

4. A cloth company has machines in two factories, factory A and factory B.

In factory A, the daily yield of a machine is X kg of cloth.

In factory B, the daily yield of a machine is Y kg of cloth.

The director of the company takes a sample of the daily yields of the 20 machines in factory A.

The sample is summarised by

$$\sum x = 32 \qquad \sum x^2 = 110$$

- (a) Find the variance of the daily yields of the machines in factory A.

(2)

The director also takes a sample of the daily yields of the 14 machines in factory B.

The sample is summarised by

$$\bar{y} = 3.5 \qquad \sigma_y^2 = 2.5$$

- (b) Find the combined variance of the daily yields of the machines in factory A and factory B.

(5)