v

$$\text{Variance } {}^{2} = \frac{\square^{2}}{\quad} - {}^{-2}$$

$$= \frac{83800}{88} - \left(\frac{2510}{88}\right)^{2}$$

$$= 952\,273 - 813\,546 = 138\,727$$

$$= 138\,73 \text{ (2 dp)}$$

$$\text{Standard deviation} = \sqrt{138\,727}$$

$$= 11\,78$$

Exercises

Find an estimate of the standard deviation of the following:

1. a)

Lifetime (hours) of components	Frequency
$300 \leq \_ < 400$	13
$400 \leq \_ < 500$	25
$500 \leq \_ < 600$	66
$600 \leq \_ < 700$	58
$700 \leq \_ < 800$	38

b)

Income (1000's £)	Frequency
$10 \leq \_ < 15$	9
$15 \leq \_ < 20$	16
$20 \leq \_ < 25$	22
$25 \leq \_ < 30$	8
$30 \leq \_ < 35$	5

c)

House prices (1000's £)	Frequency
$40 \leq \_ < 60$	5
$60 \leq \_ < 80$	9
$80 \leq \_ < 100$	15
$100 \leq \_ < 120$	8
$120 \leq \_ < 140$	3

2. The grouped frequency table shows the length of service in years of employees who have been working for a company for at least ten years.

Calculate an estimate of the standard deviation of the length of service of these employees.

Length of Service ( )	$10 \leq \_ < 15$	$15 \leq \_ < 20$	$20 \leq \_ < 25$	$25 \leq \_ < 30$	$30 \leq \_ < 40$	$40 \leq \_ < 50$
Frequency ( )	30	42	23	13	8	4

Answers

1. a) 112.37 hours b) £5 617 c) £21 994

2. 7.70 years (2 dp)

Note that the units of standard deviation are the same as the original data units. This is not true of the variance where the units would be the square of the original data units.