13 The population of Melchester is 185 207. During a nationwide flu epidemic the number of new cases in Melchester are recorded each day. The results from the first three days are shown in Fig. 13.

Day	1	2	3
Number of new cases	8	24	72

Fig. 13

A doctor notices that the numbers of new cases on successive days are in geometric progression.

(a) Find the common ratio for this geometric progression. **[1]**

The doctor uses this geometric progression to model the number of new cases of flu in Melchester.

(b) According to the model, how many new cases will there be on day 5? **[1]**

(c) Find a formula for the **total** number of cases from day 1 to day n inclusive according to this model, simplifying your answer. **[1]**

(d) Determine the maximum number of days for which the model could be viable in Melchester. **[3]**

(e) State, with a reason, whether it is likely that the model will be viable for the number of days found in part **(d)**. **[1]**