**Preparation for Midterm Exam #1**

1. The table below shows the number of cars sold in August:

|  |  |  |
| --- | --- | --- |
| **N** | **Car Type**  | **Number of Cars** |
| 1. | Sedan | 22 |
| 2. | Hatchback | 20 |
| 3. | Coupe | 10 |
| 4. | SUV | 8 |
| 5. | Minivan | 12 |

# Display the information in the table in a relative frequency bar graph.

2. During a year, the major earthquakes had Richter magnitudes as shown below:

7.0; 6.2; 7.7; 8.0; 6.4; 6.2; 7.2; 5.4; 6.4; 6.5; 7.2; 5.4.

Find mean, median and mode. Find also range, variance and standard deviation.

3.1 Test for 30 cars is analyzed:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Petrol consumption (liters) | 6 | 8 | 10 | 15 | 20 |
| Number of cars | 2 | 5 | 15 | 6 | 2 |

Let X be the petrol consumption of one of these cars selected at random:

1. Find the probability distribution for X;

b) Using the probability distribution find sample mean  and sampling standard deviation s; (answer: =11.07 and s= 3.5)

c) Find P(X<10); (answer: 7/30)

d) Find P(X10); (answer: 11/15)

e) Find P(X>10); (answer: 4/15)

f) Find P(8X15) (answer: 13/15).

3.2 Let X be a number of visitors which buy something among three visitors.

The probability distribution for X is given in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | 0 | 1 | 2 | 3 |
| P | 0.027 | 0.189 | 0.441 | 0.343 |

1. Using the probability distribution find sample mean and sampling standard deviation;

(answer:=2.1; =0,794).

b) Find the probability that among 3 visitors 1 will buy. (answer: 0.189)

c) Find the probability that among 3 visitors 1 or more will buy. (answer: 0.973)

d) Find the probability that among 3 visitors no one will buy. (answer: 0.027)

 e) Find the probability that among 3 visitors at least two will buy. (answer: 0.784).

4. There are 40 students in a group. 15 of them are male students and 10 of them are foreign students. Of all male students, 6 are foreign. One student is selected randomly from the group.

a) What is the probability that this student is male and foreign?

b) What is the probability that this student is female and local?

c) What is the probability that this student is either male or foreign or both?

d) Given that the selected student is male, what is the probability that he is local?

e) Given that the selected student is female, what is the probability that she is foreign?

f) Given that the selected student is foreign, what is the probability that this student is male?

g) Given that the selected student is local, what is the probability that this student is female?

5. A machine that produces stampings for automobile engines is producing 10% defectives. If the next 25 stampings are tested, find the probability that at least four of them are defective?

6. U.S. airlines average about 3.8 fatalities per month.

a) What is the probability that no fatalities will occur during a month?

b) What is the probability that one fatality will occur during a month?