



Answer the following questions

Question # 1: Choose the correct answer with the explanation:

From the following data:

Age (years) X	30	40	50	60
Blood Pressure (mmHg) Y	120	130	140	150

- Find the best line equation (simple linear regression equation) so that Y may be predicted from X .
- Predict blood pressure for a 45-year-old.
- Find the coefficient of correlation r .

Question # 2:

- If the following function is probability mass function, then find the value of k .

x	-2	-1	0	1	2
$p(x)$	0.2	0.4	k	0.2	0.1

Determine the requested probabilities.

- (a) $P(X \leq 2)$ (b) $P(X > -2)$ (c) $P(-1 \leq X \leq 1)$ (d) $P(X \leq -1 \text{ or } X = 2)$
- A company categorizes emails into work (70%), personal (20%), and spam (10%). Work emails have 2% typos, personal emails have 5%, and spam emails have 15%.
 - If an email is selected at random, what is the probability that it has typos?
 - If an email has typos, what is the probability it is spam?

Question # 3:

- 20% of customers at a store make a purchase. If 15 customers visit, what is the probability exactly 4 make a purchase?
- A call center receives an average of 5 calls per hour. What is the probability of receiving exactly 3 calls in an hour?

Question # 4:

- If the standard deviation of a set of observations is 6 and if each observation is divided by 2, the standard deviation of the new set of observations will be
 - 4
 - 2
 - 3
 - 1

2. In meteorology, the intensity of UV-B radiation is classified as follows: weak, moderate, strong, extreme. What is the best measure for this data?
- a) Mean b) Median c) Mode d) b and c
3. Which measure of central tendency would best depict the following data: 2, 3, 5, 7, 9, 100?
- a) Mean b) Median c) variance d) Range
4. In a class of 100 students there are 80 boys whose average marks in a subject are 70. If the average marks of the complete class is 72, then what is the average of the girls?
- a) 80 b) 71.5 c) 68 d) 67.5
5. If $A \subset B$, then $p(A^c|B) = \dots$
- ~~a)~~ 1 b) $p(A|B)$ c) $p(B|A)$ d) none of them
6. The value of k when the probability mass function is given by,

$$P(x) = \begin{cases} \frac{2x}{k}, & x = 1, 2, 3, 4 \\ 0, & \text{o.w.} \end{cases}$$
- a) 10 b) 20 c) $\frac{1}{10}$ d) $\frac{1}{20}$
7. If the average of a series of values is 10 and their variance is 9, then the coefficient of variation is:
- a) 40% b) 20% c) 90% d) 30%
8. If $\sum x_i = 20$, and $\bar{x} = 4$, then the rank of the Median is
- a) 4 b) 5 c) 3 d) 3,4
9. If the variance of x $v(x) = 3$, then $v(3x - 5) =$
- a) $\frac{1}{3}$ b) 3 c) 27 d) $\frac{1}{27}$
10. If $\sum x_i = 40$, and the standard error and variance are 0.3 and 9 respectively, then the value of mean is
- a) 0.2 b) 0.9 c) 0.3 d) 0.4

Best wishes and wish Good Luck. Dr. Hossam Mahmoud Radwan