11 An oven is used to make clay pots.

The temperature inside the oven, θ °C, is modelled by the equation

$$\theta = 1100 - 1080e^{kt}$$

where t is the time in hours after it is switched on and k is a negative constant.

11 (a) (i) Find the initial temperature inside the oven. **[1 mark]**

11 (a) (ii) Write down the maximum temperature inside the oven. **[1 mark]**

11 (b) The oven is switched on at 1:00 pm.

At 2:00 pm, the temperature inside the oven is 375 °C

11 (b) (i) Find the value of k

Give your answer to one decimal place. **[3 marks]**

11 (b) (ii) The actual temperature inside the oven at 5:30 pm is measured to be 1020 °C

Comment on the accuracy of the model. **[3 marks]**