

A company produces packets of sweets. Two different machines,  $A$  and  $B$ , are used to fill the packets. The manager decides to assess the performance of the two machines. He selects a random sample of 50 packets filled by machine  $A$  and a random sample of 60 packets filled by machine  $B$ . The masses of sweets,  $x$  kg, in packets filled by machine  $A$  and the masses of sweets,  $y$  kg, in packets filled by machine  $B$  are summarised as follows.

$$\Sigma x = 22.4 \quad \Sigma x^2 = 10.1 \quad \Sigma y = 28.8 \quad \Sigma y^2 = 16.3$$

A test at the  $\alpha\%$  significance level provides evidence that the mean mass of sweets in packets filled by machine  $A$  is less than the mean mass of sweets in packets filled by machine  $B$ . Find the set of possible values of  $\alpha$ . [12]