8 According to the latest research there are 19.8 million male drivers and 16.2 million female drivers on the roads in the UK.

(a) A driver in the UK is selected at random. Find the probability that the driver is male. **[1]**

(b) Calculate the probability that there are 7 female drivers in a random sample of 25 UK drivers. **[1]**

When driving in a built-up area, Rebecca exceeded the speed limit and was obliged to attend a speed awareness course. Her husband said "It's nearly always male drivers who are speeding." When Rebecca attends the course, she finds that there are 25 drivers, 7 of whom are female. You should assume that the drivers on the speed awareness course constitute a random sample of drivers caught speeding.

(c) **In this question you must show detailed reasoning.**

Conduct a hypothesis test to determine whether there is any evidence at the 5% level to suggest that male drivers are more likely to exceed the speed limit than female drivers. **[7]**

(d) State a modelling assumption that is necessary in order to conduct the hypothesis test in part **(c)**. **[1]**