

- 11 a) $\frac{3\sqrt{2}}{2}$ b) $\frac{\sqrt{3}}{5}$
 c) $\frac{4\sqrt{3}}{5}$ d) $\frac{2\sqrt{6}}{3}$
 e) $2\sqrt{5}$ f) $\frac{3\sqrt{2}}{2}$
 g) $\frac{5\sqrt{2}}{2}$ h) $\frac{6\sqrt{5}}{5}$
 i) $5\sqrt{2}$ j) $\frac{\sqrt{10}}{5}$
 k) $\frac{2\sqrt{10}}{15}$ l) $\frac{7\sqrt{2}}{10}$
 m) $\frac{\sqrt{6}}{3}$ n) $\frac{12\sqrt{10}}{35}$
- 12 a) $3 + 3\sqrt{2}$ b) $\frac{1 + 3\sqrt{5}}{2}$
 c) $\frac{4\sqrt{3} + 6}{2}$ d) $\frac{5\sqrt{6} + 6\sqrt{2}}{6}$
- 13 10
 14 7π
 15 $\sqrt{10}$
 16 $12 + \frac{3\pi}{2}$ or $12 + 1.5\pi$

4 Trigonometry in non-right-angled triangles

Exercise 4.1 (page 196)

- 1 $c = 5.39$ cm, $A = 46^\circ$, $a = 5.22$ cm
 2 $p = 11.6$ cm, $R = 26^\circ$, $r = 5.50$ cm
 3 $g = 14.6$ cm, $E = 55^\circ$, $e = 15.2$ cm
 4 $b = 271$ m, $C = 68.5^\circ$, $c = 260$ m
 5 $B = 66^\circ$, $C = 72^\circ$, $c = 7.39$ cm
 6 $M = 71.4^\circ$, $N = 28.6^\circ$, $n = 6.46$ cm
 7 $E = 34.2^\circ$, $D = 120^\circ$, $d = 9.11$ cm
 8 $A = 42.9^\circ$, $B = 66.1^\circ$, $b = 96.7$ m
 9 $P = 32.2^\circ$, $R = 78.4^\circ$, $r = 7.53$ cm
 10 $Y = 35.5^\circ$, $Z = 48.5^\circ$, $z = 9.04$ cm
 11 $T = 68.8^\circ$, $S = 80^\circ$, $s = 9.50$ m
 12 $b = 12.5$ mm, $C = 47^\circ$, $c = 9.28$ mm
 13 $y = 7.10$ cm, $Z = 45^\circ$, $z = 7.81$ cm
 14 $s = 1.13$ m, $T = 59^\circ$, $t = 2.70$ m
 15 28.2 cm
 16 15.7 cm
 17 $B = 94.3^\circ$
 18 a) $AT = 85.7$ m, $BT = 60.5$ m
 b) 38.9 m
 19 a) $AB = 25.7$ m, $BC = 42.7$ m
 b) 23.9 m
 20 380 m
 21 $AC = 43.9$ km, $BC = 25.3$ km
 22 6.0 m
 23 a) 54° b) 46°

Exercise 4.2 (page 201)

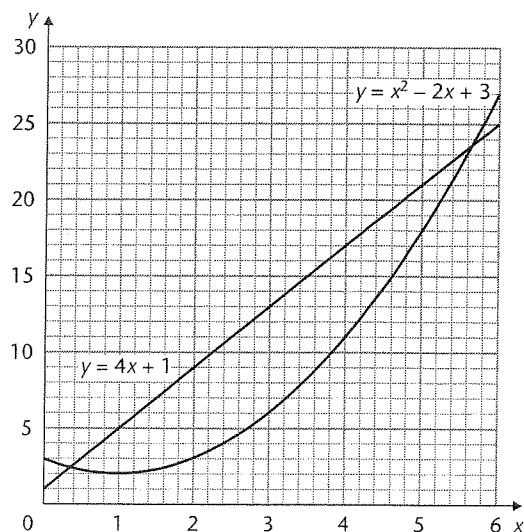
- 1 14.2 cm
 2 3.91 cm
 3 13.7 m
 4 21.6 cm
 5 48.5°
 6 50.7°
 7 110.7°
 8 8.89 cm
 9 18.7 cm
 10 14.2 cm
 11 5.37 cm
 12 52.0°
 13 39.5°
 14 49.3°
 15 $A = 45.9^\circ$ (opposite the shortest side)
 16 $A = 45.7^\circ$, $B = 62.5^\circ$, $C = 71.7^\circ$
 17 4.79 km
 18 9.6 km
 19 $x = 11.3$ m, $y = 19.5^\circ$
 20 4.85 cm, 6.40 cm
 21 a) 45.8 m b) 110.1°
 22 a) (i) 11.7 m (ii) 10.2 m (iii) 10.8 m
 b) (i) 58.6° (ii) 67.6°

Exercise 4.3 (page 205)

- 1 a) 8.94 cm² b) 19.7 cm²
 c) 20.5 cm² d) 5.20 m²
 e) 34.0 cm² f) 12.1 m²
 2 15 cm²
 3 73.2°
 4 44.6 cm
 5 35.7 cm²

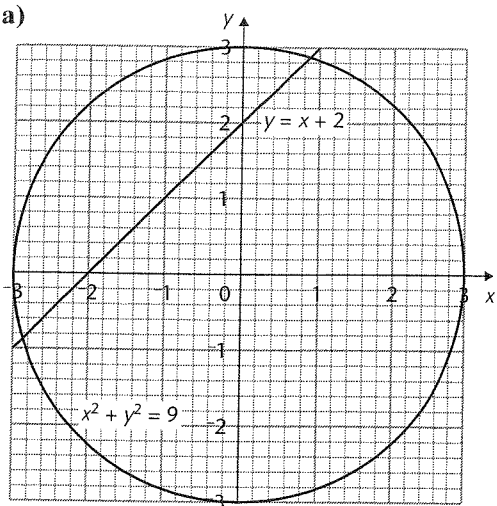
Revision exercise A1 (page 207)

1 a)



b) $x = 0.4$, $y = 2.4$ or $x = 5.6$, $y = 23.6$

2 a)

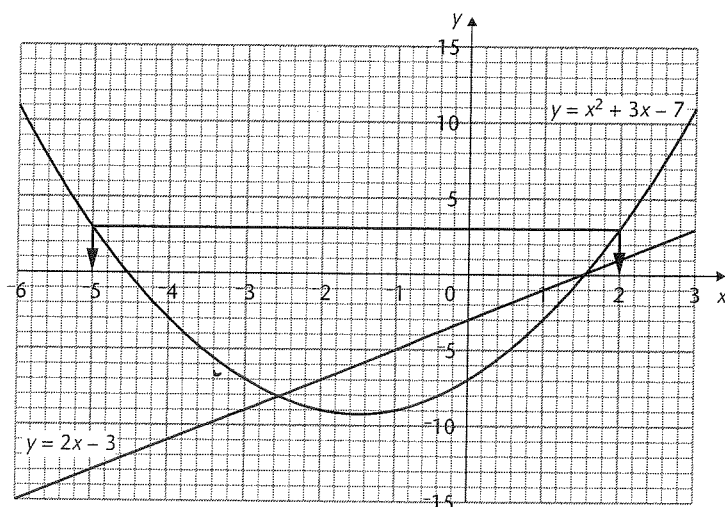


b) $x = -2.9, y = -0.9$ or $x = 0.9, y = 2.9$

3 $x = 0, y = 6$ or $x = -6, y = 0$

4 a) $y = x^2 + 3x - 7$

x	-6	-5	-4	-3	-2	-1	0	1	2	3
x^2	36	25	16	9	4	1	0	1	4	9
$+ 3x$	-18	-15	-12	-9	-6	-3	0	3	6	9
$- 7$	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7
$y = x^2 + 3x - 7$	11	3	-3	-7	-9	-9	-7	-3	3	11



b) (i) $x^2 + 3x - 7 = 0$ when $y = 0$; solution is $x = -4.5$ or 1.5

(ii) $x^2 + 3x - 10 = 0$ is the same as $x^2 + 3x - 7 - 3 = 0$ or $x^2 + 3x - 7 = 3$.

When $y = 3, x = -5$ or 2 .

c) (i) $x^2 + x - 4 = 0$ is the same as $x^2 + 3x - 7 - 2x + 3 = 0$ or $x^2 + 3x - 7 = 2x - 3$.

Equation is $y = 2x - 3$.

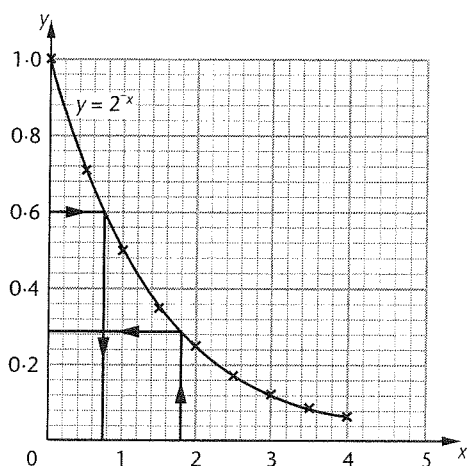
(ii) Solution is $x = -2.6$ or 1.6

5 44.9 minutes

6 $y = 2^{-x}$

x	0	0.5	1	1.5	2	2.5	3	3.5	4
y	1	0.707	0.5	0.354	0.25	0.177	0.125	0.088	0.063

Graph shown half-size.



- a) $y = 0.29$
 b) $x = 0.74$
 7 a) 100
 b) 249
 c) 12.6 days
 8 $a = 10, b = 0.8$
 9 a) R, terminating decimal
 b) R, recurring decimal
 c) I, π is irrational
 d) I, $\sqrt{3}$ is irrational
 e) R, terminating decimal
 10 a) $0.4\dot{5}$
 b) $0.21\dot{2}$
 c) $0.07\dot{4}$
 11 a) $\frac{6}{11}$
 b) $3\frac{73}{495}$
 c) $\frac{226}{1111}$

- 12 a) $4\sqrt{2}$
 b) $5\sqrt{6}$
 c) $8\sqrt{2}$
 d) 30
 e) $6\sqrt{5}$
 f) $2\sqrt{2}$
 g) $48\sqrt{6}$
 13 a) $8 - 3\sqrt{7}$
 b) $-2 + 5\sqrt{7}$
 c) $-13 - 7\sqrt{7}$
 14 a) $37 + 20\sqrt{3}$
 b) $37 - 20\sqrt{3}$
 c) 13
 15 $65\sqrt{10} + 200$
 16 a) $\frac{11\sqrt{2}}{2}$
 b) $\frac{5\sqrt{3}}{2}$
 c) $\frac{2\sqrt{3}}{3}$
 17 a) 12.3°
 b) 132°
 c) 8.30 m
 18 a) 13 cm
 b) 32.2°
 c) 52.0 cm^2
 19 a) 38.2°
 b) 60°
 20 a) 73 km
 b) 11.6°
 21 6000 m^2

- 8 5420 cm^2
- 9 255 cm^2
- 10 7.6 cm
- 11 47.7 cm
- 12 153 cm^2
- 13 170 cm^2
- 14 3.54 cm
- 15 4.3 cm
- 16 75.2 cm^2
- 17 130 cm^2

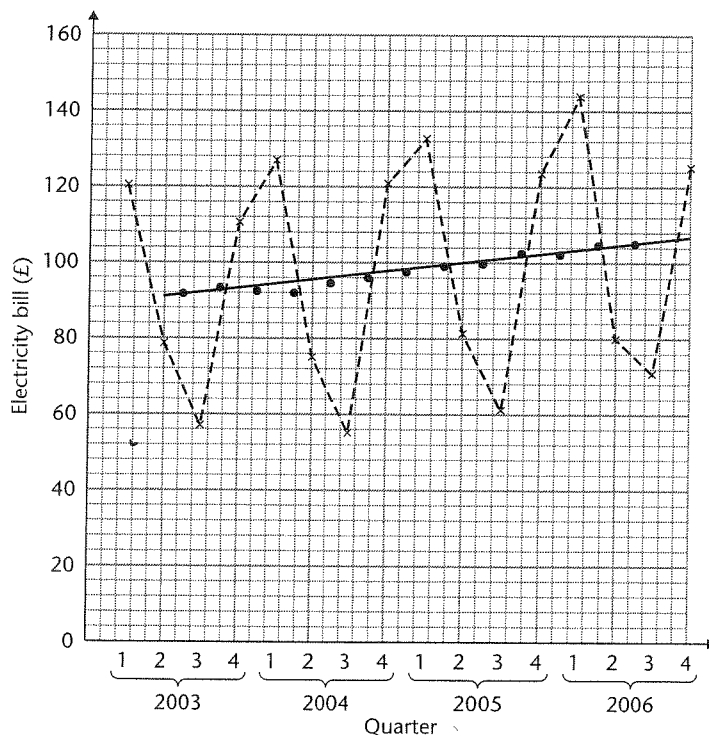
Exercise 8.2 (page 241)

- 1 63.3 cm^2
- 2 a) 5.74 cm b) 11.8 cm
- 3 a) 3 cm b) 1225 cm^3
- 4 Check students' proof.
- 5 a) 3.54 cm b) 29.5 cm^3
- 6 a) Check students' proof.
b) 6.13 cm
- 7 a) 3.34 cm b) 72.0 cm^2

- 8 484 cm^2
- 9 38.4 cm^2
- 10 169 cm^3
- 11 24.0 cm^2
- 12 29.6 cm
- 13 8.36 cm
- 14 a) Check students' proof.
b) 218 cm^3
- 15 204 cm^2
- 16 2.84 cm
- 17 72.3 cm^2
- 18 124 cm^3
- 19 a) Check students' proof.
b) 1619 cm^2
- 20 81.4 cm^3
- 21 a) 409 cm^3 b) $10.7 \text{ cm}, 382 \text{ cm}^2$
- 22 a) Check students' proof.
b) 2.56 litres
- 23 1740 cm^3
- 24 $4.8 \text{ cm}, 174 \text{ cm}^3$
- 25 784 cm^3

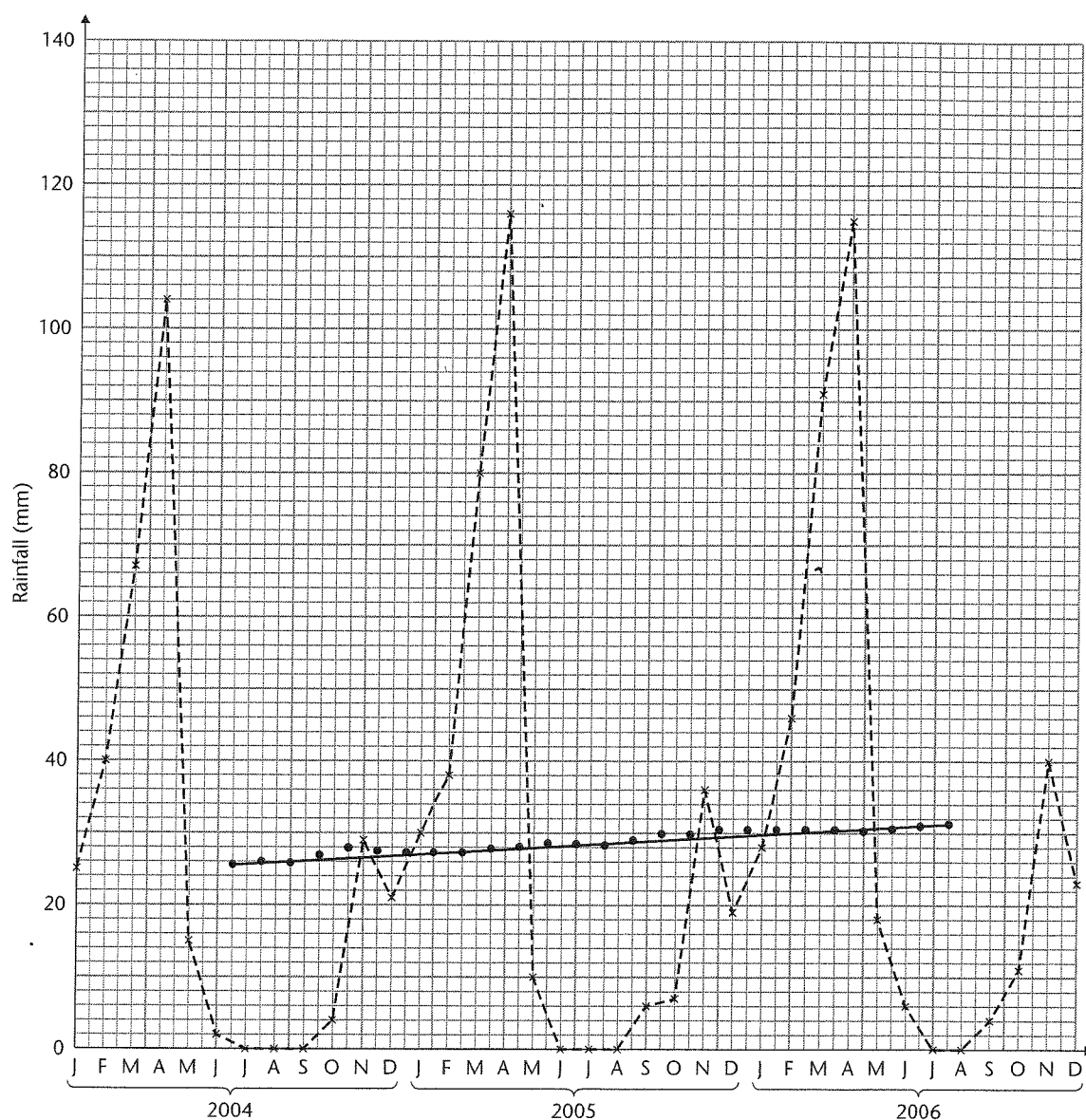
Revision exercise B1 (page 246)

- 1 a) and b)



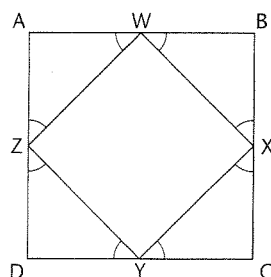
- c) A slight upward trend.
d) Possible estimates are £145 – £150, £80 – £83, £65 – £75, £125 – £130.

- 2 a) Rainy: Nov – May
Dry: June – Oct
b)



The graph shows a slight increase in rainfall over the 3-year period.

- 3 a) A The oven is warming up at a constant rate.
B The door is opened as the oven is loaded and the temperature starts to fall.
C The door is shut again.
D The door is opened at the end of baking (the oven is turned off).
b) Approximately 12°C per minute.
- 4 Because joining the midpoints as shown creates isosceles triangles, all the marked angles are 45° . Therefore the angles of the quadrilateral are 90° . The triangles ZAW, WBX, XCY and YDZ are congruent (SAS), therefore the sides ZW, WX, XY and YZ are equal. Therefore ZWXY is a square.



- 5 $OA = OB$ (Radii)
 $\angle OAP = \angle OAB = 90^\circ$ (Angle between tangent and radius.)
 OP is common to both triangles.
 So triangles OAP and OBP are congruent (RHS).
- 6 $PA = PB$ (Tangents from a point to a circle are equal.)
 $\angle APD = \angle DPB$ (Triangles OAP and OBP are congruent.)
 DP is common.
 So triangles PAD and PBD are congruent (SAS).
- 7 a) $x = 0.35$ or 5.65
 b) $x = -0.44$ or 1.69
 c) $x = -1.72$ or 0.39
 d) $x = 1.82$ or 14.82
 e) $x = 1.47$ or -6.47
- 8 $y = (x - 2.5)^2 - 2.25$; $(2.5, -2.25)$
- 9 a) Area of lawn = area of path
 $3x^2 = (x + 1)(3x + 2) - 3x^2$
 $3x^2 = 3x^2 + 5x + 2 - 3x^2$
 $3x^2 = 5x + 2$
 b) Length = 2 m, width = 6 m
- 10 a) $x = 0.137$ or 1.463
 b) $x = -0.275$ or 7.275
 c) $x = -1.260$ or 0.926
 d) $x = 1.174$ or -2.840
 e) $x = -1.243$ or 0.643
- 11 18.7 cm^2
- 12 a) 12 cm b) 151 cm^2
- 13 65.6 cm^2
- 14 44

9 Working with algebraic fractions

Exercise 9.1 (page 251)

- 1 $\frac{11x}{10}$
- 2 $\frac{x}{15}$
- 3 $\frac{-4x + 5}{6}$
- 4 $\frac{3x + 1}{10}$
- 5 $\frac{17x - 12}{30}$
- 6 x
- 7 $\frac{3x - 1}{x(x - 1)}$
- 8 $\frac{5x + 3}{x(x + 1)}$
- 9 $\frac{x + 6}{2x(x + 2)}$

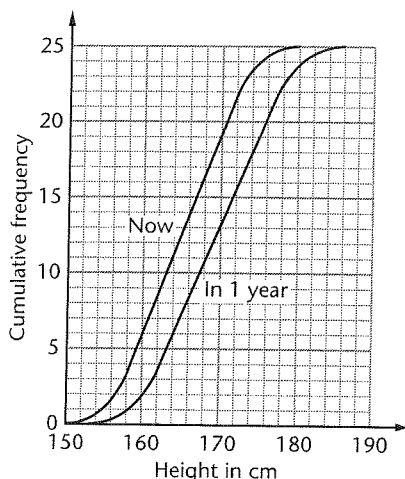
- 10 $\frac{4x + 5}{6x(2x + 1)}$
- 11 $\frac{5x + 1}{(x + 1)(x - 1)}$
- 12 $\frac{8x + 7}{(x + 2)(x - 1)}$
- 13 $\frac{2x^2 - 9x - 5}{(3x + 1)(x + 3)}$ or $\frac{(2x + 1)(x - 5)}{(3x + 1)(x + 3)}$
- 14 $\frac{x^2 + 6x + 1}{(x + 1)(x + 3)}$
- 15 $\frac{4x^2 - x + 3}{(x - 1)(x + 2)}$
- 16 $\frac{-x^2 + 5x + 2}{(x - 1)(x + 2)}$
- 17 $\frac{7x^2 - 8x - 10}{5x(x + 1)}$
- 18 $\frac{3x^2 - 17x - 15}{5x(x + 1)}$
- 19 $\frac{23x^2 + 4x + 51}{9(x - 3)(x + 2)}$
- 20 $\frac{-2x^2 + 3x + 23}{(x - 1)(x + 2)(x + 3)}$
- 21 $\frac{3(x + 1)(2x + 3)}{(2x + 1)(x + 2)}$
- 22 $\frac{2(x^2 + 7x - 3)}{(x + 3)(x - 3)}$

Exercise 9.2 (page 254)

- 1 $x = 5$
- 2 $x = 2$
- 3 $x = 3$
- 4 $x = 3$
- 5 $x = 0$
- 6 $x = 4$
- 7 $x = -3$
- 8 $x = 5$
- 9 $x = 1$
- 10 $x = -\frac{2}{3}$
- 11 $x = -2$ or 2
- 12 $x = -3$ or -4
- 13 $x = -1$ or 5
- 14 $x = -2$ or 5
- 15 $x = -1$ or $\frac{3}{4}$
- 16 $x = 1$ or $\frac{3}{4}$
- 17 $x = -\frac{1}{2}$ or 4
- 18 $x = \frac{3}{2}$ or $-\frac{5}{3}$
- 19 $x = -11$ or 2
- 20 $x = -\frac{1}{2}$ or 5
- 21 $x = 5.303$ or 1.697
- 22 $x = 0.463$ or -0.863
- 23 $x = 2.303$ or -1.303
- 24 $x = -0.21$ or 5.96

- 14 a) Translated 4 cm to right.

b)



- 15 a) 5 girls and 18 boys
b) In general, boys spent less time on the phone; the times for the girls were more evenly spread than those for the boys; there were 50 girls and 50 boys represented.
- 16 a) The 1967 outbreak had nearly 2500 cases altogether and lasted 16 weeks. The number of new cases, 81 one day, were at their greatest only 5 weeks after the first case of the disease. During the last five weeks of the outbreak, there were less than 10 new cases each day.
b) Since 25 February the 2001 outbreak had fewer new cases each day compared with 1967, until 31 March when it peaked at 59 cases. To date, there are less than half the total cases there were in 1967.

12 Simultaneous equations

Exercise 12.1 (page 292)

- 1 $x = 2, y = 3$
- 2 $x = 2, y = 3$
- 3 $x = 1, y = 2$
- 4 $x = 5, y = 6$
- 5 $x = 2, y = 1$
- 6 $x = 1\frac{1}{2}, y = 1\frac{1}{2}$
- 7 $x = 2, y = -1$
- 8 $x = 2, y = 1$

Exercise 12.2 (page 294)

- 1 $x = 4, y = 2$ or $x = -1, y = 12$
- 2 $x = -1, y = 3$ or $x = 8, y = 39$
- 3 $x = -1, y = 5$ or $x = \frac{1}{2}, y = 2\frac{3}{4}$
- 4 $x = -2, y = 5$ or $x = \frac{1}{2}, y = 3\frac{3}{4}$
- 5 $x = 5, y = -11$ or $x = -2, y = 10$
- 6 $x = 2, y = 1$ or $x = 4, y = 5$
- 7 $x = -2, y = 5$ or $x = -1, y = 3$

8 $x = \frac{4}{5}, y = -\frac{14}{25}$ or $x = -2, y = 0$

9 $x = -1, y = 11$ or $x = 4, y = 1$

10 $x = -3, y = 17$ or $x = 2, y = -3$

11 $x = -1, y = 4$ or $x = 4, y = 19$

12 $x = -1, y = 9$ or $x = 2\frac{1}{2}, y = -3\frac{1}{4}$

13 $x = -3, y = 6$ or $x = 1, y = 2$

14 $x = 0.839, y = 3.516$ or $x = -0.239, y = 0.284$

15 $x = 0, y = 0$ or $x = 1, y = 1$

Exercise 12.3 (page 296)

- 1 $x = 0, y = 7$ or $x = 7, y = 0$
- 2 $x = 5, y = 12$ or $x = -12, y = -5$
- 3 $x = 0, y = 5$ or $x = 5, y = 0$
- 4 $x = 6, y = 8$ or $x = -8, y = -6$
- 5 $x = 0, y = 8$ or $x = -6.4, y = -4.8$
- 6 $x = 2, y = 0$ or $x = -1, y = 3$
- 7 $x = 9, y = 12$ or $x = -12, y = -9$
- 8 $x = 0, y = 3$ or $x = 3, y = 0$
- 9 $x = 6, y = 8$ or $x = 8, y = 6$
- 10 $x = -3, y = -5$ or $x = 5, y = 3$
- 11 $x = -3, y = 4$ or $x = -4, y = 3$
- 12 $x = 8, y = 6$ or $x = -6, y = -8$
- 13 $x = 1.41, y = 1.41$ or $x = -1.41, y = -1.41$
- 14 $x = 0.22, y = 2.22$ or $x = 2.22, y = -0.22$
- 15 $x = 3.08, y = 5.15$ or $x = -2.28, y = -5.55$
- 16 $x = 2.83, y = -2.83$ or $x = -2.83, y = 2.83$
- 17 $x = 1.28, y = 4.83$ or $x = -1.88, y = -4.63$
- 18 $x = 0.16, y = 3.16$ or $x = -3.16, y = -0.16$

Revision exercise C1 (page 297)

- 1 a) $\frac{5x+4}{6}$ b) $\frac{2x-17}{20}$
- c) $\frac{3x}{(x+1)(x-2)}$ d) $\frac{x^2+6x-1}{(x-1)(x+2)}$
- e) $\frac{3x}{x+1}$
- 2 a) $x = 3$ b) $x = 1\frac{5}{7}$
- c) $x = -5$ or 3 d) $x = 4$ or -3
- e) $x = -2$ f) $x = 3$ or -5
- g) $x = 4$ or 5
- 3 a) $\begin{pmatrix} 2 \\ 4 \end{pmatrix}$ b) $\begin{pmatrix} 3 \\ 1 \end{pmatrix}$ c) $\begin{pmatrix} 2 \\ -2 \end{pmatrix}$
- d) $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$ e) $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$ f) $\begin{pmatrix} 0.5 \\ 1 \end{pmatrix}$
- g) $\begin{pmatrix} 5 \\ 13 \end{pmatrix}$ h) $\begin{pmatrix} -0.5 \\ 2 \end{pmatrix}$ i) $\begin{pmatrix} 3.5 \\ 2.5 \end{pmatrix}$

4 a) $(-1, 3)$ b) $(0, 0)$

c) $(5, -5)$

5 $\overrightarrow{BC} = 2\mathbf{b} - \mathbf{a}$

6 a) $\overrightarrow{AB} = 2\mathbf{b} - 2\mathbf{a}, \overrightarrow{BC} = 4\mathbf{b} - 4\mathbf{a}$

b) ABC is a straight line and BC is twice the length of AB.

7 a) $\vec{EB} = \frac{1}{2}\mathbf{p}$, $\vec{BF} = \frac{1}{2}\mathbf{q}$, $\vec{EF} = \frac{1}{2}\mathbf{p} + \frac{1}{2}\mathbf{q}$, $\vec{HD} = \frac{1}{2}\mathbf{q}$, $\vec{DG} = \frac{1}{2}\mathbf{p}$, $\vec{HG} = \frac{1}{2}\mathbf{p} + \frac{1}{2}\mathbf{q}$

b) HG and EF are equal and parallel.

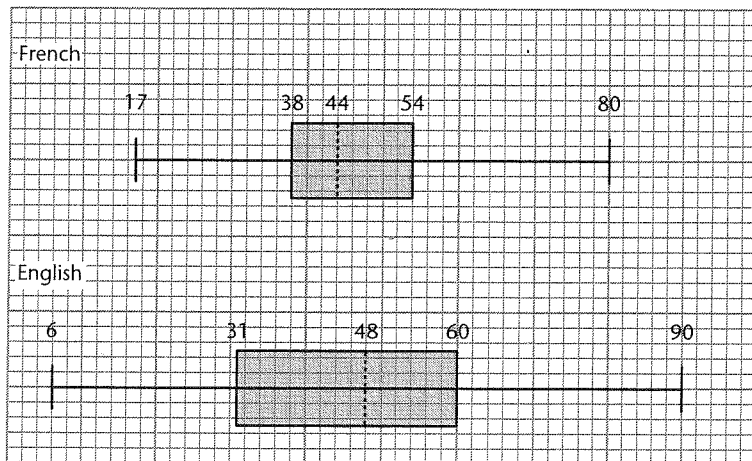
8 $\vec{EB} = \frac{1}{3}\mathbf{p} - \frac{2}{3}\mathbf{q}$

9 $DC = 5\mathbf{p}$. So AB and DC are parallel. So the shape is a trapezium.

10 Median = £212 000, IQR = £30 000

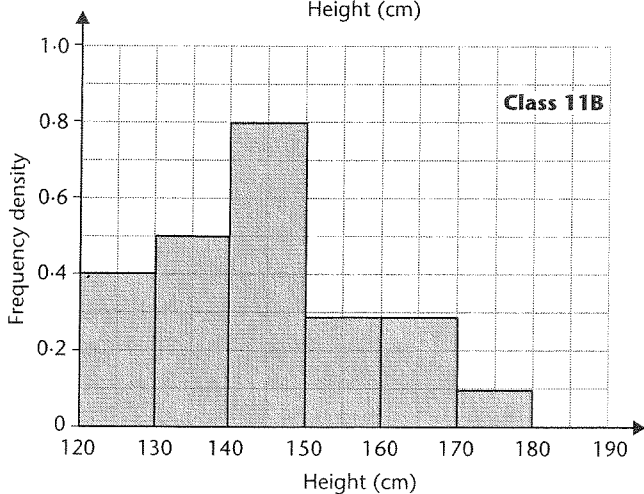
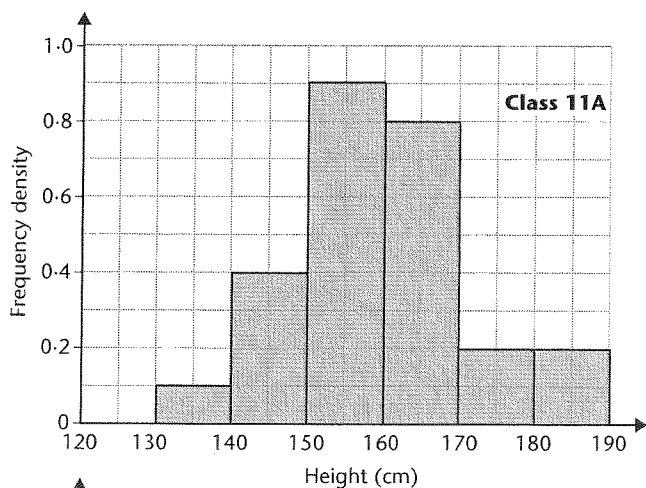
House prices are higher in the south-east, with a wider spread of prices.

11 a)



b) French: median 44, IQR 16 English: median 48, IQR 29 The English marks are higher but with a wider spread.

12 a)



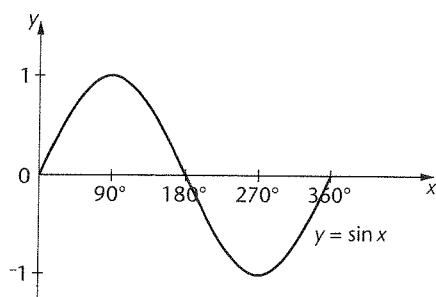
b) The students in class 11A are taller on average than those in class 11B. The range of the heights is approximately the same for both classes but class 11A has a smaller interquartile range.

- 13 a) $x = 1, y = 2$ or $x = 3, y = 6$
 b) $x = 1, y = 2$ or $x = 2, y = 5$
 c) $x = 1, y = 2$ or $x = -1, y = 10$
 d) $x = 0, y = 6$ or $x = -6, y = 0$
 14 a) $x = -2, y = 10$ or $x = 4, y = 4$
 b) $x = \frac{1}{2}, y = -\frac{1}{2}$ or $x = 3, y = 7$
 c) $x = 3, y = -1$ or $x = 2\frac{1}{2}, y = -1\frac{1}{4}$
 d) $x = 5, y = -2$ or $x = -4.6, y = 2.8$
 15 $x = -2.9, y = -0.9$ or $x = 0.9, y = 2.9$

13 Trigonometrical functions

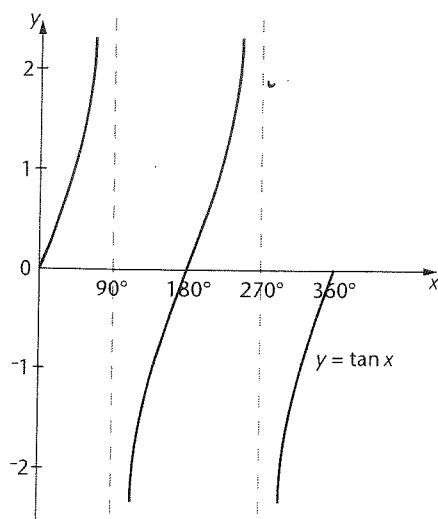
Exercise 13.1 (page 304)

- 1 Check students' graphs.
 A sketch is given here as a guide.



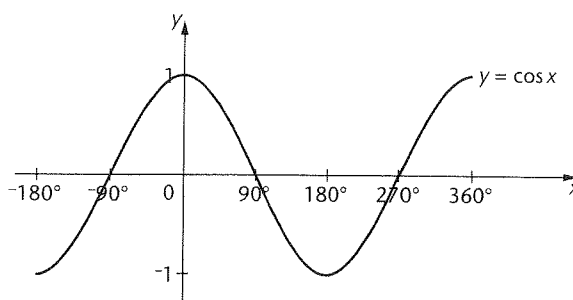
- a) $x = 0^\circ, 180^\circ, 360^\circ$
 b) $x = 27^\circ, 153^\circ$
 c) $x = 217^\circ, 323^\circ$

- 2 Check students' graphs.
 A sketch is given here as a guide.



- a) $x = 45^\circ, 225^\circ$
 b) $x = 63^\circ, 243^\circ$

3

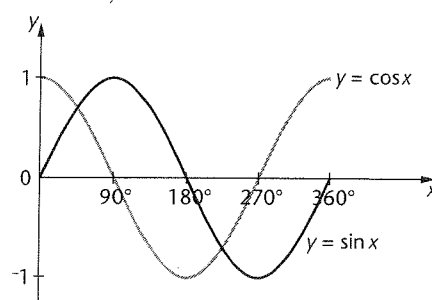


$$x = \pm 72.5^\circ, 287.5^\circ$$

- 4 See sketch for question 2.

$$x = 117^\circ, 297^\circ$$

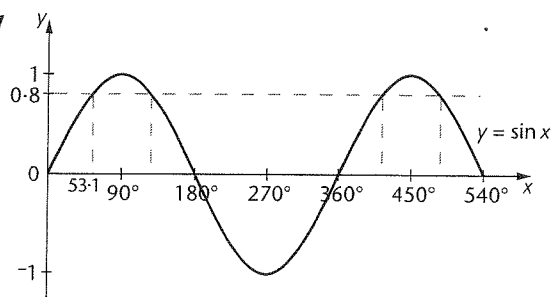
5



$$x = 45^\circ, 225^\circ$$

- 6 $x = 120^\circ, 240^\circ, 480^\circ, 600^\circ$

7



$$x = 53.1^\circ, 126.9^\circ, 413.1^\circ, 486.9^\circ$$

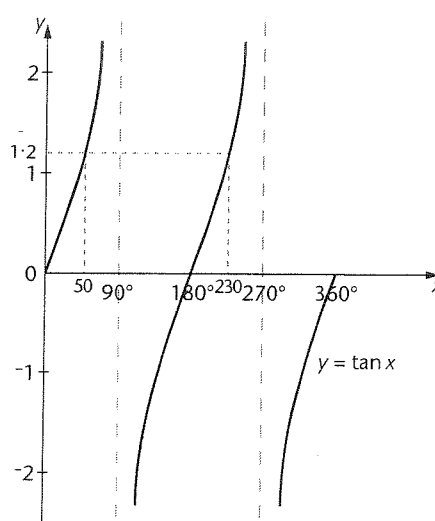
- 8 See sketch for question 1.

$$x = 192^\circ, 348^\circ$$

- 9 $x = 253^\circ, 467^\circ$

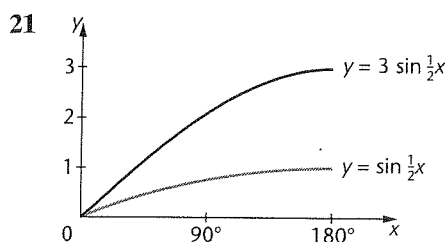
- 10 $x = 135^\circ, 315^\circ$

11 a)



- b) $x = 50^\circ, 230^\circ$

- 18 a) Translation of $\begin{pmatrix} 0 \\ -2 \end{pmatrix}$.
 b) One-way stretch parallel to the y -axis with scale factor 3.
 c) One-way stretch parallel to the x -axis with scale factor 2.
 d) One-way stretch parallel to the x -axis with scale factor $\frac{1}{2}$ and one-way stretch parallel to the y -axis with scale factor 4.
- 19 a) $y = -x^2 - 3$
 b) $y = x^2 + 3$
 c) $y = 4x^2 + 3$
- 20 a) $y = x^2 - 2x$
 b) $y = -x^2 - 2x$
 c) $y = -(x-3)^2 + 2(x-3)$ or $y = -x^2 + 8x - 15$



- 22 $a = 3$
 23 $b = \frac{1}{4}$
 24 $a = 3, b = 2$
 25 $a = -1$

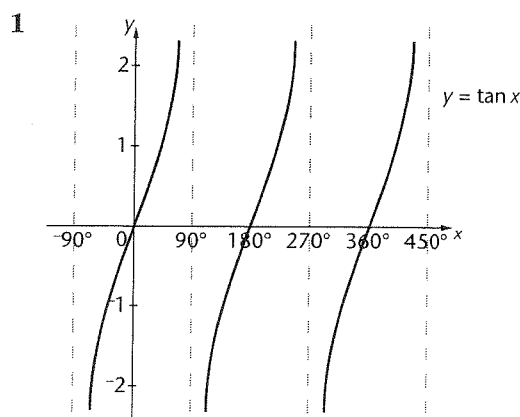
15 Probability

Exercise 15.1 (page 324)

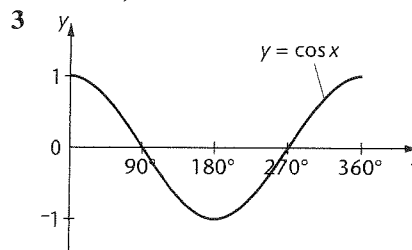
- 1 a) 0.195 to 3 d.p.
 b) 0.519 to 3 d.p.
- 2 a) $\frac{25}{49}$ b) $\frac{10}{49}$ c) $\frac{45}{49}$
- 3 a) 0.382 to 3 d.p. b) 0.618 to 3 d.p.
 c) 0.891 to 3 d.p.
- 4 a) 0.275 to 3 d.p. b) 0.123 to 3 d.p.
 c) 0.444 to 3 d.p. d) 0.718 to 3 d.p.
- 5 a) $\frac{3}{7}$ b) $\frac{4}{7}$ c) $\frac{3}{7}$
- 6 0.027
- 7 a) $\frac{3}{100}$ b) $\frac{3}{99} = \frac{1}{33}$
 c) $\frac{2}{98} = \frac{1}{49}$ d) $\frac{6}{970200} = \frac{1}{161700}$
- 8 a) 0.059 to 3 d.p. b) 0.013 to 3 d.p.
 c) 0.414 to 3 d.p. d) 0.586 to 3 d.p.
- 9 a) $\frac{7}{12}$ b) $\frac{6}{11}$
 c) 0.1515

- 10 a) $\frac{4}{15}$ b) $\frac{7}{15}$
- 11 a) 0.497 to 3 d.p. b) 0.477 to 3 d.p.
 c) 0.222 to 3 d.p.
- 12 a) 0.24 b) 0.86
- 13 a) $\frac{2}{35}$ b) $\frac{13}{35}$
- 14 0.225

Revision exercise D1 (page 327)



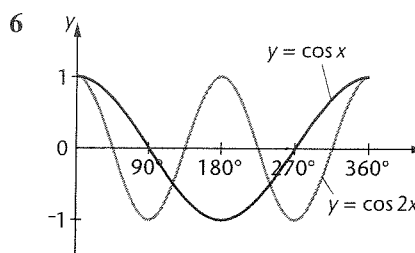
2 $x = 45^\circ, 225^\circ$



$x = 217^\circ$

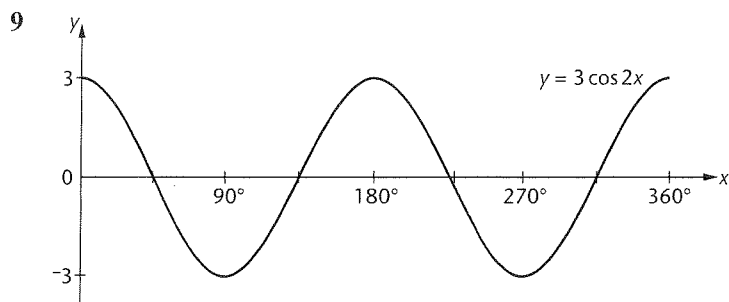
4 $x = 210^\circ, 330^\circ$

5 $x = 78.5^\circ, 281.5^\circ$



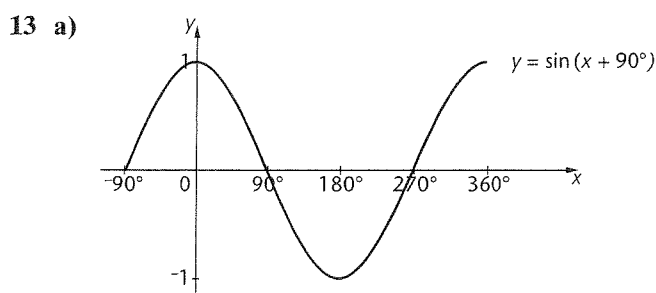
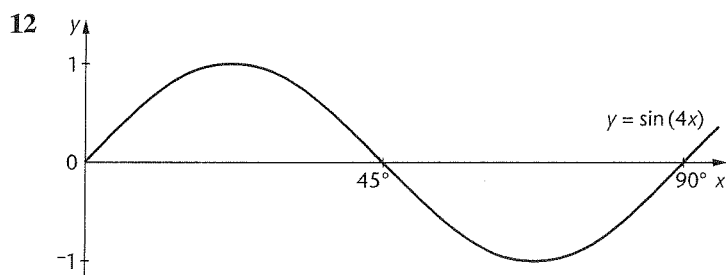
7 $x = 45^\circ, 225^\circ$

8 A(60, 0), B(30, 2)



10 $y = (x - 1)^2 - 2$ or $y = x^2 - 2x - 1$

- 11 a) One-way stretch parallel to the x -axis with scale factor $\frac{1}{3}$.
 b) One-way stretch parallel to the y -axis with scale factor 4.
 c) Reflection in the y -axis.



- b) $y = \cos x$
 14 a) $y = \cos x + 3$
 b) $y = \cos 4x$
 15 a) $y = 2[(x - 3)^2 + 1]$ or equivalent e.g. $y = 2x^2 - 12x + 20$
 b) (3, 2)
 16 a) $\frac{1}{19}$ b) $\frac{5}{76}$ c) $\frac{21}{38}$
 17 a) 0.056 b) 0.332 c) 0.612