

Exercise 3

1. State the arithmetic mean and the standard deviation for each of the following sets of data.

(a) 5, 8, 8, 12, 15, 23, 35

(b) 4, 4, 9, 13, 13, 27

(c) 1, 1, 1, 1, 1, 1, 1, 1, 1, 91

2. Given the following data, determine the arithmetic mean and the variance.

11 6 -1 0 10 -2 1 15 -4

3. A chief accountant made note of the times it took to audit all 20 account balances in the company. The audit times in minutes are as follows:

22	48	33	37
47	34	28	15
49	10	43	34
39	25	29	19
24	34	15	43

Calculate the range and the standard deviation for the audit times.

4. State whether the following statements are true or false.

- (a) If the means are the same for two distributions, the standard deviations provide an adequate measure for comparing the variability of the two distributions.
- (b) If each measurement in a distribution is multiplied by 2, the arithmetic mean of the distribution is doubled.
- (c) If each measurement in a distribution is multiplied by 2, the standard deviation remains the same.
- (d) If each measurement in a distribution is increased by 4, the arithmetic mean is increased by 4.
- (e) If each measurement in a distribution is increased by 4, the variance is increased by 16.

5. Profits made by 10 small business firms in a city were as follows:

Profits (\$)

56 000 58 000 62 000 62 000 74 000
74 000 76 000 84 000 88 000 100 000

Compute:

- (a) the arithmetic mean.
- (b) the range.
- (c) the standard deviation.

6. Which of the 2 teams, A or B, whose achievement scores for 10 months are given below, is more consistent, and why?

A: 5 9 4 15 17 3 0 42 9 36
B: 19 35 0 41 22 2 19 29 30 3

7. For a heavy machine assembly factory, the following are the daily assembly figures for 7 days. Which factory is more consistent? Show your working.

Assembly of machines (in thousands)	
Factory A	Factory B
160	218
175	223
172	213
172	204
157	198
184	205
261	263

8. The savings rates for 12 Businesswomen in a particular city are:

5.3 % 4.7 % 6.1 % 7.2 % 3.9 % 7.1 %
1.8 % 9.3 % 8.0 % 2.7 % 11.2 % 5.8 %

- (a) Calculate the variance.
- (b) Calculate the standard deviation.

9. An analysis of the weekly wages paid to workers in 2 firms A and B, belonging to the same industry, gives the following results:

	Firm A	Firm B
Number of workers	586.0	648.0
Average daily wages (dollars)	152.50	147.50
Variance of the distribution of wages	100.00	121.00

- (a) Which firm pays out the larger amount as a daily wage?
- (b) In which firm is there greater variability in individual wages?
10. (a) Calculate the variance of the set 3, 5, 8, 7, 5, 7.
- (b) Having done this first step, without doing any additional calculations write down
- (i) The variance of the set 6, 10, 16, 14, 10, 14.
- (ii) The variance of the set 25, 27, 30, 29, 27, 29.
11. Use your calculator to find the mean, median, mode, range, standard deviation and the variance for the following set of data:

223	190	646	478	359	649	623	419
482	370	289	710	415	285	333	58
547	621	174	298	274	307	800	741
204	501	362	258	524	417	721	645

