An inspector is checking the lengths of metal rods produced by two machines, X and Y. These rods should be of the same length, but the inspector suspects that those made by machine X are shorter, on average, than those made by machine Y. The inspector chooses a random sample of 80 rods made by machine X and a random sample of 60 rods made by machine Y. The lengths of these rods are x cm and y cm respectively. Her results are summarised as follows.

$$\Sigma x = 164.0 \quad \Sigma x^2 = 338.1 \quad \Sigma y = 124.8 \quad \Sigma y^2 = 261.1$$

(a) Test at the 10% significance level whether the data supports the inspector's suspicion. [8]

(b) Give a reason why it is not necessary to make any assumption about the distributions of the lengths of the rods. [1]