6 A mobile phone company records their annual sales on 31st December every year.

Paul thinks that the annual sales, S million, can be modelled by the equation $S = ab^t$, where a and b are both positive constants and t is the number of years since 31st December 2015.

Paul tests his theory by using the annual sales figures from 31st December 2015 to 31st December 2019. He plots these results on a graph, with t on the horizontal axis and $\log_{10} S$ on the vertical axis.

(a) Explain why, if Paul's model is correct, the results should lie on a straight line of best fit on his graph. **[3]**

The results lie on a straight line of best fit which has a gradient of 0.146 and an intercept on the vertical axis of 0.583.

(b) Use these values to obtain estimates for a and b, correct to 2 significant figures. **[2]**

(c) Use this model to predict the year in which, on the 31st December, the annual sales would first be recorded as greater than 200 million. **[3]**

(d) Give a reason why this prediction may not be reliable. **[1]**