

Following are the marks obtained by 13 students in business statistics.

Marks	formula			
24	n	13	standard deviation	22.16835
27	$\Sigma x$	734		
36	mean	56.46154	cv	39.26275
48	median	54		
52	mode	52	karls pearson skewness	
52	25th per	48	sk(p)	0.201257
54	Q1	48	s(b)	0
55	Q3	60		
56				
60			p90	89
85			p10	28.8
90			kurtosis	0.099668
95				

12  
120.4

box and wishker plot

x	formula		difference		
9	xmin	9	0 xmin	9	9
33	xmax	50	1 Q1	16	7
47	Q1	16	2 md	25	9
15	Q3	30	3 Q2	30	5
22	md	25	4 xmax	50	20
17					
18					
45					
50					
26					
25					
27					
9					
27					
10					



## Box and whisker



1

compute mean ,median and mode using the following data

milage      400-419    420-439    440-459    460-479    480-499    500-519

frequency            12            27            34            24            15            8

the given class interval is inclusive and we have to change to exclusive and also calculate mid values

LCB	UCB	mid(x)	frequency	fx	CF	$X^2$	$FX^2$
399.5	419.5	409.5	12	4914	12	167690.3	2012283
419.5	439.5	429.5	27	11596.5	39	184470.3	4980697
439.5	459.5	449.5	34	15283	73	202050.3	6869709
459.5	479.5	469.5	24	11268	97	220430.3	5290326
479.5	499.5	489.5	15	7342.5	112	239610.3	3594154
499.5	519.5	509.5	8	4076	120	259590.3	2076722
			120	54480	120	1273842	24823890

mean	454			fm-f1	7
median	60	0.617647	451.8529	fn-f2	10
mode	447.7353			Q1	30
sd				Q3	90
				90th posit	108
				10th	12
p25	30				
	432.8333				
Q1	432.8333				
Q3					

Draw a scatter diagram of daily rainfall and particular level in kathmandu valley using excel

Daily rainfall(x)	particularlevel(y)	XY	X <sup>2</sup>	Y <sup>2</sup>	
4.1	122	500.2	16.81	14884	
4.3	117	503.1	18.49	13689	n
5.7	112	638.4	32.49	12544	NXY
5.4	114	615.6	29.16	12996	sumX*sum
5.9	110	649	34.81	12100	n*sumX <sup>2</sup>
5	114	570	25	12996	(sumX) <sup>2</sup>
3.6	128	460.8	12.96	16384	n*sumy <sup>2</sup>
1.9	137	260.3	3.61	18769	(sumy)
7.3	104	759.2	53.29	10816	
43.2	1058	4956.6	226.62	125178	

#### SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.978658
R Square	0.957772
Adjusted R Square	0.95174
Standard Error	2.202613
Observations	9

#### ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	770.2617	770.2617	158.7676	4.58E-06
Residual	7	33.96054	4.851506		
Total	8	804.2222			

	<i>Coefficients</i>	<i>andard Errc</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	147.9107	2.518477	58.73021	1.09E-10	141.9554	153.8659
X Variable 1	-6.32399	0.501892	-12.6003	4.58E-06	-7.51077	-5.1372

#### RESIDUAL OUTPUT

<i>Observation</i>	<i>Predicted Y</i>	<i>Residuals</i>
1	121.9823	0.017653
2	120.7175	-3.71755
3	111.864	0.136033
4	113.7612	0.238837
5	110.5992	-0.59917
6	116.2908	-2.29076

#### PROBABILITY OUTPUT

<i>Percentile</i>	<i>Y</i>
5.555556	104
16.66667	110
27.77778	112
38.88889	114
50	114
61.11111	117

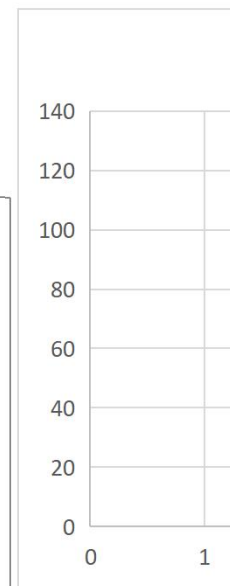
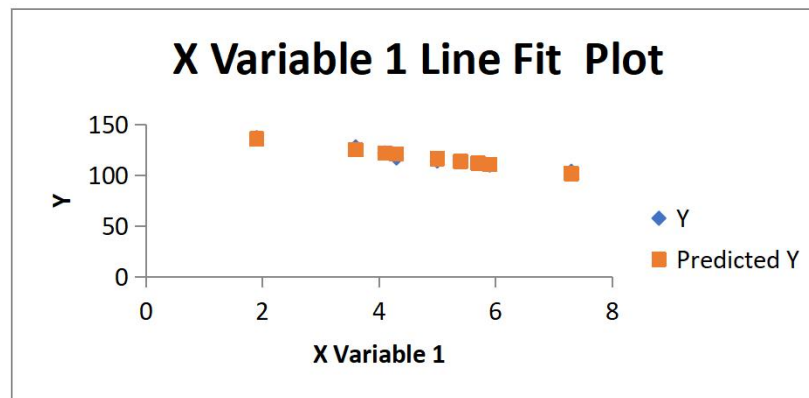
7	125.1443	2.855659
8	135.8951	1.104881
9	101.7456	2.254413

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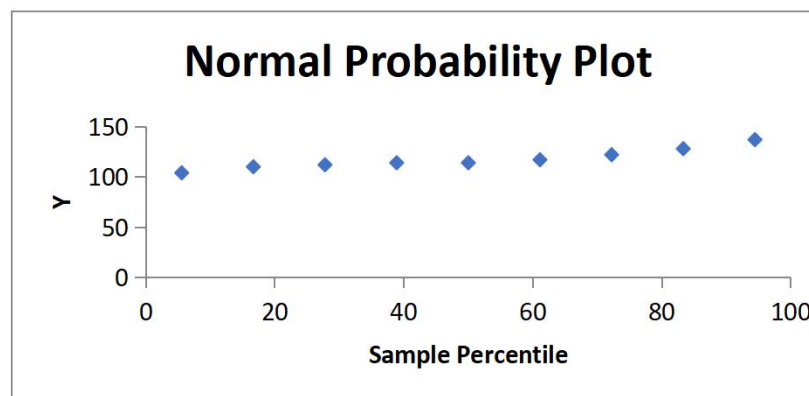
72.22222	122
83.33333	128
94.44444	137

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9	y	85.07644
44609.4	$\sum x^2 \cdot n - \sum x^2$	13.16586
45705.6	r	-0.97866
2039.58	se	0.014076
1866.24	b	-6.32399
1126602	a	147.9107
1119364	$y = 147.91 - 6.32X$	



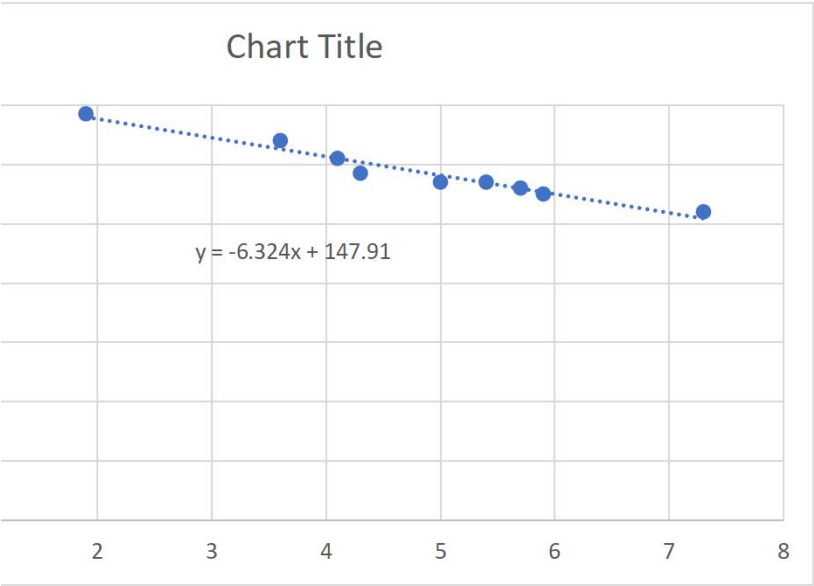
<u>Lower 95.0%</u>		<u>Upper 95.0%</u>	
141.9554	153.8659		
-7.51077	-5.1372		







	Column 1	Column 2
Column 1	1	
Column 2	0.988602	1





calculate Spearman's rank correlation coefficient

A	B	rankA	rankB	d	d <sup>2</sup>	
67	31	9	5	4	16	
41	29	2	4	-2	4	$r(s)=1-6\sum d^2/n(n^2-1)$
52	70	4	9	-5	25	
60	79	7	10	-3	9	0.369697
42	21	3	2	1	1	
39	19	1	1	0	0	
56	68	6	8	-2	4	
61	25	8	3	5	25	
53	40	5	7	-2	4	
69	37	10	6	4	16	
n=10					104	

Anger	6	7	5	21	13	5	13	14
Vigor	30	23	29	22	19	19	28	19

Anger	Vigor	r1	r2	d	d <sup>2</sup>	
6	30	6	1	5	25	
7	23	5	4	1	1	
5	29	7.5	2	5.5	30.25	
21	22	1	5	-4	16	
13	19	3.5	7	-3.5	12.25	
5	19	7.5	7	0.5	0.25	
13	28	3.5	3	0.5	0.25	
14	19	2	7	-5	25	
					110	

13 repeated 2 times	m1	2	0.5	$n(n^2 - 1)$	504
5 repeated 2 times	m2	2	0.5		
19 repeated 3 times	m3	3	2		

$r(s)$  -0.34524

hence rank correlation is negative so it is low degree correlation between anger and vigor

$$n(n^2-)$$

$$990$$

A card is drawn at random from a well shuffled pack of cards. What is the probability of (a) red card (b) black card

cases	no. of cases	probability
red card	26	0.5
black card	26	0.5
total	52	1

You are given below the income distribution of 1000 persons, find the probability that a person selected has (a) income

income	0-500	500-1000	1000-1500	1500-2000	2000-2500	2500-3000	3000-3500	N
no. person	150	250	300	100	80	70	50	1000

income	no. person	probability	prob income below 2000
0-500	150	0.15	0.8
500-1000	250	0.25	prob income 2500 or more
1000-1500	300	0.3	0.2
1500-2000	100	0.1	
2000-2500	80	0.08	
2500-3000	70	0.07	
3000-3500	50	0.05	

The following table shows the survey regarding the employment status and gender in a sample of 209 managers

gender	employed status		total
	employed	not employed	
male	83	28	111
female	64	34	98
	147	62	209

What is the prob that a graduate chosen at random

a. is currently employed

b. is a female and currently employed

c. is female or currently employed

d. suppose the graduate chosen is a female, what is the prob that she is currently employed?

employed status

a	0.703349
b	2/7
c	0.346939
d	0.435374

< card

income below 2000 (b) income 2500 or more.

nt graduate

A random variable follows binomial distribution with parameter  $n=6$  and  $p=0.4$ , find the probability of  $x=2$ ,  $x<5$  or  $x>3$

n	6	
p	0.4	
q	0.6	
cases	X=x	probability
x=2	2	0.31104
x<5	4	0.95904
x>3	3	0.1792

A person shoots three round at target .The probability of hitting a target successfully is 0.3.Compute the probability of hitting the target successfully in 1, 2 or 3 rounds

n	3
p	0.3
q	0.7

]

probability p(x)	
0	0.343
1	0.441
2	0.189
3	0.027

1



and  $x > 3$ .

ity of hitting targets where  $x=0,1,2,3$

calculate spearman's correlation coefficient between statistics and mathematics

X1	X2	d=X1-X2	d <sup>2</sup>			
2	1	1	1			
1	3	-2	4			
4	7	-3	9			
6	5	1	1	n	7	n(n <sup>2</sup> -1)
5	6	-1	1	d <sup>2</sup>	26	156
3	2	1	1	r(s)	0.535714	
7	4	3	9			



In a chips factory machine A,B and C manufactured respectively 25%,35% and 40% of the total of their output 5,4 bolts.A chips is drawn at random from the product and is found to be defective .What is the probability that it wa

$P(A)$	0.25
$p(B)$	0.35
$P\textcircled{C}$	0.4
$p(D/A)$	0.05
$P(D?B)$	0.04
$P(D/C)$	0.02

$P(A/D)$	0.362319
$P(B/D)$	0.405797
$P(C/D)$	0.231884

1 and 2 percent defective  
is manufactured by machine A,B and C?

Fit binomial distribution and find the probability of less than 3 , less than equal to 3, exactly 3,not equal to

X	f	p(x)	expected	rounded	fx
0	20	0.003565	5.642978	6	0
1	100	0.029174	46.18228	46	100
2	190	0.104457	165.3562	165	380
3	280	0.213721	338.3198	338	840
4	350	0.273296	432.6277	433	1400
5	300	0.223666	354.0637	354	1500
6	220	0.114406	181.1041	181	1320
7	120	0.033439	52.93431	53	840
8	3	0.004276	6.768996	7	24
total	1583			1583	6404
n	8			mean	4.045483
mean	4.045483				
p	0.505685				
q	0.494315				

X	f	expected	rounded
0	20	5.6429	6
1	100	46.1822	46
2	190	165.3562	165
3	280	338.3198	338
4	350	432.6277	433
5	300	5.642978	6
6	220	181.1041	181
7	120	52.93431	53
8	3	6.768996	7

for finding poisson distribution

X	f	p(x)	expected	rounded
0	20	0.017501	27.70448	28
1	100	0.070801	112.078	112
2	190	0.143212	226.7048	227
3	280	0.193121	305.7102	306
4	350	0.195317	309.1863	309
5	300	0.15803	250.1616	250
6	220	0.106551	168.6707	169
7	120	0.061579	97.47923	97
8	3	0.031139	49.29382	49

X	f	expected
0	20	28
1	100	112
2	190	227
3	280	306
4	350	309
5	300	250
6	220	169
7	120	97
8	3	49