Check in 1

1 **a** **i** 10 **ii** 13.0 **iii** 12.973
b **i** 340 **ii** 342.9 **iii** 342.914
2 **a** 27 **b** 32 **c** 1 000 000 **d** 625
3 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
4 2, 3, 5, 7, 11, 13, 17, 19, 23, 29

MyReview 1

1 **a** 3 **b** 3.1 **c** 3.08
2 **a** 0.04 **b** 0.036 **c** 0.0360
3 **a** 6 **b** 50 **c** 808 **d** 46
4 **a** 1.5 cm, 0.5 cm
b 1.505 m, 1.495 m
c 35 mm, 25 mm
d 255 mm, 245 mm
5 **a** 100.5 mm, 99.5 mm
b 8.0005 m, 7.9995 m
c 11.05 cm, 10.95 cm
d 1.5 mm, 0.5 mm
6 £485 million $\leq$ cost $<$ £495 million
7 **a** 24.55 cm^2 **b** 21.8 cm
8 **a** 25.2 m/s **b** 26.1 m/s
9 **a** $2^2 \times 3 \times 7$ **b** $2 \times 3^2 \times 7$
c $3^2 \times 7 \times 11$ **d** $2 \times 5 \times 11 \times 13$
10 **a** HCF = 5, LCM = 175
b HCF = 6, LCM = 2574
c HCF = 105, LCM = 1260
d HCF = 60, LCM = 25200
11 **a** $\frac{135}{420} = \frac{9}{28}$ **b** $\frac{24}{420} = \frac{2}{35}$

Check in 2

1 **a** 1430 **b** 35 **c** 36.1
d 300 **e** 6000
2 **a** 37.68 cm **b** 113.04 cm^2
3 **a** 236 cm^2 **b** 240 cm^3

MyReview 2

1 **a** 6820 mm **b** 0.14 *l*
c 820 g **d** 70 mm^2
e 80 000 cm^2 **f** 12 000 cm^3
2 **a** 4.8 *l* **b** 10 kg
c 192 km **d** 0.625 m
3 **a** area **b** volume **c** length **d** area
4 390 cm^2
5 11 cm
6 **a** 283.5 cm^2 **b** 59.7 cm
7 **a** 36π cm^2 **b** $24 + 6\pi$ cm
8 3.2 g/cm^3
9 **a** 59.5 km **b** 12 minutes

Check in 3

1 **a** $3x$ **b** $9y$ **c** $7a$
d $5b - 2$ **e** $4p$ **f** $a + 5b$
g $x^2 + 2x$ **h** $6y + y^2$
2 **a** 42 cm **b** 46 cm
3 **a** $2x + 10$ **b** $7p - 21$ **c** $10k + 5$
d $12 - 3y$ **e** $x^2 + 2x$ **f** $ab - 6a$
g $4p^2 + 4pq$ **h** $15t - 6t^2$

MyReview 3

1 **a** 1000 **b** -8
2 **a** $20a^8$ **b** $3b^5$ **c** $27c^{18}$ **d** $2d^6$
3 **a** 1 **b** 4 **c** $\frac{1}{12}$ **d** $\frac{1}{10}$
4 **a** e **b** f$^{\frac{3}{2}}$ **c** g^5 **d** h
5 **a** $a^2 + 3a + 2$ **b** $b^2 + 3b - 28$
c $c^2 - 11c + 24$ **d** $d^2 - 10d + 25$
e $2e^2 - 5e - 12$ **f** $9f - 36$
6 **a** $4(g - 5)$ **b** $8(4 - 3h)$
c $5m(3n + 4)$ **d** $4y(3x + 1)$
7 **a** $x(x + 7)$ **b** $5x(x + 2y)$
c $2y(2y^2 + 3y - 1)$ **d** $3y^2(4y - 5z)$
8 **a** $(p + 3)(p - 3)$ **b** $(2q + 1)(2q - 1)$
c $(r + 9s)(r - 9s)$ **d** $(10t + u)(10t - u)$
9 **a** yes **b** no **c** yes
10 $2a^2 + 30a - \pi a^2 = a(2a + 30 - \pi a)$
11 **a** $x = b - 2a$ **b** $x = \frac{c + b}{a}$
c $x = 3f(d + e)$ **d** $x = \frac{c - 2a}{b}$
12 **a** $y = \frac{a}{2b}$ **b** $y = \frac{3}{c} - d$
c $y = \frac{2}{f - e}$ **d** $y = \sqrt{\frac{a - 3c}{b}}$

Check in 4

1 **a** $\frac{13}{21}$ **b** $\frac{6}{35}$ **c** $\frac{8}{15}$ **d** $\frac{5}{6}$
2 **a** £36 **b** 16.8 kg **c** £64.80 **d** £337.75
3 **a** 3 : 4 **b** 13 : 5 **c** 7 : 30 **d** 2 : 3

MyReview 4

1 **a** $\frac{171}{35}$ **b** $\frac{91}{36}$ **c** $\frac{77}{20}$ **d** $\frac{107}{60}$
2 **a** $\frac{7}{3}$ **b** $\frac{3}{20}$ **c** 18
d $\frac{8}{5}$ or $1\frac{3}{5}$ **e** $\frac{5}{2}$ or $2\frac{1}{2}$ **f** $\frac{7}{2}$ or $3\frac{1}{2}$
3 **a** $0.\dot{7}$ **b** $0.\dot{4}\dot{5}$ **c** $0.41\dot{6}$
d $0.\dot{8}57142\dot{8}$ **e** $0.6\dot{3}$ **f** $0.\dot{5}38461\dot{5}$
4 **a** $\frac{31}{99}$ **b** $\frac{1}{15}$
5 **a** £94.05 **b** 485.55 g
6 6.67%
7 30.6%
8 £720
9 1.70 m
10 £749.42
11 £7111.11

Check in 5

1 **a** 93° **b** 27° **c** 56°
2 **a** **i** 31.4 cm **ii** 78.5 cm^2
b **i** 37.7 m **ii** 113.1 m^2
c **i** 0.63 m **ii** 0.031 m^2

MyReview 5

1 $a = 12°$, angles in a triangle add up to 180°.
$b = 103°$, corresponding angles are equal.

c = 106°, missing angles in triangle are both 74° as isosceles then use angles on a straight line adding up to 180°.
d = 72°, missing angles in triangle are both 54° as isosceles.
e = 109°, use alternate angles are equal to find angle adjacent to e then angles on a straight line.
f = 98°, angles on a straight line.
g = 82°, either use angles in polygon add up to 360° or alternate angles are equal.

2 **a** Exterior = 60, interior = 120°
b Exterior = 20°, interior = 160°

3 **a** 45 **b** 172° **c** 7740°
d 45 **e** 45

4 **a** 55° **b** 55° **c** 35°

5 **a** $\frac{40}{9}\pi$ **b** $\frac{160}{9}\pi$

6 7.78 cm

7 **a** p = 65°, q = 51° **b** Congruent

Check in 6

1 **a** 3 **b** 0 **c** -6 **d** 15

2 **a** Straight line through (0, 1)
b Straight line through (0, 5)
c Straight line through (0, 12)
d Straight line through $(0, 3\frac{1}{3})$

MyReview 6

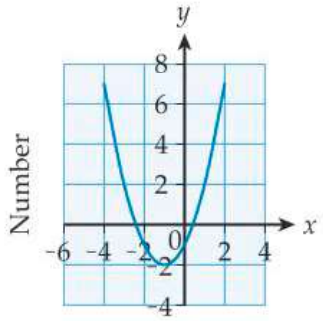
1 $\frac{1}{2}$

2 **a** $m = \frac{1}{4}$, c = 0 **b** m = -7, c = 10
c m = 8, c = -28 **d** m = -4, c = 5

3 **a** $y = 2x - 3$ **b** $y = 4 - x$
c $y = \frac{x}{2} + 1$

4 $y = 3x \pm c$

5 **a**



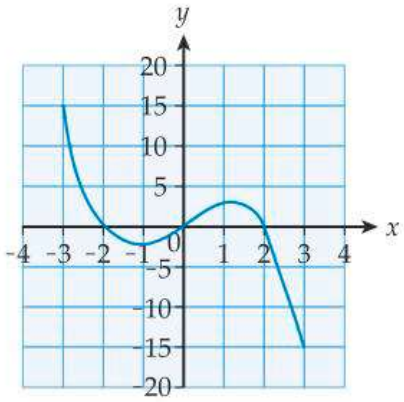
Number of items of homework

b x = -1 **c** (-1, -2)

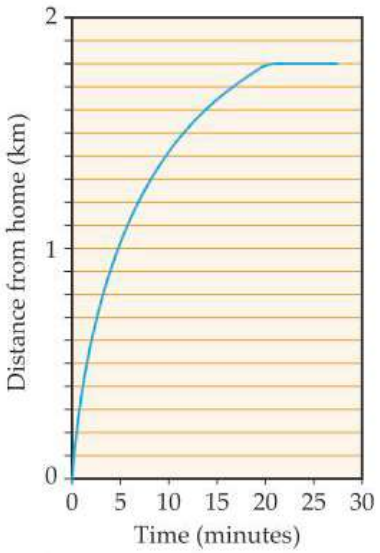
6 **a**

x	-3	-2	-1	0	1	2	3
$4x$	-12	-8	-4	0	4	8	12
$-x^3$	27	8	1	0	-1	-8	-27
y	15	0	-3	0	3	0	-15

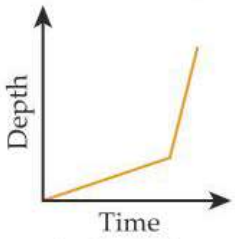
b



7



8



9 **a** Reciprocal graph, asymptotes x = 0 and y = 0. Passing through (-1, -4) and (1, 4). $x \approx 2.1$
b Exponential graph, passes through (0, 1) and (1, 3). $x \approx 2$

Check in 7

1 **a** 688.8 **b** 148.58
c 23.5 **d** 45.9

2 **a** 4.472 **b** It was rounded

MyReview 7

1 **a** 148.02 **b** 4.15
c 15.68 **d** 17.58
e 9.21 **f** -88.35

2 **a** 94.963 **b** 129.88
c 8.758 **d** 44.2411

3 **a** 182.16 **b** 34.79
c 4.524 **d** 0.031584

4 **a** 120.12 **b** 4.108
c 22.272 **d** 7.2226

5 **a** 132 **b** 689 **c** 6950
d 0.0268 **e** 4.99

6 **a** 0.88 **b** 0.72

7 **a** 345 000 000 km
b 439 days, 16 hours and 36 minutes

8 **a** £7.14 **b** 33 mm
c 19 hours 12 minutes

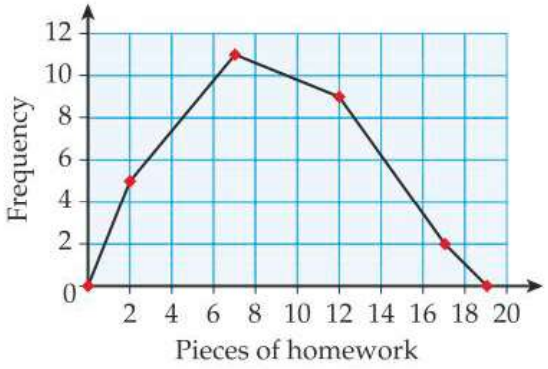
Check in 8

1 **a** 0 **b** 2 **c** $7 - 0 = 7$ **d** 2.3

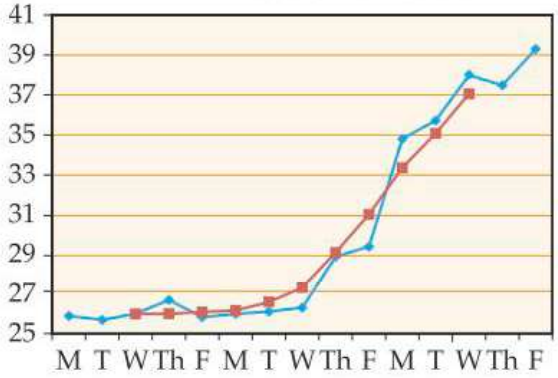
2 **a** Own diagram **b** $25 \leq x < 30$

MyReview 8

1 **a** 19 **b** 5 – 9
c

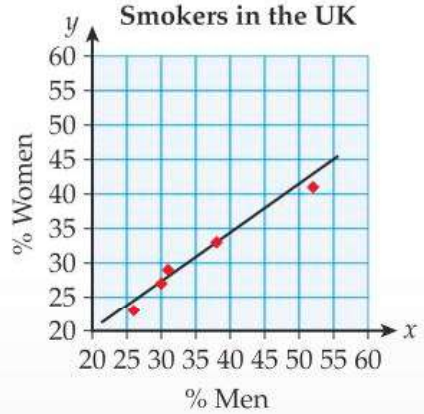


2



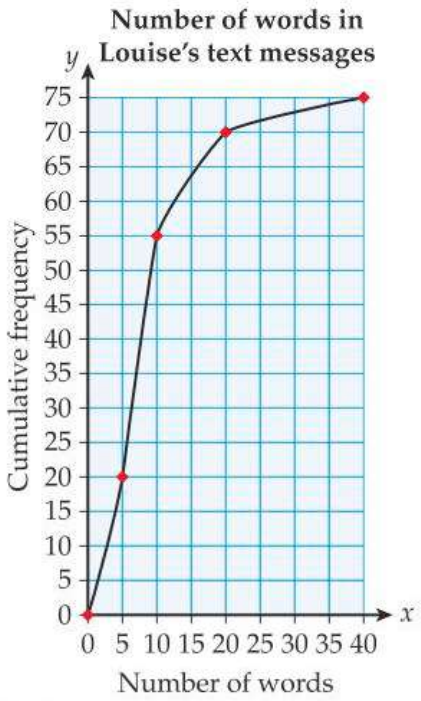
3 9.17 words

4



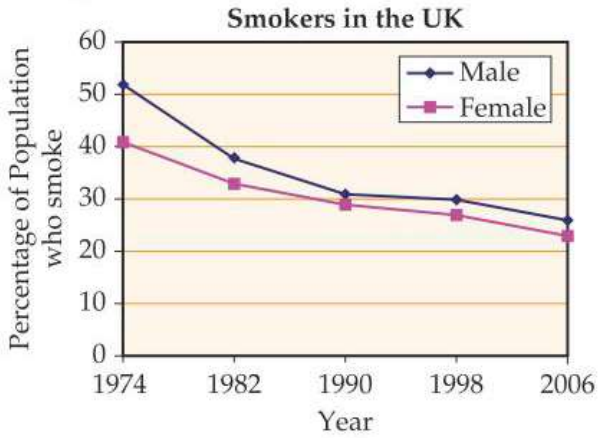
The graph shows positive correlation.

5 **a**

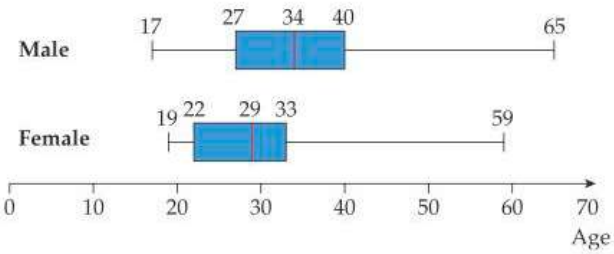


b 7.5
c IQR = 11 – 4.5 = 6.5

6

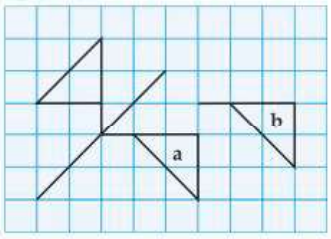


7



Check in 9

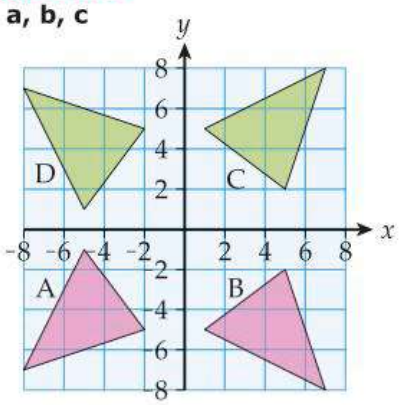
1



2 195 m, 0.8 m

MyReview 9

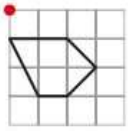
1 **a, b, c**



d Reflection in line $y = 0$

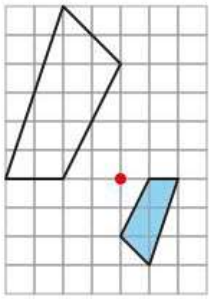
2 **a** $\begin{pmatrix} 1 \\ -7 \end{pmatrix}$ **b** (-8, -4)

3

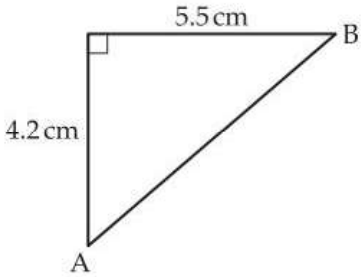


4 Scale factor $\frac{1}{3}$, centre of enlargement (0, 9)

5



6 **a**



b 5.54 km

7 2.2 cm

Check in 10

1 **a** $24x + 120$ **b** $20a + 27$
c $5x^2 - 20x$ **d** $10y - 5$

2 **a** $x = 3$ **b** $m = 7$

3 $x^2 + x + 5$

MyReview 10

1 **a** $a = 13$ **b** $b = 21$
c $c = \frac{3}{2}$ **d** $d = -4$
e $e = -\frac{2}{5}$ **f** $f = \frac{4}{7}$

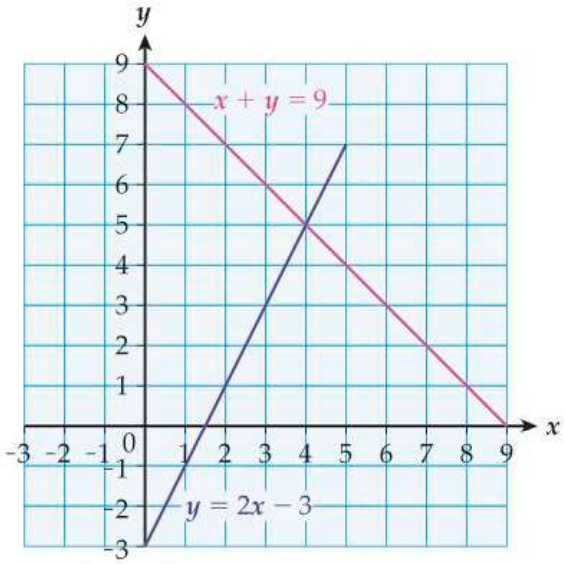
2 **a** $x = 2, y = 7$ **b** $x = -1, y = 6$
c $x = \frac{1}{2}, y = \frac{3}{2}$ **d** $x = -4, y = \frac{1}{2}$

3 **a** $x = 5, y = -2$ **b** $x = -4, y = 7$
c $x = -6, y = -9$ **d** $x = 4, y = -\frac{1}{2}$

4 **a** $x = 6, y = 3$ **b** $x = -2, y = 6$
c $x = \frac{1}{2}, y = -\frac{1}{2}$ **d** $x = \frac{2}{5}, y = \frac{6}{13}$

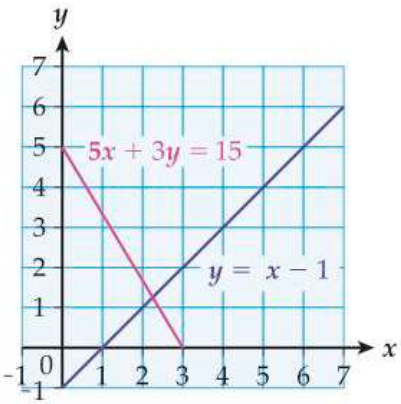
5 $s = 14$ ($m = 39$)

6 **a**



$x = 4, y = 5$

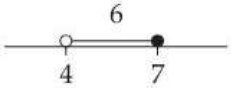
b



$x = \frac{9}{4}, y = \frac{5}{4}$

7 **a** $x \leq -1$ **b** $x < 6$

8 **a** 5, 6, 7 **b**



9 **a** 2.78 **b** 1.46

Check in 11

1 **a** 0.038 **b** 27.5 **c** 0.045 **d** 100

2 **a** 17 **b** 0.75 **c** 2000 **d** 0.040

MyReview 11

1 **a** 21 000 000 **b** 269 000
c 0.0074 **d** 0.000373

2 **a** 2.6×10^4 **b** 9.88×10^5
c 8.8×10^{-5} **d** 7.59×10^{-3}
e 5.94×10^9 **f** 9.8×10^{-9}
g 1.4×10^4 **h** 6.72×10^{-2}

3 **a** 8.495×10^6 **b** 5.172×10^{-2}

4 **a** 9^8 **b** 8^{-9} **c** 6^7
d 3^{-11} **e** 4^{14} **f** 7^{15}
g 3^{12} **h** 4^{-12}

5 **a** 7 **b** $5\sqrt{2}$ **c** $6\sqrt{6}$
d $4\sqrt{2}$ **e** $24\sqrt{10}$ **f** $48\sqrt{3}$

6 **a** $4\sqrt{2}$ **b** $4\sqrt{5}$
c $5\sqrt{7}$ **d** $8\sqrt{5}$

7 **a** $7^{\frac{1}{2}}$ **b** $5^{\frac{1}{3}}$

8 **a** 7 **b** 4

9 **a** 6 **b** $7^{-\frac{3}{2}}$ **c** 1
d $8^{\frac{7}{2}}$ **e** $4^{\frac{2}{3}}$ **f** $3^{\frac{3}{2}}$

Check in 12

1 **a** 17 **b** 12 **c** 5.67 **d** 5.4

2 **a** Check BC = 6 cm
b Check that perpendicular bisector passes through C.
c **i**, **ii**, **iii** all 3.5 cm.

MyReview 12

1 **a** 26 cm **b** 8 m **c** 15 mm

2 No

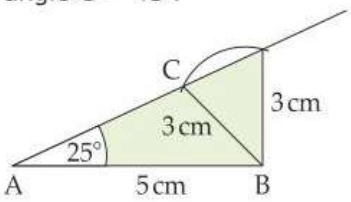
3 **a** $5\sqrt{5}$ **b** $4\sqrt{17}$

4 6.71 m

5 $5\sqrt{2}$

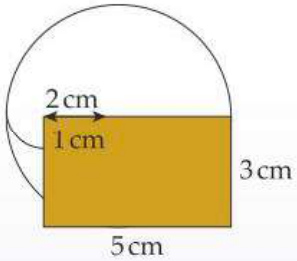
6 Check ASA: 48°, 5 cm, 53° for top triangle and SSS: 5 cm, 7 cm, 4 cm for bottom triangle

7 Check ASS 25°, 5 cm, 3 cm for both triangles.
Solution 1: AC = 2.4 cm, angle B = 20°, angle C = 135°.
Solution 2: AC = 6.7 cm, angle B = 110°, angle C = 45°.



8 FORWARD 4
REPEAT 2
[TURN RIGHT 120° FORWARD 4]

9



Check in 13

1 **a** Start at 3 and +3; 12
b Start at 2 and +5; 12
c Start at 4 and +3; 10, 13
d Start at 21 and -4; 17, 13
e Start at 5 and +8; 13, 29
f Start at 50 and -6; 44, 32

2 **a** 0, 3, 6, 9, 12 **b** 1, 2, 4, 8, 16
c 0, -2, -4, -6, -8 **d** 2, 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$

MyReview 13

1 **a** $5n - 4$ **b** $7n - 3$
c $0.9n + 4.7$ **d** $20 - 2n$

2 **a** 3, 9, 15, 21, 27
b -4.5, -4, -3.5, -3, -2.5
c 28, 52, 76, 100, 124
d 19, 16, 13, 10, 7

3 **a** 465 **b** 820

4 **a** $n(n + 2)/n^2 + 2n$ **b** 120

5 **a** 2, 5, 10, 17, 26 **b** 4, 16, 36, 64, 100
c -3, 6, 27, 60, 105 **d** 5, 11, 19, 29, 41

6 **a** $n^2 + 5$ **b** $2n^2 + 3n$
c $4n^2 - 2n + 1$ **d** $n^2 - 5n + 2$

7 **a** Divergent
b Converges to a limit of $^-2$
c Divergent
d Oscillatory

Check in 14

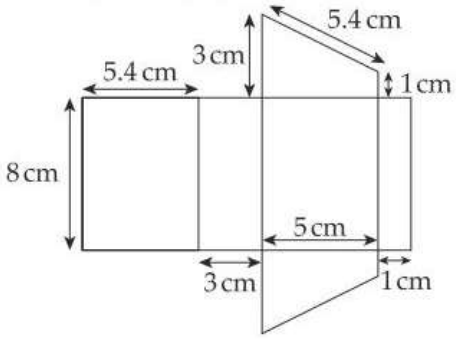
1 **a** Cylinder **b** Pyramid
c Prism **d** Cone

2 **a** 2.5 cm **b** 24 cm

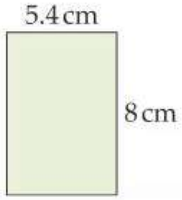
MyReview 14

1 **a** 6 faces, 12 edges, 8 vertices

b



c

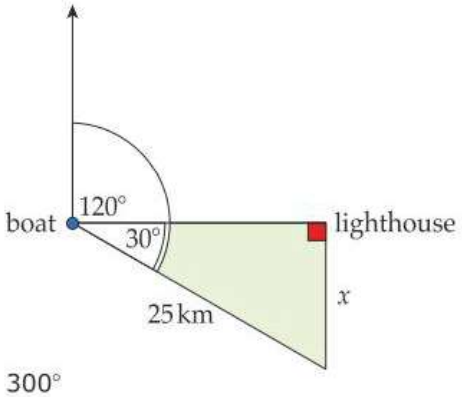


2 **a** 15 cm **b** 1512 cm^3 **c** 1116 cm^2

3 **a** $4\sqrt{5}$ cm **b** $4\sqrt{6}$ cm

4 $\sin\theta = 0.385$, $\cos\theta = 0.923$, $\tan\theta = 0.417$

5 **a** 36.9° **b** 78.5° **c** 54.5°
6 **a** 33.1° **b** 66.4° **c** 34.6°
7 **a** 7.1 cm **b** 9.7 cm **c** 22.8 cm
8 **a** 12.5 km



b 300°

Check in 15

1 **a** £235.84 **b** 43.3125 kg
2 **a** 8.93% **b** 1.47
3 **a** 30 **b** 0.08 **c** 3000
d 4×10^2 **e** 5×10^{-2}

MyReview 15

1 **a** $£6\frac{3}{4}$ **b** $£6\frac{1}{3}$ miles
2 **a** $£21\frac{2}{3}$ **b** 960 kg
3 **a** 27 km **b** $£54\frac{1}{3}$ m
4 **a** 4 : 2 : 5 **b** 13 : 8
5 **a** 1 : 3.5 **b** 1 : 3.75
6 The first one
7 **a** 210 **b** 78 **c** 8
8 £1.47
9 £5.85
10 **a** 1.05 km / 1050 m **b** 30 cm
11 **a** 7.143 litres **b** 2.679 litres
12 Bottle C.

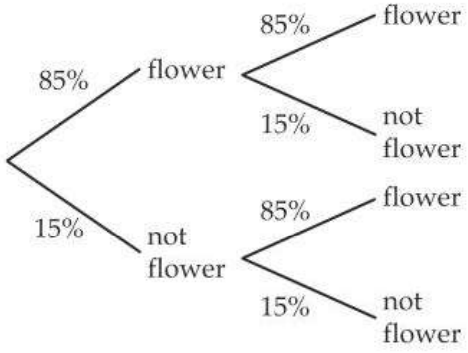
Check in 16

1 **a** $\frac{1}{3}$ **b** $\frac{2}{3}$
2 **a** $\frac{3}{4}$ **b** $\frac{3}{8}$ **c** 1
d $\frac{1}{9}$ **e** $\frac{14}{25}$ **f** $\frac{61}{36}$
g $\frac{1}{3}$ **h** $\frac{7}{20}$

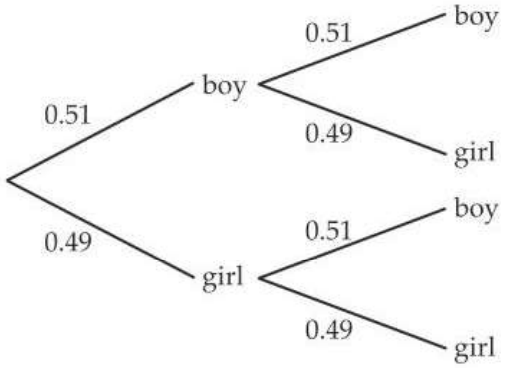
MyReview 16

1 **a** Every 4 years
b Advantages: peace of mind, may not be able to afford £240 in one go.
Disadvantages: could end up paying a lot of money and never need the insurance.

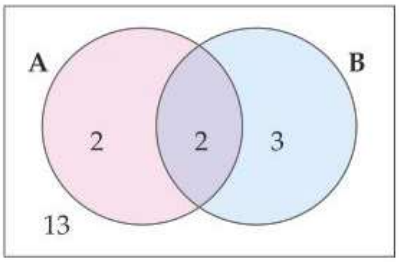
2 No
3 0.1 or 10%
4 **a**



b 72.25% or 0.7225 **c** 25.5% or 0.255
5 **a**



b 0.4998 or 49.98% **c** 0.7399 or 73.99%
6 **a** 0.2 **b** 0.4 **c** 4
7 **a**



b $P(A) = \frac{1}{5}$, $P(B) = \frac{1}{4}$, $P(A) \times P(B) = \frac{1}{20}$
$P(A \cdot B) = \frac{1}{10}$, $P(A \cdot B) \cdot P(A) \times P(B)$
so A and B are not independent.