The children at two large schools, P and Q, are all given the same puzzle to solve. A random sample of size 10 is taken from the children at school P. Their individual times to complete the puzzle give a sample mean of 9.12 minutes and an unbiased variance estimate of 2.16 minutes^2. A random sample of size 12 is taken from the children at school Q. Their individual times, x minutes, to complete the puzzle are summarised by

$$\Sigma x = 99.6 \qquad \Sigma(x-\bar{x})^2 = 21.5,$$

where $\bar{x}$ is the sample mean. Times to complete the puzzle are assumed to be normally distributed with the same population variance.

Test at the 5% significance level whether the population mean time taken to complete the puzzle by children at school P is greater than the population mean time taken to complete the puzzle by children at school Q. [8]