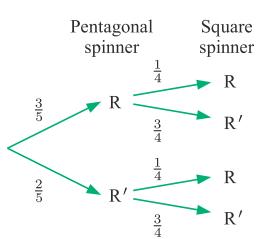


- 8 a Pentagonal spinner b $\frac{11}{20}$



c i $P(X = 1) = \binom{10}{1} \left(\frac{11}{20}\right)^1 \left(\frac{9}{20}\right)^9$,
 $P(X = 9) = \binom{10}{9} \left(\frac{11}{20}\right)^9 \left(\frac{9}{20}\right)^1$
ii It is more likely that exactly one red will occur 9 times.

REVIEW SET 23B

- 1 a $k = \frac{8}{5}$ b 0.984 c 2.55 d 0.75
2 a 0.302 b 0.298 c 0.561 3 6.43 surgeries
4 a 0.849 b 2.56×10^{-6} c 0.991 d 0.000 246
5 a 42 donations b 0.334
6 a i 0.100 ii 0.114 b 3.41 games
7 a $n = 120$, $p = \frac{1}{4}$
b i ≈ 0.0501 ii ≈ 0.878 iii ≈ 0.172

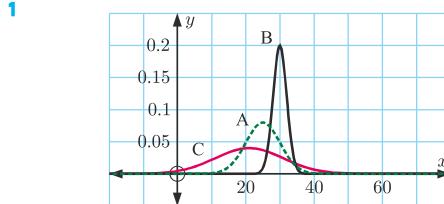
REVIEW SET 23C

- 1 a $k = \frac{12}{11}$ b $k = \frac{1}{2}$
2 a

x	0	1	2	3	4
$P(X = x)$	0.0625	0.25	0.375	0.25	0.0625

b $\mu = 2$ c 1
3 a $\left(\frac{4}{5} + \frac{1}{5}\right)^5 = \left(\frac{4}{5}\right)^5 + 5\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right) + 10\left(\frac{4}{5}\right)^3\left(\frac{1}{5}\right)^2 + 10\left(\frac{4}{5}\right)^2\left(\frac{1}{5}\right)^3 + 5\left(\frac{4}{5}\right)\left(\frac{1}{5}\right)^4 + \left(\frac{1}{5}\right)^5$
b i ≈ 0.0205 ii ≈ 0.205
4 $\mu = 480$, $\sigma \approx 17.0$ 5 a 0.259 b 0.337 c 0.922
6 a i $\frac{2}{5}$ ii $\frac{1}{10}$ iii $\frac{1}{10}$ b \$2.70
7 a ≈ 0.0660 b ≈ 0.563

EXERCISE 24A



- 2 a, b The mean volume (or diameter) 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 0.683 b 0.477
4 a 15.9% b 84.1% c 97.6% d 0.13%
5 3 times 6 a 5 b 32 c 137 competitors
7 a 459 babies b 446 babies 8 a 0.954 b 2.9
9 a $\mu = 176$ g, $\sigma = 24$ g b 81.9%
10 a i 34.1% ii 47.7%

- b i 0.136 ii 0.159 iii 0.0228 iv 0.841
c $k = 178$

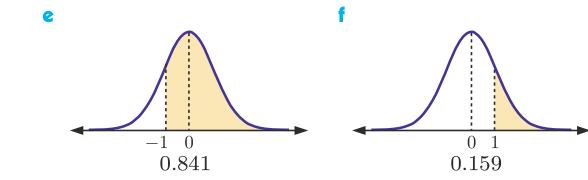
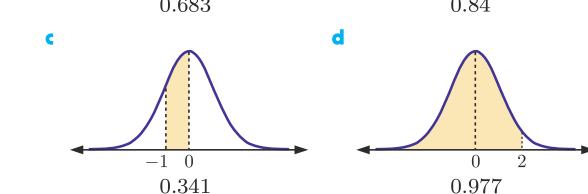
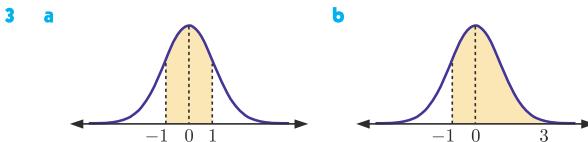
- 11 a $\mu = 155$ cm, $\sigma = 12$ cm b 0.84
12 a 84.1% b 2.28% c i 2.15% ii 95.4%
d i 97.7% ii 2.28%
13 a ≈ 41 days b ≈ 254 days c ≈ 213 days

EXERCISE 24B

- 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
3 0.378 4 a 90.4% b 4.78%
5 a 0.003 33 b 61.5% c 23 eels
6 a 0.303 b 0.968 c 0.309
7 a 10.3% b 0.544 8 a 84.1% b 0.880

EXERCISE 24C

- 1 a z-scores:
English ≈ 1.82 Geography ≈ 1.61
Mandarin ≈ 2.33 Biology $= 0.9$
Maths ≈ 2.27
b Mandarin, Maths, English, Geography, Biology
2 a Physics -0.463 , Chemistry 0.431, Maths 0.198,
German 0.521, Biology -0.769
b German, Chemistry, Maths, Physics, Biology



- 4 a $a = -1$, $b = 2$ b $a = -0.5$, $b = 0$
c $a = 0$, $b = 3$

