

12 The jaguar is a species of big cat native to South America. Records show that 6% of jaguars are born with black coats. Jaguars with black coats are known as black panthers. Due to deforestation a population of jaguars has become isolated in part of the Amazon basin. Researchers believe that the percentage of black panthers may not be 6% in this population.

- (a)** Find the minimum sample size needed to conduct a two-tailed test to determine whether there is any evidence at the 5% level to suggest that the percentage of black panthers is not 6%. **[3]**

A research team identifies 70 possible sites for monitoring the jaguars remotely. 30 of these sites are randomly selected and cameras are installed. 83 different jaguars are filmed during the evidence gathering period. The team finds that 10 of the jaguars are black panthers.

- (b)** Conduct a hypothesis test to determine whether the information gathered by the research team provides any evidence at the 5% level to suggest that the percentage of black panthers in this population is not 6%. **[7]**