Maya is an athlete who competes in 1500-metre races. Last summer her practice run times had mean 4.22 minutes. Over the winter she has done some intense training to try to improve her times. A random sample of 10 of her practice run times, x minutes, this summer are summarised as follows.

$$\sum x = 42.05 \qquad \sum x^2 = 176.83$$

Maya's new practice run times are normally distributed. She believes that on average her times have improved as a result of her training.

Test, at the 5% significance level, whether Maya's belief is supported by the data. [6]