Question 8 **(13 marks)**

The owners of a small family business that sells farm-fresh honey decide to advertise their produce online. A website has been created and they monitor the number of visits to the website each day for three weeks. The table below shows time series analysis of the collected data using a seven-day period.

Week	Day	Time (*t*)	Weekly mean	Visits as a percentage of the weekly mean	Deseasonalised data
1	Monday	1	43.7	86.9	42.4
	Tuesday	2		91.5	45.3
	Wednesday	3		77.8	45.4
	Thursday	4		**A**	41.2
	Friday	5		116.7	42.6
	Saturday	6		125.8	42.0
	Sunday	7		130.4	47.0
2	Monday	8	45.9	89.4	45.8
	Tuesday	9		85.0	44.1
	Wednesday	10		72.0	44.1
	Thursday	11		76.3	46.5
	Friday	12		124.3	47.6
	Saturday	13		135.2	47.4
	Sunday	14		117.8	44.5
3	Monday	15	50.9	92.4	52.5
	Tuesday	16		88.5	**B**
	Wednesday	17		74.7	50.8
	Thursday	18		78.7	53.1
	Friday	19		118.0	50.1
	Saturday	20		131.7	51.2
	Sunday	21		116.0	48.6

(a) Complete the following table. (2 marks)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Daily index	89.6%	88.3%	74.8%	75.3%	119.7%		

(b) Determine the value of **A** in the table above. (2 marks)

(c) Given the actual website visits on Tuesday of week 3 was 45, determine the value of **B** in the table above. (2 marks)

(d) Interpret the daily index for Friday in the context of this question. (1 mark)

(e) Given there were 62 website visits on Friday of week 4, estimate the total of number of website visits for week 4. (2 marks)

(f) Calculate the actual number of visits to the website on Monday of week 1. (1 mark)

The least-squares line for the deseasonalised data and time is $y = 0.47t + 41.70$.

(g) Predict the number of website visits on Tuesday of week 5. (3 marks)