

- 8** A team called “The Educated Guess” enter a weekly quiz. If they win the quiz in a particular week, the probability that they will win the following week is 0.4, but if they do not win, the probability that they will win the following week is 0.2.

In week 4 The Educated Guess won the quiz.

- (a)** Calculate the probability that The Educated Guess will win the quiz in week 6. **[3]**

Every week the same 20 quiz teams, each with 6 members, take part in a quiz. Every member of every team buys a raffle ticket. Five winning tickets are drawn randomly, without replacement. Alf, who is a member of one of the teams, takes part every week.

- (b)** Calculate the probability that, in a randomly chosen week, Alf wins a raffle prize. **[2]**
- (c)** Find the smallest number of weeks after which it will be 95% certain that Alf has won at least one raffle prize. **[4]**