**Probability Distribution:**

**Binomial Distribution:**

Q1) 4 coins are tossed simultaneously. Show that probability of getting two heads and two tails is 3/8.

Q2) Find the probability that in a family of 5 children there will be: a) at least one boy b) at least one girl and one boy. Probability of getting a girl is ½.

Q3) Find the probability that in 5 tosses of a fair die, a ‘3’ appears: a) twice b) at most once c) at least two times.

Q4) The probability of a bomb hitting a target is 2/5. Four direct hits are necessary to destroy a bridge completely. If 6 bombs are aimed at the bridge, what is the probability that it would be destroyed completely?

Q5) If a sample of 5 items is drawn randomly from a lot containing 10% defective items, what is the probability of getting not more than one defective item?

Q6) Pepperfry wanted to test the customer satisfaction about their home delivery system with a sample size of 10. The collected data is given below. The company has decided to look into their home delivery system as it plays an important role behind their sales. Can you find out from the data, the probability that at least 80% customers are satisfied with their home delivery system?

|  |  |
| --- | --- |
| Customer No. | Feedback |
| 1 | Good |
| 2 | Excellent |
| 3 | Satisfied |
| 4 | Not Satisfied at all |
| 5 | Admirable |
| 6 | Should be changed |
| 7 | Awful |
| 8 | Content |
| 9 | Poor |
| 10 | Good |

**Poisson Distribution:**

Q1) A hospital switch board receives on average 4 emergency calls in a five minute interval. What is the probability that there are: a) at most two emergency calls in a five minute interval b) exactly three emergency calls in a five minute interval

Q2) If 3 percent of electric bulbs produced by a company are defective, find the probability that in a sample of hundred bulbs, five will be defective.

Q3) A doctor attends on an average 12 patients daily in his chamber between 6 p.m. and 9 p.m. Find the probability that he sits idle on a specific day between 8 p.m. and 9 p.m.

**Normal Distribution:**

Q1) The height distribution of a group of 2989 individuals is known to be normal distribution with mean 65 inches and S.D 2.1 inches. Find the number of individuals whose height lies between 60.8 and 67.1 inches. Find also the number of individuals whose heights are above 67.1 inches.

Q2) Assume the mean height of soldiers to be 68.22 inches with a variance of 10.8 square inch. How many soldiers in a regiment of 1000 would you expect to be over 6 feet tall?

Q3) The mean I.Q of a group of children is 90 with a S.D of 20. Assuming that I.Q is normally distributed, find the % of children over 100.

Q4) A sample of 100 dry battery cells tested to find the length of life produced the following results: mean = 12 hrs. and S.D= 3hrs. If the data is normally distributed, what percentage of battery cells are expected to have life: 1) more than 15 hrs. 2) less than 6 hrs. 3) between 10 and 14 hrs?

Q5) In an exam a boy scored 90, where the mean score was 80 with a S.D of 5. Find his percentile.

Q6) The mean of a normal distribution is 50 and 5% of the values are greater than 60. Find the S.D of the distribution.

<http://www.mathsisfun.com/data/standard-normal-distribution-table.html>

**Business questions\_bank: (Probability Distribution)**

Q1) What is the probability that at least 75% of ‘good’ customers have Account Type A13?

Q2) What is the probability that at most 10% of bad customers have Credit History A33?

Q3) What is the probability of having 50 ‘bad’ customers having Credit History A34, if on an average 17% of ‘bad’ customers are found to make huge delay in payment?

Q4) What is the probability of having 50 to 55 ‘bad’ customers not checking their account, if it is found that on an average around 50 ‘bad’ customers do not do so?

Q5) What is the probability that the customers have an engagement duration of greater than 50 months with the bank?

Q6) What is the % of customers having amount deposited between Rs. (5,000 and 10,000)?