Question 4 **(5 marks)**

Ryan was keen to compare interest rates offered by different banks, so he decided to construct a table showing the effective annual rates of interest (%). Part of his table is shown below.

	Rate of interest (p.a.)				
Compounding period	**4%**	**4.5%**	**5%**	**5.5%**	**6%**
Quarterly	4.060	4.577	5.095	5.614	6.136
Monthly	4.074	4.594	5.116	5.641	6.168
Daily	4.081	4.602	5.127	5.654	6.183

(a) Ryan wants to borrow $5000 to purchase a second-hand car. A bank offers to lend him the money at the rate of 6% p.a. for one year. He plans to pay off the entire loan (including the interest) at the end of the year. Which compounding period should he sign up for? Justify your decision. (2 marks)

(b) Ryan is curious to know how much interest he would earn by investing $100 for a year, earning 4% p.a. with interest compounded quarterly. Determine the interest he would earn. (1 mark)

(c) Ryan's sister has $3000 to invest for a year. She has been offered a rate of 5% p.a., with interest compounded daily. Determine the value of her investment at the end of the year. (2 marks)