variable with a mean of $65.16 and a Standard Deviation of $10.00

a) Find the probability that a household spent less than $35.00.
b) Find the probability that a household spent more than $60.00
c) What proportion of the households spent between $40.00 and $50.00?
d) 99% of households spent less than what amount?