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Q 2

Q 11.

a)

x	y	$\bar{y} = \frac{172}{10} = 17.2$
3	25	
4	24	
5	20	7.6
6	20	$\bar{x} = \frac{76}{10} = 7.6$
7	19	
8	17	
9	16	
10	13	
11	10	
13	8	

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

$$r = \frac{\sum (76 - 7.6)(172 - 17.2)}{\sqrt{\sum (6.8 \dots) \sum (154.8)^2}}$$

$$\sqrt{\sum (6.8 \dots) \sum (154.8)^2}$$

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$$r = 68.4 \times 154.8$$

$$\sqrt{4678.56 \times 2396304}$$

$$r = 10588.32$$

$$112112520$$

$$r = \frac{110588.32}{10588.32} = 1.00000$$

Q 1 (b)

X	Y	X ²	Y ²	XY
20	5	400	25	100
11	15	121	225	165
15	14	225	196	210
10	17	100	289	170
17	8	289	64	136
18	9	324	81	162
21	12	441	144	252
25	16	625	256	400
28	18	784	324	504

$\Sigma = 165$ $\Sigma = 114$ $\Sigma = 3309$ $\Sigma = 1604$ $\Sigma = 2099$

(a) Formula for least square regression line for Y on X

$$Y = a + bX$$

$$b = \frac{\Sigma XY - \frac{\Sigma X \Sigma Y}{n}}{\Sigma X^2 - \frac{(\Sigma X)^2}{n}}$$

$$n \Sigma X^2 - (\Sigma X)^2$$

$$b = \frac{(9)(2099) - (165)(114)}{(9)(3309) - (165)^2}$$

$$(0.2b) \quad \textcircled{5}$$

$$b = 18891 - 18810$$

$$29781 - 27225$$

$$b = \frac{81}{2556}$$

$$b = \frac{81}{2552}$$

$$b = 0.031$$

Now.

$$a = \frac{1}{n} \{ \sum y - b \sum x \}$$

$$a = \frac{1}{9} \{ 114 - (0.031)(165) \}$$

$$a = \frac{1}{9} \{ 114 - 5.115 \}$$

$$a = \frac{1}{9} \{ 108.885 \}$$

$$a = 12.09 \quad \text{Hence}$$

$$y = 12.09 + 0.031x$$

Q1b

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Least square line.
for x on y

$$x = a + by$$

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum y^2 - (\sum y)^2}$$

$$n \sum y^2 - (\sum y)^2$$

$$b = \frac{(9)(2099) - (165)(114)}{(9)(1604) - (114)^2}$$

$$b = \frac{18891 - 18810}{14436 - 12996}$$

$$b = \frac{81}{1440}$$

$$b = 0.056$$

Now $a = \frac{1}{n} \{ \sum x - b \sum y \}$

$$a = \frac{1}{9} \{ 165 - (0.056)(114) \}$$

Q. 7.

(a) Each coin has two possible results.
Probability of getting head = $p = \frac{1}{2}$

5 tosses = 5 times -

There are .

$$P(2 \text{ head \& 1 Tail}) = \binom{5}{2} \left(\frac{1}{2}\right)^2 \left(\frac{1}{2}\right)^1 \\ = \frac{5}{8}$$

$$P(1 \text{ head \& 2 tails}) = \binom{5}{1} \left(\frac{1}{2}\right)^1 \left(\frac{1}{2}\right)^2 \\ = \frac{5}{8}$$

$$\text{Probability of 1 head} = \frac{5}{8} + \frac{5}{8} = \frac{10}{8} \\ = \boxed{1.25}$$

Q2

(b) part - possible

Therefore the binomial probability distribution $n=10$

$$p = 2/3$$

$$q = 1 - p$$

$$q = 1 - 2/3$$

$$q = 1/3$$

Let X denote the number of won by A then

$$\begin{aligned}
 \textcircled{1} \quad P(X \geq 4) &= 1 - P(X < 4) \\
 &= 1 - \sum_{x=0}^3 \binom{10}{x} \left(\frac{2}{3}\right)^x \left(\frac{1}{3}\right)^{10-x} \\
 &= 1 - \left[\binom{10}{0} \left(\frac{1}{3}\right)^{10} + 10 \left(\frac{2}{3}\right)^1 \left(\frac{1}{3}\right)^9 + 45 \left(\frac{2}{3}\right)^2 \left(\frac{1}{3}\right)^8 \right. \\
 &\quad \left. + 120 \left(\frac{2}{3}\right)^3 \left(\frac{1}{3}\right)^7 \right] \\
 &= \frac{1-1}{59049} [1 + 20 + 180 + 960]
 \end{aligned}$$

0.9

$$P = 0.228 + 0.261 + 6.196 + 0.087 + 0.018$$

$$P(x \geq 6) = 0.79$$

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Q3 Give information of children
(B) part) born 50 women.

2	6	1	5	9	8	3	12	12	1
1	3	3	0	15	2	1	10	3	4
5	3	3	6	3	3	2	2	7	4
N=1	4	12	9	14	4	6	8	10	7
7	5	6	5	3	2	3	9	2	2

group Frequency Distribution
given Data.

N = 50 Data

N = 50 $X_0 = 1$

Range = $X_{max} - X_0$

$R = 10 - 1 = 9$

$K = 1 + 3.3 \log N$

$= 1 + 3.3 \log (50)$

$= 1 + 3.3 (1.698)$

$= 1 + 5.6066 \quad K = 6.6066 \quad \boxed{= 6}$

(1)

$n = \text{class interval} = \text{Range}$

$$h = \frac{7}{6} = 1.285 = \boxed{2}$$

we find out the information from Data

$$N = 50 \quad R = 9, \quad K = 6 \quad h = 2$$

Classes	Freq	Class mark	
0-1	5	0.5-1.5	2.5
2-3	19	1.5-3.5	4.5
4-5	13	3.5-5.5	6.5
6-7	7	7.5-9.5	8.5
8-9	3	10.5-11.5	11
10-11	3		

Total 50

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Total 50

P.	P. Frequency	C.F	R.C.F
5/50	5/50 $\times 100 = 10$	5	5/50 = 0.1
19/50	19/50 $\times 100 = 38$	24	24/50 = 0.48
13/50	13/50 $\times 100 = 26$	37	37/50 = 0.74
7/50	7/50 $\times 100 = 14$	44	44/50 = 0.88
3/50	3/50 $\times 100 = 6$	47	47/50 = 0.94
3/50	3/50 $\times 100 = 6$	50	50/50 = 1.0

Q3 (a) Given Data.

2	6	1	5	3	3	8	8	16	1
4	5	3	0	2	1	4	4	10	3
5	3	3	6	3	2	2	2	7	4
1	4	1	4	4	6	6	8	10	7
2	5	6	1	2	3	3	9	2	2

un completed Freq Distribution

P.T.O \rightarrow

ve 50

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un completed Frequency Distribution

No	Tally mark	Freq
0	I	1
1	IIII	4
2	IIII III	8
3	IIII III I	11
4	IIII III	8
5	IIII	5
6	IIII	4
7	III	3
8	II	2
9	I	1
10	III	3