

HW-4

**Answer the following questions:**

- 1- It is known that 40% of account holders at a bank have credit cards. If 5 account holders are selected at random, find the probability that
- all five have credit cards,
  - fewer than 2 have credit cards,
  - more than one have credit cards,
  - three or four have credit cards.

- 2- A box contains 10 coins of which 3 are gold coins. Four coins are selected at random without replacement from the box. What is the probability that
- only one is a gold?
  - All four are gold?
  - At most two are gold?
  - At least two are gold

3- Repeat question (2) when the four coins are selected ar random with replacement.

4- Let the random variable X have a discrete uniform with parameter  $k=3$  and with values 0,1, and 2.

(1)	The mean of X is							
	(A)	1.0	(B)	2.0	(C)	1.5	(D)	0.0
(2)	The variance of X is							
	(A)	0.0	(B)	1.0	(C)	0.67	(D)	1.33

5- Suppose that the percentage of females in a certain population is 50%. A sample of 3 people is selected randomly from this population.

(3)	The probability that no females are selected is							
	(A)	0.000	(B)	0.500	(C)	0.375	(D)	0.125
(4)	The expected number of females in the sample is							
	(A)	3.0	(B)	1.5	(C)	0.0	(D)	0.50
(5)	The variance of the number of females in the sample is							
	(A)	3.75	(B)	2.75	(C)	1.75	(D)	0.75

6- Suppose that the number of telephone calls received per day has a Poisson distribution with mean of 4 calls per day.

(6)	The probability that 2 calls will be received in a given day is							
	(A)	0.546525	(B)	0.646525	(C)	0.146525	(D)	0.746525
(7)	The expected number of telephone calls received in a given week is							
	(A)	4	(B)	7	(C)	28	(D)	14
(8)	The probability that at least 2 calls will be received in a period of 12 hours is							
	(A)	0.59399	(B)	0.19399	(C)	0.09399	(D)	0.29399

7- Given a standard normal distribution. The area under the curve which lies:

(9)	to the left of $Z = 1.39$ (Hint: $Z \leq 1.39$ ) is							
	(A)	0.7268	(B)	0.9177	(C)	0.2732	(D)	0.0832
(10)	between $Z = -2.16$ and $Z = 0.65$ is							
	(A)	0.9177	(B)	0.2732	(C)	0.0294	(D)	0.7268

8- The weight of a large number of fat persons is nicely modeled with a normal distribution with mean of 128 kg and a standard deviation of 9 kg.

(11)	The percentage of those fat persons with weights at most 110 kg is							
	(A)	0.09 %	(B)	90.3 %	(C)	99.82 %	(D)	2.28 %
(12)	The percentage of those fat persons with weights more than 149 kg is							
	(A)	0.09 %	(B)	0.99 %	(C)	9.7 %	(D)	99.82 %
(13)	The weight $x$ above which 86% of those persons will be							
	(A)	118.28	(B)	128.28	(C)	154.82	(D)	81.28