

# Practice book answers

## Practice 1a

- 1 a 20      b 900      c 2000, 500, 30
- 2 a Seven hundred and fifteen  
b Eight thousand six hundred and ten  
c Twenty six thousand and four hundred
- 3 a 49, 307, 311, 317, 416  
b 9900, twelve thousand, 15 555, 25 000  
c 79, 707, 719, 724, 763
- 4 a 415      b 8520      c 222
- 5 a 567      b 6414      c 8399
- 6 a 762      b 267      c 26
- 7 a 1614      b 3850      c 24 644  
d 20 600
- 8 a 3794      b 4099      c 1121  
d 304
- 9 210 610
- 10 a 8430      b 3048

## Practice 1b

- 1 a  $-8^{\circ}\text{C}$ ,  $-4^{\circ}\text{C}$ ,  $3^{\circ}\text{C}$   
b  $-5^{\circ}\text{C}$ ,  $-3^{\circ}\text{C}$ ,  $-1^{\circ}\text{C}$ ,  $0^{\circ}\text{C}$   
c  $-11^{\circ}\text{C}$ ,  $-8^{\circ}\text{C}$ ,  $-2^{\circ}\text{C}$ ,  $22^{\circ}\text{C}$   
d  $-5^{\circ}\text{C}$ ,  $-3^{\circ}\text{C}$ ,  $-2.5^{\circ}\text{C}$ ,  $-1^{\circ}\text{C}$
- 2 a 9, 7, 5, 3, 1, -1      b 14, 10, 6, 2, -2, -6  
c 10, 5, 0, -5, -10      d -6, -4, -2, 0, 2  
e -8, -7, -6, -5, -4      f 11, 7, 3, -1, -5
- 3 a 3      b -3      c -6      d -8  
e 2      f -10      g -16      h -7  
i 5      j -7      k -18      l 0  
m 7      n 2      o -12      p -5  
q -7      r 0      s -9      t 15  
u -22      v -2      w 2      x -11

4 a

+	5	2	-3	-7
-4	1	-2	-7	-11
0	5	2	-3	-7
-3	2	-1	-6	-10
6	11	8	3	-1

b

+	-3	-1	5	-2
6	3	5	11	4
-5	-8	-6	0	-7
-1	-4	-2	4	-3
3	0	2	8	1

- 5 a -10      b 6      c -32      d -6      e 5  
f 36      g 1      h -16      i 2      j -4  
k -6      l -7      m 56      n 294      o 30  
p 72      q -600      r -32      s 0.25      t -10 000

6 a

×	-3	-1	5	-2	3
2	-6	-2	10	-4	6
-4	12	4	-20	8	-12
1	-3	-1	5	-2	3
-5	15	5	-25	10	-15
-1	3	1	-5	2	-3

b

×	7	-1	0	-3	5
-5	-35	5	0	15	-25
1	7	-1	0	-3	5
3	21	-3	0	-9	15
-6	-42	6	0	18	-30
10	70	-10	0	-30	50

## Practice 1c

- 1 a 19      b 242      c 12      d 3014      e 8  
f 26      g 734      h 1
- 2 a 47      b 260      c 40      d 380      e 7800  
f 86 000
- 3 a 800      b 80      c 50 000      d 2      e 0.08  
f 0.03
- 4 a 11.3      b 8.8      c 211.7      d 0.9      e 0.3  
f 16.0
- 5 a 1.67      b 8.76      c 0.45      d 0.07      e 85.22  
f 16.96

- 6 a 36.6    b 5.86    c 38.8    d 71.0  
 e 9.6    f 1.0    g 12    h 2.6  
 i 9680    j 67    k 238

6 a

	Girls	Boys	Total
Can	70	80	150
Cannot	160	190	350
Total	230	270	500

b 29.6%    c 45.7%

### Practice 1d

- 1 a 1851    b 6.889    c 1.214    d 0.4189  
 e 7.889    f 19.35    g 0.049 47    h 221.5  
 i 24.37    j 6.619    k 3.306    l 2.303
- 2 a 41.73    b 8.163    c 0.1090    d 0.5001  
 e 20.63    f 10.09    g 6.191    h 10.27  
 i 8.627    j 22.02    k 1.093    l 44.72  
 m 45.66    n 52.86    o 22.51
- 3 a 5.479    b 5.272    c 0.2116    d 4.605  
 e 1.153    f 1.858    g 0.026 88    h 2.717  
 i 4.840    j 10.87    k 7.425    l 13.49  
 m 0.7392

### Practice 2a

1 a

	Smoker	Non-smoker	Total
Male	190	210	400
Female	285	315	600
Total	475	525	1000

b 285

2 a

	Sky dive	Head shaved	Bathed in baked beans	Total
Loved doing it	171	64	33	268
Said afterwards, 'I must have been mad'	54	106	72	232
Total	225	170	105	500

- b i  $\frac{232}{500}$     ii  $\frac{171}{500}$

3 a

	Argentina	England	Scotland	
Boy	4	0	10	14
Girl	1	2	7	10
	5	2	17	24

- b 2    c 10%    d Scotland

4

	Shaded	Unshaded
Squares	2	3
Circles	3	4

5 a

	Male	Female
Summer	4	2
Christmas	0	6
Autumn	2	2

b 10    c 60%

### Practice 2b

- 1 a 5    b 4    c 3  
 2 a 4    b 4    c 1  
 3 a 6    b 6    c 5  
 4 a 9.6    b 11    c 12  
 5 a 5.1    b 6    c 7  
 6 a  $6\frac{1}{4}$     b 6

7 a

No.	Tally	Frequency
1		5
2		6
3		10
4		10
5		6
6		5
7		4
8		3
9		1

- b 2 modes: 3 and 4

- 8 a 2    b 11    c 15  
 9 a 3.5 kg    b 5.08 kg    c 4.29 kg

### Practice 2c

- 1 a 18    b 37    c 57    d  $\frac{7}{18}$   
 2 a 204 cm    b 185 cm    c 35 cm  
 3 a Stem | Leaf    b 47    c 8

2	5 7
3	0 4 5 6
4	2 4 7 8 8
5	1 1 6 8 9
6	3 4 8
7	1 2

Key 2|5 means 25 marks

### Practice 2d

- 1 For example a 1 3 9 12 15    b 2, 5, 7, 8, 11, 12  
 c 3 5 4 6 4 7 4 1 9 4  
 2 a 20    b

Goals	No.	Total
1	7	7
2	6	12
3	4	12
4	3	12

2.15 goals

## Practice 2e

- 1 a 20 b 9  
 2 a 50 b 10.88 hours  
 c Individual times for each battery are not given.

## Practice 2f

- 2 a No chance for them to say so if they thought their meal was poor.  
 b Allow options for poor opinions.  
 3 a Not all possible numbers are included.  
 b The interval limits are not clear.

## Practice 3a

- 1 a 0.6 b 10.3 c 3.8 d 6 e 20  
 f 7.1 g 9.2 h 2.04 i 0.3  
 2 a 2.3 b 2.8 c 440 d 520 e 0.62  
 f 0.66

## Practice 3b

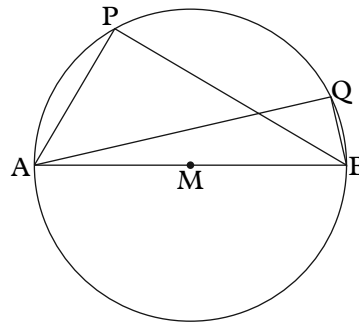
- 1 300 cm 2 2800 m 3 320 cm  
 4 3000 g 5 0.400 km 6 2.50 m  
 7 3000 kg 8 200 mm 9 5 litres  
 10 3.4 kg 11 1200 kg 12 0.260 kg  
 13 a gram b metre c kilometre  
 d litre e centimetre  
 14 24 inches 15 2 yards 16 2 gallons  
 17 16 ounces 18 3 feet 19 32 ounces  
 20 36 inches 21 14 pounds 22 80 pints  
 23 a foot b pint c ton d inch  
 24 a True b True c True d False  
 25 a 4 inches b  $4\frac{1}{2}$  gallons c 4 pounds  
 d 100 litres e 80 km f 30 cm  
 26 a kilometre, mile b kilogram, pound  
 c litre, gallon d metre, yard  
 e centimetre, inch  
 27 a 0.57 b 17.5 pints c 1.7 litres

## Practice 3c

- 1 b 42.5 m

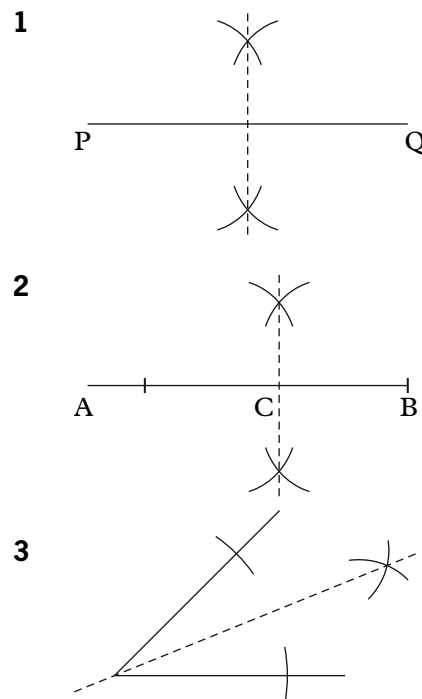
## Practice 3d

- 1 b Around  $77^\circ$  c Around 19.4 cm  
 2  $\angle M = 64^\circ$   
 3  $a = 6$  cm  
 4  $b = 6$  cm  
 5  $c = 9.7$  cm  
 6 b 42.5 m  
 7  $a = 82^\circ$   
 8  $b = 78.5^\circ$   
 9  $c = 41.5^\circ$   
 10

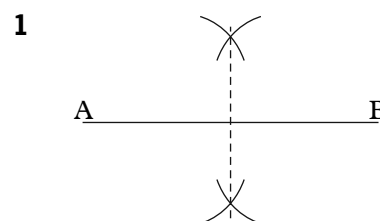


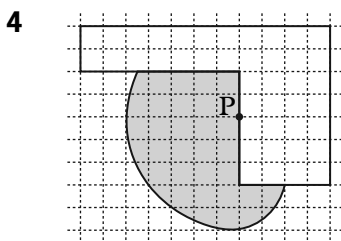
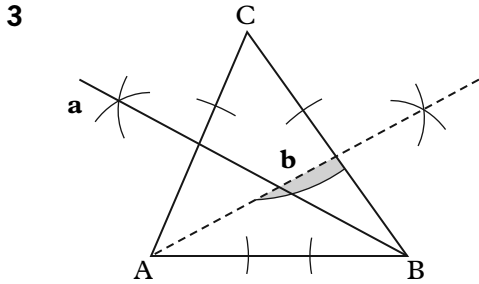
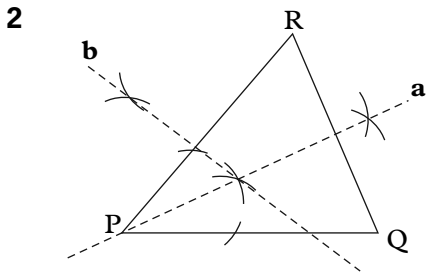
$$\angle APB = \angle AQB = 90^\circ$$

## Practice 3e



## Practice 3f





### Practice 4a

- 1 a 1, 2, 3, 6      b 1, 3, 5, 15  
 c 1, 3, 9      d 1, 2, 3, 6, 9, 18  
 e 1, 3, 7, 21      f 1, 2, 3, 4, 6, 9, 12, 18, 36  
 g 1, 2, 4, 7, 14, 28      h 1, 2, 4, 5, 8, 10, 20, 40
- 2 a 8 1, 2, 4, 8      1, 2, 4  
 12 1, 2, 3, 4, 6, 12
- b 25 1, 5, 25      1, 5  
 40 1, 2, 4, 5, 8, 10, 20, 40
- 3 a 2, 4, 6, 8      b 5, 10, 15, 20  
 c 7, 14, 21, 28      d 11, 22, 33, 44
- 4 a 20      b 28      c 22
- 5 a 40      b 3, 6      c 40

### Practice 4b

- 1 3, 5, 7, 19
- 2 True, there is only one even prime number, namely 2.
- 3 1, 4, 9, 16, 25, 36, 49
- 4 a 25      b 100      c 82      d 25
- 5 a 4      b 6      c 1      d 12
- 6 a 121      b No
- 7 a True      b False      c True      d False
- 8 a 15      b 27      c 49

- 9 a 17      b 63      c 4      d 27
- 10 a 8      b 8, 64      c 61      d 18  
 e 61 and 64
- 11 a 3, 6, 9, 12, 15      b 4, 8, 12, 16, 20      c 12
- 12 a 4, 8, 12, 16, 20      b 10, 20, 30, 40 50      c 20
- 13 a 1, 3, 5, 15      b 1, 5, 25      c 5

### Practice 4c

- 1 6:1      2 4:5
- 3 a 3:2      b 2:5      c 3:4      d 5:8
- 4  $\frac{7}{25}$
- 5 a 25:4      b 1:8      c 3:5
- 6 £30, £45      7 £160, £640      8 £125      9 180g
- 10 25%

### Practice 5a

- 1 a 7, 11, 15, 19, 23      b -2, 0, 2, 4  
 c 3, 4, 6, 9, 13, 18      d 0.7, 0.8, 0.9, 1.0

### Practice 5b

- 1 a 2, 5, 8, 11, 14      b 2, 7, 12, 17, 22  
 c 24, 22, 20, 18, 16      d 25, 34, 43, 52, 61  
 e -3, -1, 1, 3, 5      f 1, 2, 4, 8, 16  
 g 80, 40, 20, 10, 5      h 1, 10, 100, 1000, 10000
- 2 a 2, 8, 14, 20      b 2, 7, 12, 17      c 0, 3, 6, 9  
 d 1, 3, 9, 27, 81      e 7, 4, 1, -2      f 1, 2, 4, 8, 16
- 3 a 7, 18, 29, 40      b 84, 64, 44, 24      c 3, 6, 12, 24  
 d 200, 20, 2, 0.2
- 4 8 if the rule is "Double", or 7 if the rule is "The difference starts with 1 and constantly increases by 1."

### Practice 5c

- 1 503
- 2 256, 1024
- 3 a 4444 488 889      b 6666 667
- 4 a . . . . .      b 

$n$	1	2	3	4
no.	6	10	14	18

  
 . . . . .      c 50  
 . . . . .



3 825

4 a 120 b 13 c 53

5 108

6 a 69 b -19 c 98 d 63

### Practice 7d

1 a 3 b -11 c B and D

2  $4\frac{1}{2}$  3 7 cm 4 5

5 £7.50

6 a  $2\frac{1}{7}$  b  $1\frac{2}{3}$

7 21 8  $x = 5$  Perimeter = 46

### Practice 7e

1 a 11 b 32 c 18 d 21 e 12

f 1 g 7 h 18 i 5

2 4, 11

3 a 2 b 5 c 7 d 5 e 0.25

f 0.4 g 3 h 18 i  $\frac{1}{6}$  j 6

k 22 l -2

4 10, 5

5 7

### Practice 7f

1 a -4 b 4 c 3 d  $\frac{1}{9}$  e 2

f  $\frac{3}{10}$  g 4 h 4 i 4

2 a  $3x-3$  b  $4x+2$  c  $5-10x$  d  $9x+6$

3 a 7 b  $5\frac{1}{2}$  c 3 d -2 e  $3\frac{1}{3}$

f 12 g 2 h 3 i 1

4 3, 5

### Practice 7g

1 a 2 b 4 c  $4\frac{1}{2}$  d  $\frac{1}{2}$  e 14

f 99 g -200 h 14 i 10 j 12

k 28 l 16

2 1

3 a 5 b  $\frac{1}{6}$  c 16 d 3 e -14

### Practice 8a

1 a  $055^\circ$ , b  $120^\circ$ , c  $200^\circ$ , d  $320^\circ$

2 a  $076^\circ$ , b  $016^\circ$ , c  $098^\circ$ , d  $130^\circ$  e  $328^\circ$

3 b 11.5 km

4 1320 km

### Practice 8b

1 a 5 cm b 7.81 cm c 10.6 cm d 5.66 cm

2 7.48 cm

3 a 4.58 cm b 5.20 cm c 6.24 cm d 4.47 cm

4 9.43 cm

5 19.2 km

### Practice 8c

1 6.63 cm 2 7.60 cm 3 8.29 cm 4 10.4 cm

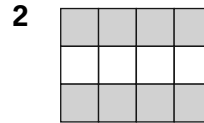
5 10.9 cm

6 a  b 6.93 cm c  $27.7 \text{ cm}^2$

( $\frac{1}{2}$  scale)

### Practice 9a

1  $\frac{2}{5}$



3  $\frac{4}{5}, \frac{7}{10}, \frac{1}{4}$

4 a  $\frac{2}{3}$  b  $\frac{3}{5}$  c  $\frac{2}{3}$  d  $\frac{1}{4}$  e  $\frac{3}{5}$

5 a  $\frac{2}{6}$  b  $\frac{4}{10}$  c  $\frac{9}{12}$  d  $\frac{7}{7}$  e  $\frac{3}{18}$

f  $\frac{21}{24}$

6  $\frac{2}{5}, \frac{9}{19}, \frac{1}{2}$

7 a  $\frac{1}{3}$  b  $\frac{4}{5}$  c  $\frac{3}{12}$

### Practice 9b

1 a  $\frac{3}{10}, 0.3$  b  $\frac{2}{5}, 0.4$  c  $\frac{1}{10}, 0.1$

2 a 0.7 b 0.27 c 0.06 d 0.84 e 0.02

3 a 0.5, 0.6, 0.7, 0.8, 0.9 b 0.1, 0.3, 0.5, 0.7, 0.9, 1.1

c 1.1, 1.4, 1.7, 2.0, 2.3, 2.6

4 a 0.7, 0.71, 0.814 b 92.56, 94.9, 95

c 10.8, 10.85, 11, 11.02 d 0.402, 0.41, 3.95, 4.1

e 0.35, 0.36, 0.405, 0.5

5 a 17.34 b 8.12 c 124.0 d 11.771

6 a True b True c False d True

e False f True g True h True

7 A  $\frac{3}{10}, 30\%$  B  $\frac{1}{5}, 20\%$  C  $\frac{1}{4}, 25\%$

8 a 60% b 5% c 30% d 44% e 75%

9 70% 10 92.5%

## Practice 9c

- 1 a 4.8 b 10.1 c 3.94 d 4.22 e 39.5  
f 3.2 g 4.8 h 4.5 i 2.65 j 1.5
- 2 £8.95
- 3 £33.94
- 4 a £22.02 b £2.98
- 5 a 6.4 b 3.76 c 14.3 d 2.6 e 7.3  
f 2.3 g 3.75 h 7.23 i 9.34
- 6 a £3.55 b £4.93 c £18 d £5.20  
e £4.25 f £5.49
- 7 a 32.4 b 15.6 c 340 d 81.4 e 7.56  
f 90.74 g 8.6 h 0.4765 i 1700 j 130  
k 2.17 l 0.7 m 0.589 n 700 o 0.004  
p 2.008
- 8 £455
- 9 £365
- 10 a 22.2 b 41 c 39.02 d 146 e 157.6  
f 259.4 g 71 h 1976.8
- 11 £6.25
- 12 £14.50
- 13 a £6.35 b £7.41 c £3.34 d £8.16
- 14 a 0.14 b 0.3 c 4 d 1.68  
e 3.04 f 19.88 g 0.064 h 1.692
- 15 a 2.3 b 1.7 c 12.3 d 6.54  
e 0.124 f 0.168 g 1.11 h 6.5
- 16 0.27 kg
- 17 £6.90
- 18 £13.84
- 19
- |                    |                   |                    |                    |                    |                    |                    |
|--------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <sup>1</sup><br>2  | 5                 |                    | <sup>2</sup><br>5  | 7                  |                    | <sup>3</sup><br>2  |
| <sup>4</sup><br>4  | 4                 | <sup>5</sup><br>3  |                    | <sup>6</sup><br>2  | 4                  | 6                  |
| 0                  |                   | <sup>7</sup><br>1  | 9                  |                    | <sup>8</sup><br>8  | 8                  |
|                    | <sup>9</sup><br>1 | 6                  |                    | <sup>10</sup><br>8 |                    |                    |
| <sup>11</sup><br>2 | 5                 |                    | <sup>12</sup><br>5 | 7                  |                    | <sup>13</sup><br>9 |
| <sup>14</sup><br>6 | 4                 |                    | <sup>15</sup><br>1 | 3                  | <sup>16</sup><br>2 | 1                  |
| 2                  |                   | <sup>17</sup><br>9 | 9                  |                    | 8                  |                    |
- 20 a 7.4 b 6.3 c 3.14 d 3.56  
e 3.42 f 5.61 g 8.3 h 7.2  
i 14 j 117 k 2.1 l 0.51
- 21 12
- 22 0.26 m
- 23 17

- 24 14
- 25 0.382 kg
- 26 a 42.1 b 630 c 9.32 d 1.2  
e 1.2 f 7.36 g 2.13 h 0.086  
i 0.01 j 41.8 k 130 l 6.2
- 27 a £5.40 b £5.04  
c One thousand two hundred and seven point zero seven
- 28 6, 50 cm
- 29 0.45 cm
- 30 £236
- 31 a £252 b £ 106.50
- 32 0.0174 cm
- 33 23
- 34 £1.55

## Practice 9d

- 1 30%
- 2 a £11 b £20 c £42
- 3 156

## Practice 9e

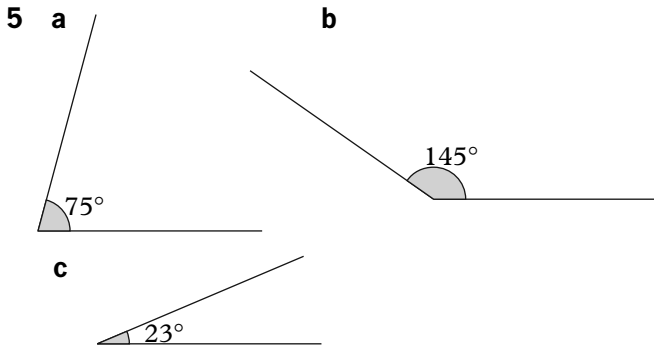
- 1 a  $\frac{5}{8}$  b  $\frac{3}{5}$  c  $\frac{7}{11}$  d  $\frac{4}{9}$
- 2 a  $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$  b  $\frac{5}{20} + \frac{4}{20} = \frac{9}{20}$  c  $\frac{5}{12}$   
d  $\frac{5}{8}$  e  $\frac{1}{12}$  f  $\frac{1}{40}$
- 3 a  $\frac{3}{20}$  b  $\frac{3}{10}$  c  $\frac{5}{18}$  d  $\frac{33}{40}$
- 4  $\frac{10}{9} = 1\frac{1}{9}$
- 5 a  $\frac{4}{5}$  b  $2\frac{1}{4}$  c  $\frac{5}{24}$  d  $3\frac{1}{5}$
- 6 £216
- 7 a  $\frac{17}{20}$  b  $\frac{2}{5}$
- 8 Swimmers 40%, others 37.5%
- 9  $\frac{3}{4} - \frac{1}{2}, \frac{1}{12} + \frac{1}{6}, \frac{11}{12} - \frac{2}{3}, 7 \div 28$

## Practice 9f

- 1 a  $\frac{5}{4}$  b  $\frac{8}{3}$  c  $\frac{7}{2}$  d  $\frac{27}{5}$  e  $\frac{22}{7}$
- 2 a  $2\frac{7}{12}$  b  $3\frac{11}{12}$  c  $8\frac{9}{10}$
- 3 a  $2\frac{2}{3}$  b  $2\frac{1}{4}$  c  $2\frac{1}{5}$  d  $2\frac{2}{5}$  e  $3\frac{1}{2}$
- 4 a 2 b  $2\frac{1}{2}$  c  $5\frac{5}{8}$  d  $3\frac{1}{12}$

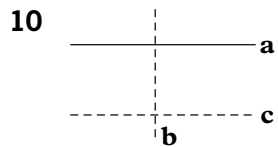
## Practice 10a

1  $30^\circ$  2  $55^\circ$  3  $120^\circ$  4  $137^\circ$



6  $66^\circ, 48^\circ, 66^\circ$  7  $107^\circ, 36^\circ, 37^\circ$

8  $40^\circ, 97^\circ, 43^\circ$  9  $64^\circ, 40^\circ, 76^\circ$



11  $y, x, z$

## Practice 10b

1 a  $x = 48^\circ$  b  $y = 134^\circ$  c  $x = 39^\circ$

d  $a = 65^\circ$  e  $x = 31^\circ$  f  $x = 44^\circ$

g  $a = 36^\circ$  h  $x = 51^\circ$

2 a  $x = 100^\circ$  b  $y = 80^\circ$  c  $e = 60^\circ$

d  $x = 30^\circ$  e  $x = 44^\circ, y = 136^\circ$

f  $x = 75^\circ, y = 105^\circ, z = 75^\circ$

g  $x = 60^\circ, x + 60^\circ = 120^\circ, y = 60^\circ$  h  $a = 72^\circ$

## Practice 10c

1 a  $a = 73^\circ$  b  $b = 59^\circ$  c  $c = 103^\circ$

d  $d = 135^\circ$  e  $e = 70^\circ$  f  $x = 80^\circ, y = 75^\circ$

2 a  $a = 95^\circ, b = 115^\circ$

b  $a = 60^\circ, b = 50^\circ, c = 70^\circ$

c  $x = 68^\circ, y = 112^\circ$

d  $x = 60^\circ, 2x = 120^\circ$

e  $y = 45^\circ, 3y = 135^\circ$

f  $y = 65^\circ, y + 50^\circ = 115^\circ, x = 75^\circ, x + 30^\circ = 105^\circ$

3 a  $a = 50^\circ$  b  $x = 40^\circ, b = 60^\circ, 2b = 120^\circ$

c  $c = 80^\circ, c + 20^\circ = 100^\circ$

d  $d = 105^\circ, d - 30^\circ = 75^\circ$

## Practice 10d

1 a  $a = 70^\circ$  b  $b = 73^\circ$  c  $c = 55^\circ$

d  $d = 37^\circ$  e  $e = 23^\circ$  f  $x = 74^\circ$

2 a  $x = 66^\circ$  b  $y = 40^\circ$  c  $z = 38^\circ$

d  $a = 48^\circ$  e  $z = 112^\circ$  f  $e = 68^\circ$

3 a  $a = 110^\circ, b = 55^\circ$

b  $z = 23^\circ$  c  $x = 34^\circ$  d  $x = 39^\circ$

## Practice 10e

1 a i Trapezium ii Parallelogram

iii Square iv Kite v Rhombus

b Square, Rhombus, Kite

2 a  $x = 108^\circ$  b  $y = 50^\circ$  c  $z = 76^\circ$

d  $p = 270^\circ$  e  $d = 110^\circ$  f  $e = 102^\circ$

3 a  $f = 98^\circ$  b  $x = 60^\circ, 2x = 120^\circ, y = 48^\circ$

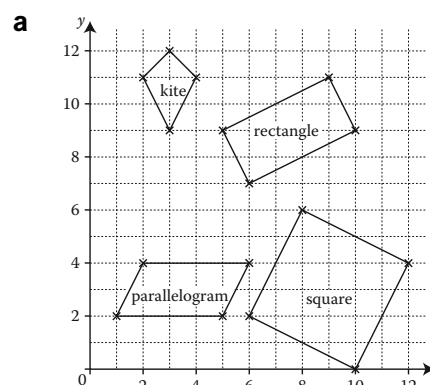
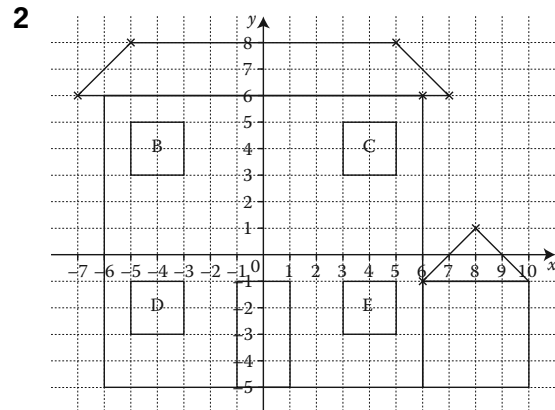
c  $a = 65^\circ, b = 40^\circ$  d  $c = 46^\circ, d = 54^\circ$

e  $a = 60^\circ, b = 40^\circ$

## Practice 11a




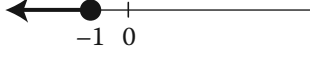


1 a A(4, 1) B(5, -3) C(-2, 2) D(-4, -3) E(2, -4) F(0, 4)

G(-3, 4) H(-2, -4) b  $x = -2$  c  $y = -3$

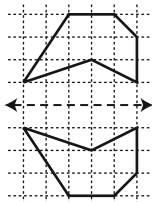
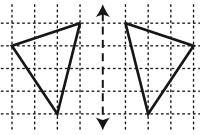
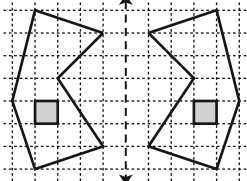
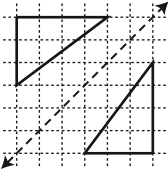
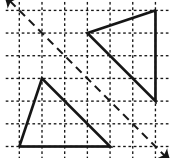
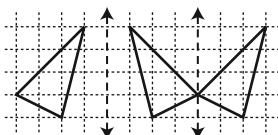
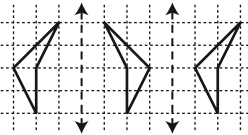
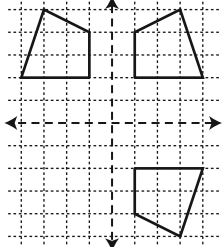
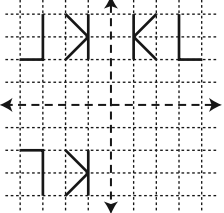


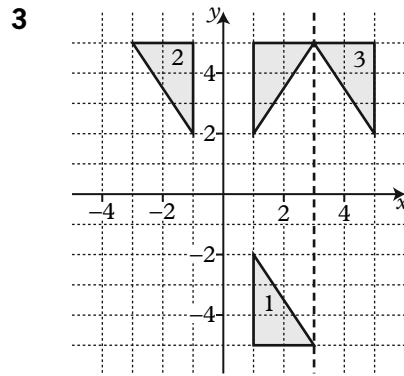
b kite - (4, 11)  
rectangle - (9, 11)  
parallelogram - (6, 4)  
square - (8, 6)

## Practice 11b

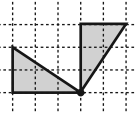
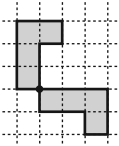
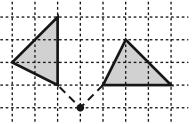
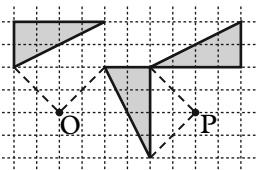
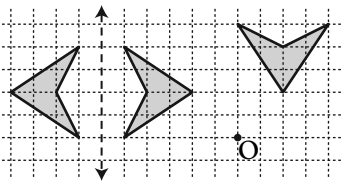
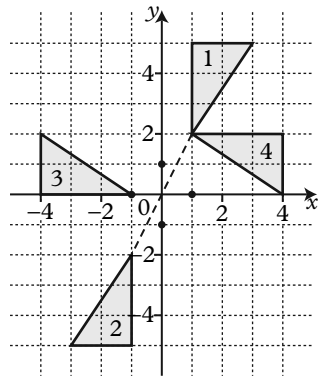
- 1 a  $n > -2$       b  $n < 1$       c  $n \leq 3$   
 d  $n \geq 0$       e  $-5 \leq n < 2$       f  $-4 < n < 0$   
 g  $-1 \leq n < 5$       h  $-4 < n \leq 2$
- 2 a   
 b   
 c   
 d   
 e   
 f 
- 3 a 2, 3, 4      b 1, 2, 3, 4, 5      c -2, -1, 0, 1  
 4 a  $x > 4$       b  $x < 3$       c  $x > 4$   
 d  $x > 3$       e  $x \geq 2$       f  $x < 4$   
 5  $11 < x < 24$   
 6  $-1 < x < 4$

## Practice 12a

- 1 a   
 b   
 c   
 d   
 e 
- 2 a   
 b   
 c   
 d 



## Practice 12b

- 1 a  b  c 
- 2 
- 3 
- 4 
- 5 a Rotation of  $90^\circ$ , clockwise, about  $(0, 0)$       b Rotation of  $90^\circ$ , anticlockwise, about  $(1, 1)$   
 c Rotation of  $180^\circ$  about  $(0, 0)$       d Rotation of  $90^\circ$ , clockwise, about  $(-2, 1)$

### Practice 12c

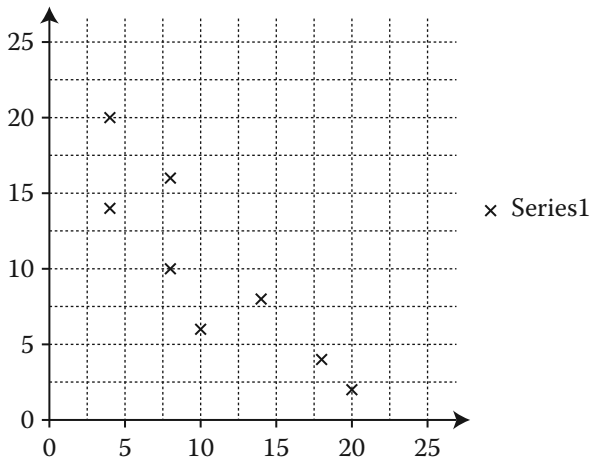
- 1 a  $\begin{pmatrix} 4 \\ 3 \end{pmatrix}$  b  $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$  c  $\begin{pmatrix} 1 \\ 3 \end{pmatrix}$  d  $\begin{pmatrix} 5 \\ 0 \end{pmatrix}$   
 e  $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$  f  $\begin{pmatrix} -7 \\ 3 \end{pmatrix}$  g  $\begin{pmatrix} 5 \\ 6 \end{pmatrix}$  h  $\begin{pmatrix} 0 \\ 5 \end{pmatrix}$

### Practice 12d

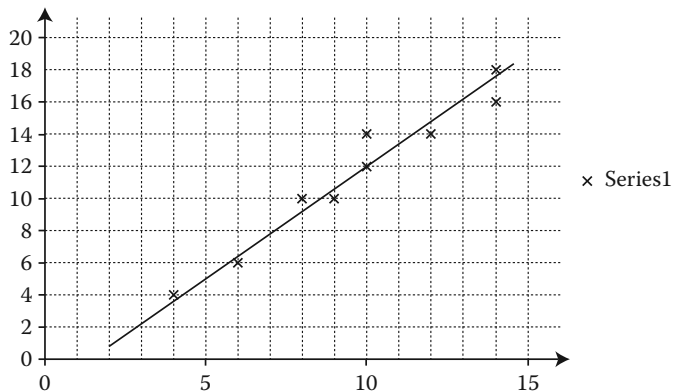
- 1 a Reflection in  $y = -1$  b Rotation of  $90^\circ$ , anticlockwise about  $(0, 0)$ .  
 c Translation  $\begin{pmatrix} -3 \\ 3 \end{pmatrix}$

### Practice 13a

- 1 b Positive  
 2 a Negative (strong)



- b Positive (quite strong)

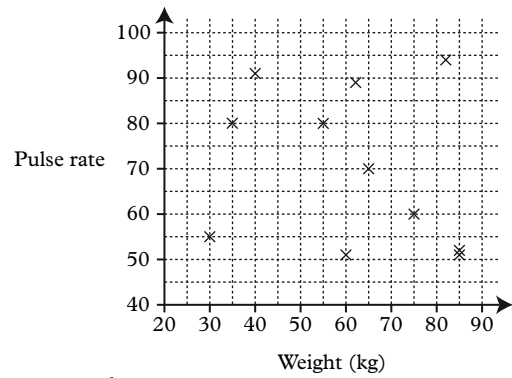


### Practice 13b

- 1 a B and D b A and F c C and E

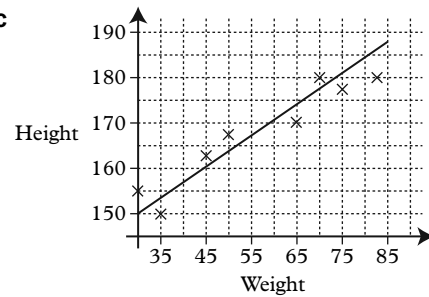
### Practice 13c

- 1 a



- b no correlation

- 2 a, c



- b strong positive correlation c  $\approx 55$  kg

- 3 a no correlation

- b weak negative

- c strong positive

### Practice 14a

- 1  $(1, 4), (5, 6), (6, 3), (2, 2), (7, 1), (8, 4), (4, 4), (2, 7), (7, 6)$

- 2 a  $y = 4$

- b  $y = 6$

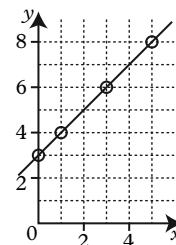
- c  $x = 2$

- d  $x = 7$

- e  $y = x$

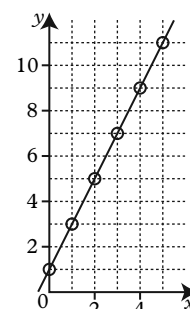
- 3 a

x	0	1	3	5
y	3	4	6	8

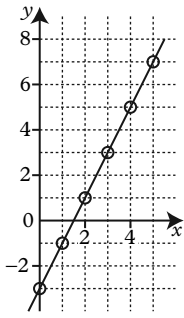


- b

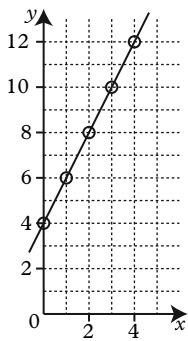
x	0	1	2	3	4	5
y	1	3	5	7	9	11



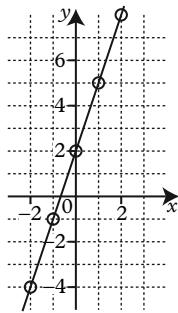
<b>c</b>	x	0	1	2	3	4	5
	y	-3	-1	1	3	5	7



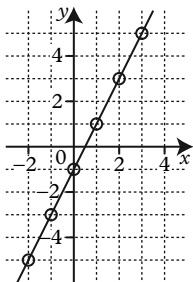
<b>d</b>	x	0	1	2	3	4
	y	4	6	8	10	12



<b>e</b>	x	-2	-1	0	1	2
	y	-4	-1	2	5	8



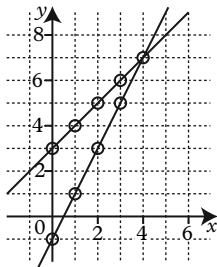
<b>f</b>	x	-2	-1	0	1	2	3
	y	-5	-3	-1	1	3	5



<b>4 a</b>	x	0	1	2	3	4
	y	-1	1	3	5	7

<b>b</b>	x	0	1	2	3	4
	y	3	4	5	6	7

**c** (4, 7)



### Practice 14b

1  $\frac{1}{4}, -1, 4$

2  $\frac{5}{4}, \frac{1}{5}, -4$

3 **a**  $y = 3x + 2$     **b**  $y = 4x - 1$     **c**  $y = 6 - 2x$

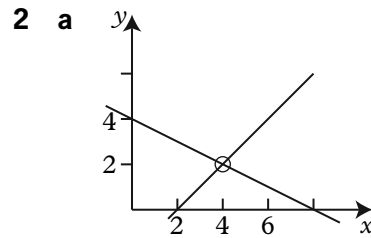
**d**  $y = 2x$     **e**  $y = 8 - \frac{1}{2}x$     **f**  $y = 5 - x$

4 **a** 3    **b** 5

5  $y = 2x + 3$

### Practice 14c

1 **a** (8, 3)    **b** (2, 9)



**c** (4, 1)

**b** (4, 2)

**b**  $x = 4$   
 $y = 2$

### Practice 15a

<sup>1</sup> 2	6		<sup>2</sup> 8	4		<sup>3</sup> 6
<sup>4</sup> 4	4	<sup>5</sup> 8		<sup>6</sup> 3	5	2
0		<sup>7</sup> 4	9		<sup>8</sup> 6	2
	<sup>9</sup> 9	5		<sup>10</sup> 1		
<sup>11</sup> 1	1		<sup>12</sup> 4	2		<sup>13</sup> 6
<sup>14</sup> 3	6		<sup>15</sup> 8	1	<sup>16</sup> 3	6
2		<sup>17</sup> 6	0		9	

<sup>1</sup> 2	5		<sup>2</sup> 8	9		<sup>3</sup> 5
<sup>4</sup> 4	2	<sup>5</sup> 7		<sup>6</sup> 4	2	7
3		<sup>7</sup> 5	9		<sup>8</sup> 9	2
	<sup>9</sup> 2	0		<sup>10</sup> 3		
<sup>11</sup> 8	1		<sup>12</sup> 8	4		<sup>13</sup> 7
<sup>14</sup> 6	6		<sup>15</sup> 2	3	<sup>16</sup> 1	5
9		<sup>17</sup> 5	7		7	

### Practice 15b

1 **a** 9    **b** 16    **c** 49    **d** 1    **e** 27

2 **a**  $5^5$     **b**  $6^3$     **c**  $7^6$     **d**  $10^8$     **e** 100 000 000

3 **a** 13    **b** 36    **c** 19

4 **a** 6    **b** 8    **c** 9

5 **a** 5    **b** 7    **c** 1    **d** 100

6 4.5 cm

### Practice 15c

- 1 a 20(C) b 200(B) c 300(C) d 80(A) e 5000(C)  
 f 2(C) g 7(A) h 100(B) i 0.1(C) j 500(A)
- 2 a 49.98 b 65.27 c 25.44 d 81.37 e 2.97  
 f 11.52
- 3 a 81.78 b 4.15 c 13.68 d 38.94 e 56.16  
 f 29.24
- 4 a 18.72 b 89.18 c 63.99 d 7.638 e 31.16  
 f 48.248

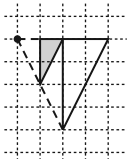
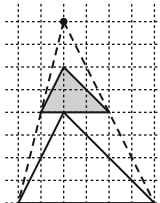
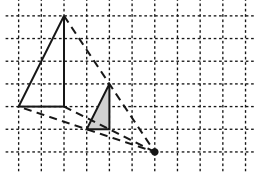
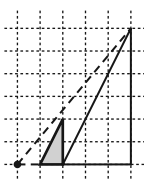
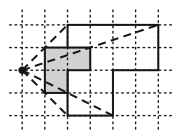
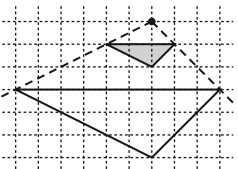
### Practice 15d

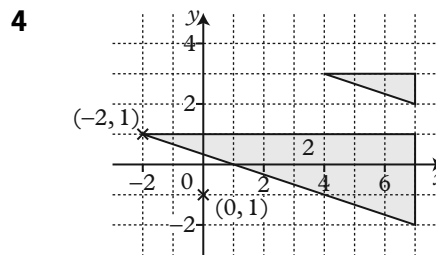
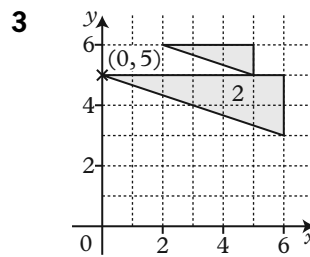
- 1 a  $\frac{1}{2}$  b  $\frac{1}{4}$  c  $\frac{1}{9}$  d  $\frac{1}{10}$  e  $\frac{1}{36}$
- 2 a  $3^5$  b  $5^7$  c  $6^7$  d  $2^{11}$  e  $2^8$  f  $3^4$   
 g  $5^6$  h  $6^7$  i  $4^4$  j  $7^2$  k 8 l  $9^{-4}$
- 3 a False b True c True d True  
 e True f False g False h True
- 4 a 3 b 2 c 4 d -2 5 141

### Practice 16a

- 1 A and H, D and E, F and I  
 2 B, C and G

### Practice 16b

- 1 a  b 
- c 
- 2 a  b 
- c 



### Practice 17a

- 1 £231
- 2 a £83.20 b £266.40 c £644
- 3 a  $\frac{2}{3}(66\frac{2}{3}\%)$  b  $\frac{3}{4}(75\%)$
- 4 £66
- 5 £25.38
- 6 A(£135) B(£141)  $\therefore$  Difference = £6
- 7 £1463

### Practice 17b

- 1 4% 2 a 6% b 2% c 10%
- 3 5% 4 62.5% 5 14% 6 6

### Practice 17c

- 1 a £5250 b £5512.50 2 £3374.59
- 3 £3573.05 4 £4800, £4750.75 5 432

### Practice 18a

- 1 a  $17 \text{ cm}^2$  b 20 cm
- 2 a  $42 \text{ cm}^2$  b  $121 \text{ cm}^2$  c  $84 \text{ cm}^2$
- 3 a 28.4 cm b 44 cm c 38 cm
- 4 a  $12 \text{ cm}^2$  b  $30 \text{ cm}^2$  c  $35 \text{ cm}^2$
- 5 10.5 cm
- 6 5 cm

### Practice 18b

- 1 a  $60 \text{ cm}^2$  b  $54 \text{ cm}^2$  c  $26 \text{ cm}^2$
- 2 a 38 cm b 42 cm c 30 cm
- 3 7.5 square units
- 4  $1000 \text{ cm}^2$
- 5 60

- 6  $48.75 \text{ m}^2$   
 7 a  $25\,000 \text{ m}^2$     b 2.5 hectares  
 8 9 square units

### Practice 18c

- 1 a 22.0 cm    b 25.1 cm    c 32.7 cm  
 2 a  $38.5 \text{ cm}^2$     b  $50.3 \text{ cm}^2$     c  $84.9 \text{ cm}^2$   
 3 34.6 cm  
 4  $78.1 \text{ m}^2$   
 5  $85.8 \text{ cm}^2$

### Practice 19a

- 1 a  $3x + 6$     b  $4x - 12$     c  $10x + 5$   
 d  $21x - 7$     e  $x^2 + x$     f  $x^2 + 4x$   
 g  $2x^2 + x$     h  $x^2 - 2x$     i  $3x^2 + 10x$   
 2 a  $13x + 8$     b  $7x - 8$     c  $7x + 7$   
 d  $11x + 10$     e  $2x^2 + 3x$     f  $3x^2 + 5x$   
 3  $x^2 + 7x + 10$   
 4 a  $x^2 + 5x + 4$     b  $x^2 + 8x + 7$     c  $x^2 + 6x + 9$   
 d  $x^2 + x - 6$     e  $x^2 - x - 20$     f  $2x^2 + 7x + 3$   
 g  $x^2 + 8x + 16$     h  $x^2 + 2x + 1$     i  $x^2 - 16$   
 5 a  $4(2a + b)$     b  $5(a + 3b)$     c  $5(3a + 4b)$   
 d  $7(a + 3b)$     e  $9(3a - 4b)$     f  $4(a + 2b + c)$   
 6 a  $4(5x + 3y)$     b  $6(5x - 2y)$     c  $9(3x + y)$   
 d  $7(5x - 2y)$     e  $20(2x + y)$     f  $5(2x + y + 2z)$   
 g  $x(3x + 2)$     h  $2x(2x + 1)$     i  $x(5x + 1)$   
 j  $x(x - 2)$     k  $y(2y + 5)$     l  $3x(4x + 7)$

### Practice 19b

- 1 a 7 cm    b 14 cm    c 2.2  
 2 9.6  
 3 a 3.7    b 5.9  
 4 19.1 cm

### Practice 20a

1

Shape	Edges	Faces	Vertices
A	12	6	8
B	9	5	6
C	18	8	12
D	8	5	5

- 2 a Cylinder    b Cone    c Sphere  
 3 a Isosceles    b Square    c Octagon    d Polygon

### Practice 20b

- 1 b F

### Practice 20c

- 1 a  $72 \text{ cm}^2$     b  $150 \text{ cm}^2$   
 2 1.75 m, 1.05 m, 1.05 m

### Practice 20d

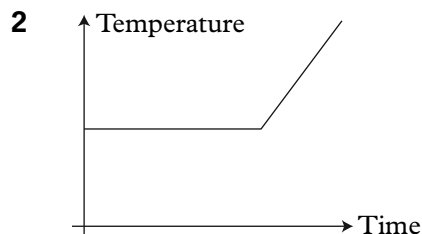
- 1 a  $125.7 \text{ cm}^2$     b  $292.2 \text{ cm}^2$     c  $276.5 \text{ cm}^2$   
 2  $311.6 \text{ cm}^2$

### Practice 21a

- 1 a 30 km    b 12:00  
 c i 30 km/h    ii 60 km/h    iii 60 km/h  
 2 a 25 km    b 14:45  
 c 40 km/h, 20 km/h, 0 km/h, 10 km/h, 80 km/h  
 3 She sets off, but after a time slows down. She visits her parents, and returns home at a speed which is somewhere between her two outward speeds.

### Practice 21b

- 1 a i £50    ii £30    iii £35.70  
 b i \$56    ii \$140    iii \$168



### Practice 22a

- 1 a 129 miles    b 87 miles    c 241 miles  
 2 £7.25  
 3 a 520 000    b £208 000  
 4 £2.47



5 a 10 b 30

6 a 5 b 10

7 a  $\frac{1}{2}$  b  $\frac{1}{4}$  c  $\frac{1}{8}$  d  $\frac{1}{8}$  e  $\frac{3}{4}$

3 a 

+	4	5	6
1	5	6	7
2	6	7	8
3	7	8	9

 b  $\frac{2}{9}$

+	4	5	6
1	5	6	7
2	6	7	8
3	7	8	9

## Practice 24d

1 a HHH, HHT, HTH, THH, HTT, THT, TTH, TTT b  $\frac{1}{8}$

2

Myself	Brother	Myself	Brother
Tea	Tea	Orange	Tea
Tea	Coffee	Orange	Coffee
Tea	Orange	Orange	Orange
Tea	Water	Orange	Water
Coffee	Tea	Water	Tea
Coffee	Coffee	Water	Coffee
Coffee	Orange	Water	Orange
Coffee	Water	Water	Water

4 a

+	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

b  $\frac{1}{12}$  c  $\frac{5}{36}$