FIT3158 Note - W10 Forecast

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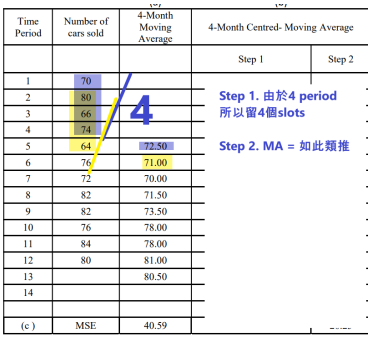
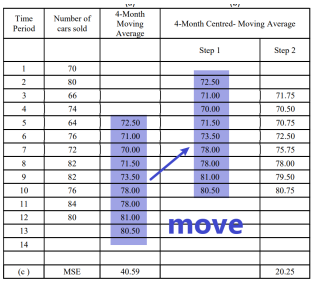
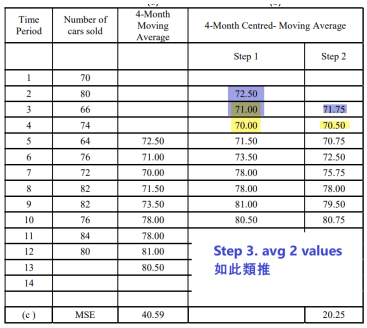
Calculate 4-period centred-moving average

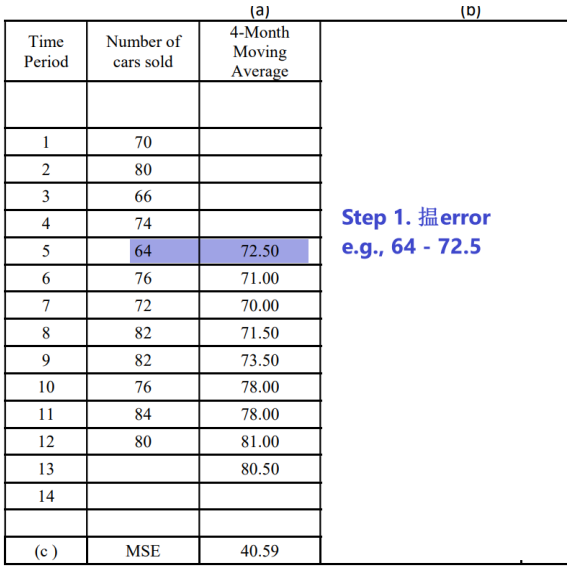
Avg 再avg

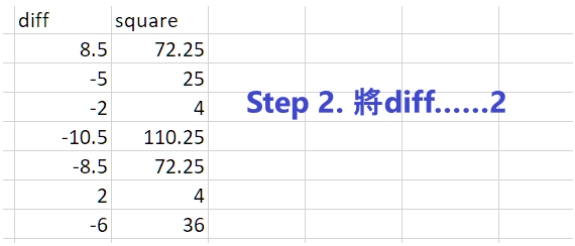


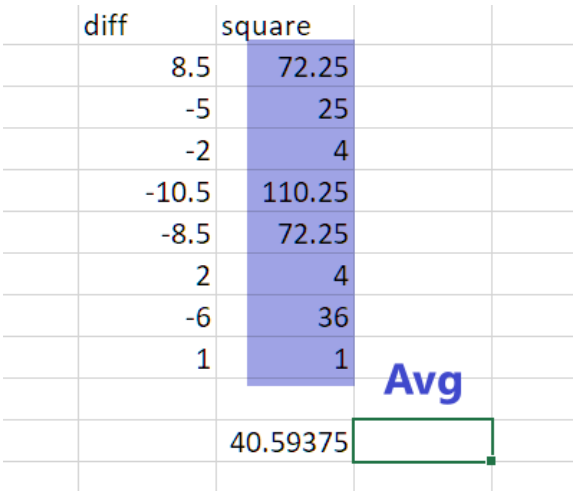




Calculate MSE

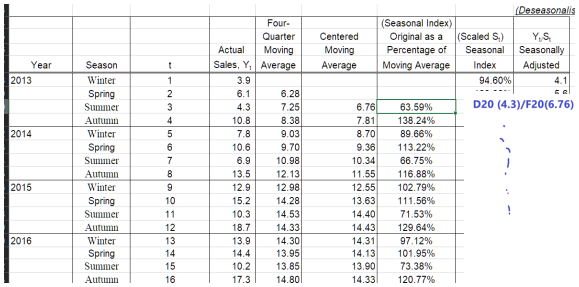






Calculate seasonal indices

Deseasonalise data

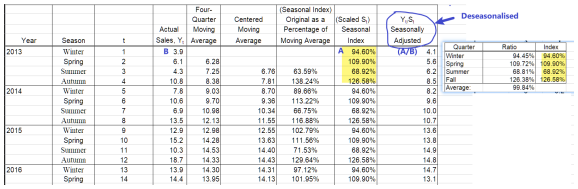


Year	Season	t	Actual Sales, Y_t	Four-Quarter Moving Average	Centered Moving Average	(Seasonal Index) Original as a Percentage of Moving Average	(Scaled S_t) Seasonal Index	Y_t/S_t Seasonally Adjusted
								(Deseasonalis
2013	Winter	1	3.9				94.60%	4.1
	Spring	2	6.1	6.28				
	Summer	3	4.3	7.25	6.76	63.59%	D20 (4.3)/F20(6.76)	
	Autumn	4	10.8	8.38	7.81	138.24%		
2014	Winter	5	7.8	9.03	8.70	89.66%		
	Spring	6	10.6	9.70	9.36	113.22%		
	Summer	7	6.9	10.98	10.34	66.75%		
	Autumn	8	13.5	12.13	11.55	116.88%		
2015	Winter	9	12.9	12.98	12.55	102.79%		
	Spring	10	15.2	14.28	13.63	111.56%		
	Summer	11	10.3	14.53	14.40	71.53%		
	Autumn	12	18.7	14.33	14.43	129.64%		
2016	Winter	13	13.9	14.30	14.31	97.12%		
	Spring	14	14.4	13.95	14.13	101.95%		
	Summer	15	10.2	13.85	13.90	73.38%		
	Autumn	16	17.3	14.80	14.33	120.77%		

After calculating CMA

Quarter	Ratio		Index	
Winter	A	94.45%	94.60%	A/B
Spring		109.72%	109.90%	
Summer		68.81%	68.92%	
Fall		126.38%	126.58%	
Average:	B	99.84%		

Step 1. 搵index



Step 2. 搵seasonal adjusted

Exponential

	A	B	C	D	E	F
1	alpha =	0.1	$\hat{Y}_{t+1} = \alpha Y_t + (1 - \alpha)\hat{Y}_t$			
2						
3	Week (t)	Sales (t)	forecast			
4	1	110.0	110.00			-
5	2	115.0	110.00	=$B$1*B4+(1-$B$1)*C4		
6	3	125.0	110.50	=$B$1*B5+(1-$B$1)*C5		
7	4	120.0	111.95			
8	5	125.0	112.76			
9	6	120.0	113.98			
10	7	130.0	114.58			
11	8	115.0	116.12			
12	9	110.0	116.01			
13	10	130.0	115.41			

Alpha * 上一個forecast value + (1 - Alpha) * 上一個expo value

MAPE

Solution for a) and c) :

	A	B	C	D	E	F
1	Time Period	Number of Toys Sold	Exponential Smoothing Prediction			
2		真	測	APE		
3	1	174	174.00			
4	2	189	174.00	0.079		
5	3	168	180.60	0.075		
6	4	180	175.06	0.027		
7	5	165	177.23	0.074		
8	6	183	171.85	0.061		
9	7	177	176.76	0.001		
10	8	192	176.86	0.079		
11	9	192	183.52	0.044		
12	10	183	187.25	0.023		
13	11	195	185.38	0.049		
14	12	189	189.61	0.003		
15						
16		MAPE		0.047		

Step1: 搵APE

abs (測 - 真) / 真

abs (測 - 真)
=abs(174-189)
=15

15/189
= 0.079365

	A	B	C	D	E	F
1	Time Period	Number of Toys Sold	Exponential Smoothing Prediction			
2				APE		
3	1	174	174.00		alpha	0.44
4	2	189	174.00	0.079		
5	3	168	180.60	0.075		
6	4	180	175.06	0.027		
7	5	165	177.23	0.074		
8	6	183	171.85	0.061		
9	7	177	176.76	0.001		
10	8	192	176.86	0.079		
11	9	192	183.52	0.044		
12	10	183	187.25	0.023		
13	11	195	185.38	0.049		
14	12	189	189.61	0.003		
15						
16		MAPE		0.047		