

Q2 part (b)

Solution Here-

There fore the binomial probability dist  
with  $n=10$

$$p = 2/3$$

$$q = 1-p$$

$$q = 1 - 2/3$$

$$q = 1/3$$

Let  $x$  denote the number of won by  
A then

$$(i) P(x \geq 4) = 1 - P(x < 4)$$

$$= 1 - \sum_{x=0}^3 \binom{10}{x} \left(\frac{2}{3}\right)^x \left(\frac{1}{3}\right)^{10-x}$$

$$= 1 - \left[ \left(\frac{1}{3}\right)^{10} + 10 \left(\frac{2}{3}\right)^1 \left(\frac{1}{3}\right)^9 + 45 \left(\frac{2}{3}\right)^2 \left(\frac{1}{3}\right)^8 \right. \\ \left. + 120 \left(\frac{2}{3}\right)^3 \left(\frac{1}{3}\right)^7 \right]$$

$$= 1 - \frac{1}{59049} \left[ 1 + 20 + 180 + 960 \right]$$

$$1 - 0.0197$$

$$P(x \geq 4) = 0.9803$$

Q No 3

(a) Ungrouped Frequency Distribution:

No. of children	Frequency
0	1
1	4
2	8
3	11
4	8
5	5
6	4
7	3
8	2
9	1
10	3

Ans.

Q No 3.

(b)

Grouped Frequency Distribution.

No. of children	Frequency
1-2	13
3-4	19
5-6	9
7-8	5
9-10	4
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Ans.

5 No. (1) (1)

(b)

(a)

x	y	xy	y <sup>2</sup>
20	5	100	25
11	15	165	225
15	14	210	196
10	17	170	289
17	8	136	64
13	9	162	81
21	12	252	144
25	16	400	256
28	18	504	324
<u>165</u>	<u>114</u>	<u>2099</u>	<u>1604</u>

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

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

(b)  $r_{xy} = 0.056$

$$y = a + bx$$

x	y
20	12.722
11	12.43
15	12.56
25	12.82
28	12.99

(3)

Q NO 28

(a)

$$X = 0, 1, 2, 3, 4, 5$$

$$n = 5$$

$$p = 1/2$$

$$P(\text{no head}) = P(X=0) = \binom{5}{0} \left(\frac{1}{2}\right)^0 \left(\frac{1}{2}\right)^5 = 1/32$$

$$P_1 (\text{1 head}) = P(X=1) = \binom{5}{1} \left(\frac{1}{2}\right)^1 \left(\frac{1}{2}\right)^{5-1} = 5/32$$

$$P_2 (\text{2 head}) = P(X=2) = \binom{5}{2} \left(\frac{1}{2}\right)^2 \left(\frac{1}{2}\right)^{5-2} = 10/32$$

$$P_3 (\text{3 head}) = P(X=3) = \binom{5}{3} \left(\frac{1}{2}\right)^3 \left(\frac{1}{2}\right)^{5-3} = 10/32$$

$$P_4 (\text{4 head}) = P(X=4) = \binom{5}{4} \left(\frac{1}{2}\right)^4 \left(\frac{1}{2}\right)^{5-4} = 5/32$$

$$P_5 (\text{5 head}) = P(X=5) = \binom{5}{5} \left(\frac{1}{2}\right)^5 \left(\frac{1}{2}\right)^{5-5} = 1/32$$

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Subject: Biostatistic.

Q No 1 (a)

X	Y	$x - \bar{x}$	$y - \bar{y}$	$(x - \bar{x})(y - \bar{y})$	$(x - \bar{x})^2$	$(y - \bar{y})^2$
		$3 - 7.6 = -4.6$	$25 - 17.2 = 7.8$	$-35.88$	21.16	60.84
3	25	$4 - 7.6 = -3.6$	$24 - 17.2 = 6.8$	$-24.48$	12.96	46.24
4	24	$5 - 7.6 = -2.6$	$20 - 17.2 = 2.8$	$-7.28$	6.76	7.84
5	20	$6 - 7.6 = -1.6$	$20 - 17.2 = 2.8$	$-4.48$	2.56	2.24
6	20	$7 - 7.6 = -0.6$	$19 - 17.2 = 1.8$	$-1.08$	0.36	3.24
7	19	$8 - 7.6 = 0.4$	$17 - 17.2 = -0.2$	$-0.08$	0.16	0.04
8	17	$9 - 7.6 = 1.4$	$16 - 17.2 = -1.2$	$-1.68$	1.96	1.44
9	16	$10 - 7.6 = 2.4$	$13 - 17.2 = -4.2$	$-10.08$	5.76	17.64
10	13	$11 - 7.6 = 3.4$	$10 - 17.2 = -7.2$	$-24.48$	11.56	51.84
11	10	$13 - 7.6 = 5.4$	$18 - 17.2 = 0.8$	$4.32$	29.16	0.64
13	18				92.4	281.6
<u>76</u>	<u>172</u>					

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

$\bar{x} = \frac{76}{10} = 7.6$   
 $\bar{y} = \frac{172}{10} = 17.2$

$$r = \frac{-159.2}{\sqrt{5132.58}}$$

$r = -0.22$  Weak correlation.