Discrete Random Variable

Thulasy

1. What name is given to a table that lists all the values that a discrete random variable x can assume and their corresponding probabilities?
   Answer
   Probability Distribution Table

2. Classify each of the following random variables as discrete or continuous.

   (a) The time left on a parking meter
   Answer
   Continuous Variable

   (b) The total pounds of fish caught on a fishing trip
   Answer
   Continuous Variable

   (c) The number of gumballs in a vending machine
   Answer
   Discrete Variable

   (d) The time spent by a physician examining a patient
   Answer
   Continuous Variable

3. A household can watch news on any of the three networks ??? ABC, CBS, or NBC. On a certain day, five households randomly and independently decide which channel to watch. Let x be the number of households among these five that decide to watch news on ABC. Is x a discrete or a continuous random variables? Explain.
   Answer
   x = the number of households among these five that decide to watch news on ABC
   x=0,1,2,3,4,5
   x is a discrete random variable because the number of family cannot be a real number

4. The following table gives the probability distribution of a discrete random variable x.

x	p(x)
0	0.11
1	0.19
2	0.28
3	0.15
4	0.12
5	0.09
6	0.06

Find the probabilities?

(a) P(x=3)
Answer
P(x=3)=0.15

(b) P(x $\leq$ 2)
Answer
P(x$\leq$2)=P(x=0)+P(x=1)+P(x=2)=0.11+0.19+0.28

(c) P(x $\geq$ 3)
P(x $\geq$ 3) = P(x=3)+P(x+4)+P(x=5)+P(x=6)=0.15+0.12+0.09+0.06

(d) $P(1 \leq x \leq 4)$ = P(x=1)+P(x=2)+P(x=3)+P(x=4)
e. Probability that x assumes a value less than 4 f. Probability that x assumes a value greater than 2 g. Probability that x assumes a value in the interval 2 to 5 h. Probability that x assumes a value between 2 to 5