# Moving Average, Seasonal Variation and Forecast Sales

Appendix 1: Ice cream sales data by volume (000 litres)

Year	Quarter	Sales volume	Centred quarterly moving average	Seasonal variation	Average seasonal variation
2014	2	25			
	3	35			
	4	25	25.88	−0.88	0.22
2015	1	16	27.13	−11.13	−12.09
	2	30	28.63	1.38	0.34
	3	40	30.00	See Q4a(II)	11.97
	4	32	30.88	1.13	0.22
2016	1	20	31.88	−11.88	−12.09
	2	33	32.75	0.25	0.34
	3	45	33.25	11.75	11.97
	4	34	33.75	0.25	0.22
2017	1	22	34.38	−12.38	−12.09
	2	35	35.00	0.00	0.34
	3	48	35.38	12.63	11.97
	4	36	35.63	0.38	0.22
2018	1	23	36.00	−13.00	−12.09
	2	36	36.25	−0.25	0.34
	3	50	See Q4a(I)		11.97
	4	36			
2019	1	25			

Ice cream quarterly sales volume (000 litres)
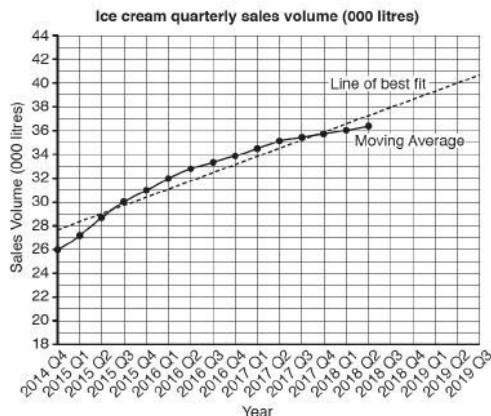
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4 (a) Refer to the table in Appendix 1. Calculate:
(i) the centred quarterly moving average for quarter 3, 2018 (3 marks)

4 period MA = 8 period moving total/8 (1 mark if no calculation)

= (23 + 36 + 50 + 36 + 36 + 50 + 36 + 25)/8

= 36 500 litres or 36.5 thousand litres

4 (a) Refer to the table in Appendix 1. Calculate:
(ii) the seasonal variation for quarter 3, 2015. (2 marks)

Sales – 4 period moving average trend

= 40 – 30

= 10 000 litres

4 (b) Refer to the table and graph in Appendix 1. Calculate SWF's forecast sales for Quarter 3 in 2019.

Predicted trend from inspection of graph: 40.8 Allow ±0.2 i.e. 40.6 – 41

Add average seasonal variation Q3 = 11.97

Forecast = 52.77 thousand litres or 527 700 litres