1. The manager of a small retail store counted the number of sales each hour during a 60-hour week. The frequency distribution is given below.   **(7)**

number of sales during hour	number of occurrences
6	25
7	20
8	10
9	0
10	5

    The relative frequency of 7 sales an hour is

    1) 7/60   b) 7/40

    3) 1/4   d) 1/3

    1) none of the above

2. Which of the following can be a probability distribution for the random variable X?   **(6)**

    1) k $Pr(X = k)$ b) k $Pr(X = k)$

         -2   l/3   1   1/3
         0   5/12   2   1/6
         1   1/4   3   5/6

    3) k $Pr(X = k)$ d) k $Pr(X = k)$

         -3   1/12   0   1/6
         1   5/12   1   5/12
         4   1/3   2   2/3

    5)   none of the above

4. A single die is tossed 5 times. Find the probability that a 1 appears exactly 4 times.   **(8)**

5. A true false test has 4 questions. What is the probability of getting at least 3 questions correct by guessing?   **(8)**

6. The manager of a small retail store counted the number of sales each hour during a 60-hour week. The frequency distribution is given below. **(6)**

Number of sales during hour	number of occurrences
6	25
7	20
8	10
9	0
10	5

The average number of sales during an hour is

1) 6   b) 7

3) 8   d) 8 2

5) none of the above

6. Two people play a game. A single die is thrown. If the outcome is a 2 or a 3, then A pays B $6. How much should B pay A when a 1, 4, 5 or 6 is thrown so that A and B break even, on average, over many repetitions of the game? **(6)**

1) $2   b) $4

3) $6   d) $8

5) $3

7. The mean of binomial random variable based on n independent repetitions of a binomial trial with constant probability of success p is **(9)**

1) $\dfrac{n}{p}$ b) $np(1 - p)$

3) $np(1 - p)$ d) np

5) none of the above

8. Find the mean, variance and standard deviation of the following probability distribution. **(6)**

k	$Pr(X = l)$
-2	1/12
1	1/3

9. If X is a random variable such that $E(X^2) = \dfrac{15}{2}$ and $= \dfrac{5}{2}$, calculate σ^2. **(6)**

10. Use a table to find the areas of the shaded regions under the standard normal curve. **(6)**

11. Find the value of z for which the area of the shaded region under the standard normal curve is given. **(6)**

    Area = .484

12. Find the 90th percentile of the normal distribution with $= 10$, $\sigma = 1.5$. **(6)**

13. The weights of men in a certain large group is normally distributed with $= 160$ lbs. and $\sigma = 15$ lbs. If X represents the weight of a man selected at random from this group, determine the probability that the man weighs less than 130 pounds. **(10)**

14. (Partial credit - show all work)

   Assume that 80% of all children who are exposed to chicken pox contract the disease. If 1225 children are exposed to chicken pox, the probability that more than 945 of them will contract the disease is approximately the area under the standard normal curve **(10)**

1) to the right of -2.50   b)   to the right of -.18
3) to the right of -2.46   d)   to the left of 2.46
5) to the left of - 2.50