DEMAND FORECASTING

Even number of Year x= Year- Mean of 2 middle years/ ½ Interval

Origin=(2012+2013)/2 = 2012.5

X= Year- 2012.5/ ½ Interval

For year 2009 It is 2009-2012.5/0.5 = (-7)

Year	y	x	xy	X2	
2009	80	-7	-560	49	
2010	90	-5	-450	25	
2011	92	-3	-276	9	
2012	83	-1	-83	1	
2013	94	1	94	1	
2014	99	3	297	9	
2015	92	5	460	25	
2016	104	7	728	49	
	∑y= 734	∑x= 0	∑xy= 210	∑x2= 168	

∑y= a+ b∑x => 734= 8a so a = 91.75

∑xy= a∑x + b ∑x2 => 210= 168b so b= 1.25

Y= a+ bx = 91.75+ 1.25x

Estimate for 2017

2017-2012.5/0.5 = (9)

Y= 91.75+ 1.25x= 91.75+ 1.25*9= 103

……

Odd number of Year

Year	y	x	xy	X2	
2010	125	-3	-376	9	
2011	128	-2	-256	4	
2012	133	-1	-133	1	
2013	135	0	0	0	
2014	140	1	140	1	
2015	141	2	282	4	
2016	143	3	429	9	
	∑y= 945	∑x= 0	∑xy= 87	∑x2= 28	

x = (Year- origin)/ Interval

For 2010

X = 2010-2013/1 = (-3)

∑y= a+ b∑x => 945= 7a so a = 135

∑xy= a∑x + b ∑x2 => 87= 28b so b= 3.107

Y= a+ bx = 135+ 3.107x

Estimate for year 2017

X= 2017-2013/1= 4

Y= a+ bx = 135+ 3.107*4= 147.428

Direct Method

Calculate the regression equations Y on X from the data given below,

Price	10	12	13	12	16	15
Demand	40	38	43	45	37	43

Price(X)	Demand(Y)	∑XY	$\sum X^2$
10	40	400	100
12	38	456	144
13	43	559	169
12	45	540	144
16	37	592	256
15	43	645	225
∑X=78	∑Y=246	∑XY= 3192	$\sum X^2$= 1038

$\sum y = N\,a + b\sum x$ => 246= 6a+78b……(i)

$\sum xy = a\sum x + b\sum x^2$ => 3192= 78a+1038b……(ii)

Solving (i) & (ii)

a= 44.25

b= (-0.25)

Y= a+ bx=> Y= 44.25 - 0.25X