EXERCISE 29C

1 102 days **2** **a** $\frac{1}{8}$ **b** 25 **3** **a** $\doteqdot 0.385$ **b** 19 times

4 **a** **i** $\frac{1}{6}$ **ii** $\frac{1}{3}$ **iii** $\frac{1}{2}$ **b** **i** \$1.33 **ii** \$0.50 **iii** \$3.50
c lose 50 cents **d** lose \$50

5 27 saves **6** 15 days **7** 30 doubles **8** $\doteqdot$ 86 times

9 **a** **i** 0.55 **ii** 0.29 **iii** 0.16
b **i** 4125 **ii** 2175 **iii** 1200

10 **a** \$3.50 **b** No **11** **a** \$2.75 **b** \$3.75 **12** \$1.50

13 **a** \$7.67 **b** lose \$233.33 **14** \$2

EXERCISE 29D

1 **a** $\mu = 0.74$ **b** $\sigma = 0.9962$

2 $P(1) = \frac{1}{10}$, $P(2) = \frac{3}{10}$, $P(3) = \frac{6}{10}$, $\mu = 2.5$, $\sigma = 0.6708$

3 **a** $P(0) = 0.216$, $P(1) = 0.432$, $P(2) = 0.288$, $P(3) = 0.064$

x_i	0	1	2	3
$P(x_i)$	0.216	0.432	0.288	0.064

b $\mu = 1.2$, $\sigma = 0.8485$

5 **a**

x_i	1	2	3	4	5
$P(x_i)$	0.1	0.2	0.4	0.2	0.1

b $\mu = 3.0$, $\sigma = 1.0954$ **c** **i** $P(\mu - \sigma < x < \mu + \sigma) \doteqdot 0.8$
ii $P(\mu - 2\sigma < x < \mu + 2\sigma) \doteqdot 1$

6 \$390 **7** **a**

x_i	1	2	3	4	5	6
$P(m_i)$	$\frac{1}{36}$	$\frac{3}{36}$	$\frac{5}{36}$	$\frac{7}{36}$	$\frac{9}{36}$	$\frac{11}{36}$

b $\mu = 4.472$, $\sigma = 1.404$

8

x_i	1	2	3
$P(x_i)$	0.5	0.25	0.25

$\mu = 1.75$

EXERCISE 29E

1 **a** The binomial distribution applies, as tossing a coin has one of two possible outcomes (H or T) and each toss is independent of every other toss.

b The binomial distribution applies, as this is equivalent to tossing one coin 100 times.

c The binomial distribution applies as we can draw out a red or a blue marble with the same chances each time.

d The binomial distribution does not apply as the result of each draw is dependent upon the results of previous draws.

e The binomial distribution does not apply, assuming that ten bolts are drawn without replacement. We do not have a repetition of independent trials.

2 **a** 0.0156 **b** 0.234 **c** 0.109 **d** 0.344

3 **a** 0.268 **b** 0.800 **c** 0.200

4 **a** 0.231 **b** 0.723

5 **a** 0.476 **b** 0.840 **c** 0.160 **d** 0.996

6 **a** 9.54×10^{-7} **b** 0.176 **c** 0.412 **d** 0.0207

7 **a** 0.0280 **b** 0.002 46 **c** 0.131 **d** 0.710

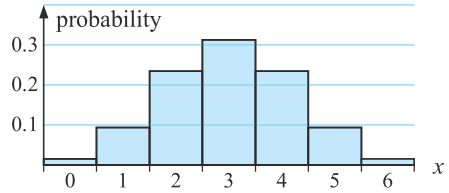
8 **a** 0.998 **b** 0.8065 **9** **a** 0.290 **b** 0.885

EXERCISE 29F

1 **a** **i** $\mu = 3$, $\sigma = 1.2247$

x_i	0 or 6	1 or 5	2 or 4	3
$P(x_i)$	0.0156	0.0938	0.2344	0.3125

ii

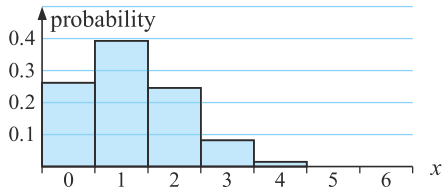


iii The distribution is bell-shaped.

b **i** $\mu = 1.2$, $\sigma = 0.980$

x_i	0	1	2	3	4	5	6
$P(x_i)$	0.262	0.393	0.246	0.082	0.015	0.002	0.000

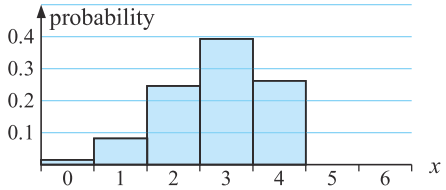
ii



iii The distribution is positively skewed.

c **i** $\mu = 4.8$, $\sigma = 0.980$

ii



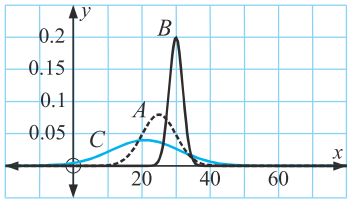
iii This distribution is negatively skewed and is the exact reflection of **b**.

2 $\mu = 5$, $\sigma = 1.58$ **4** $\mu = 1.2$, $\sigma = 1.07$

5 $\mu = 8.99$, $\sigma = 2.94$ **6** $\mu = 0.65$, $\sigma = 0.752$

EXERCISE 29G.1

1



2 **a** The mean volume (or life time, weight, diameter etc) is likely to occur most often with variations around the mean occurring symmetrically as a result of random variations in the production process.

3 **a** 84.1% **b** 2.3% **c** 2.14%, 95.5% **d** 97.7%, 2.3%

4 **a** 0.683 **b** 0.341 **c** 0.477 **d** 0.499

5 **a** 34.1% **b** 47.7% **c** 0.136 **d** 0.159
e 0.0228 **f** 0.841

6 **a** $\doteqdot$ 382 **b** $\doteqdot$ 399 **c** $\doteqdot$ 781

7 **a** $\doteqdot$ 41 days **b** $\doteqdot$ 254 days **c** $\doteqdot$ 213 days

EXERCISE 29G.2

1 **a** 0.341 **b** 0.383 **c** 0.106

2 **a** 0.341 **b** 0.264 **c** 0.212 **d** 0.945 **e** 0.579
f 0.383

EXERCISE 29H.1

1 **a** 0.885 **b** 0.195 **c** 0.3015 **d** 0.947 **e** 0.431

2 **a** 0.201 **b** 0.525 **c** 0.809 **d** 0.249 **e** 0.249

3 **a** 0.383 **b** 0.950