Question 5 **(12 marks)**

A stall at a local market sells leather handbags. Sales over the past three weeks are tabulated, along with other calculations.

Week	Day	t	Sales	3 point moving average	Daily mean	Percentage of daily mean	Deseasonalised sales
1	Friday Saturday Sunday	1 2 3	2 9 4	— 5 **5.33**	5	40 180 80	4 6 4
2	Friday Saturday Sunday	4 5 6	3 6 6	4.33 5 5	5	60 **120** 120	6 4 6
3	Friday Saturday Sunday	7 8 9	3 9 6	6 6 —	**6**	50 150 100	 6 6

(a) Show clearly how each of the numbers in bold type was calculated. (3 marks)

5.33

120

6

(b) Determine the seasonal index for Friday and explain its meaning. (2 marks)

(c) (i) Give a reason why time series data are deseasonalised. (1 mark)

(ii) Calculate the deseasonalised value for Friday of Week 3. (2 marks)

The equation of the least-squares line for the deseasonalised sales, based on time t, is $y = 0.2t + 4.3$.

(d) How does this equation support the observation that sales are increasing? (1 mark)

(e) Predict the sales for Friday of Week 4. (3 marks)