



1

1.1

- $w = 5$
 - $x = 10$
 - $y = 12$
 - $z = 4\sqrt{6}$ or 9.8
 - $g = \sqrt{109}$ or 10.44
 - $h = 20$
 - $k = 3$
 - $x = 1$
- 120cm
- $y = 8$ or $y = 11$
 - $x = \sqrt{65}$ $x = \sqrt{33}$
- 109.2 cm
- $\sqrt{493}$ or 22.2m
- 101.6 cm
 - W=89cm, H=50cm
 - Area of 2nd TV is greater by 491 cm^2

1.2

- $h = 6.062$ or $7\sqrt{3}/2$
 - $i = 10$
 - $j = 4.04$ or $7\sqrt{3}/3$
 - $k = 3.83$
 - $l = 17.54, m = 16.48$
 - $n = 1, \alpha = 45^\circ$
- $a = 20$
 - $b = 14$
 - $c = 6\sqrt{2}, d = 6$
 - $e = 10\sqrt{3}$
- Construction
 - $\frac{\sqrt{84}}{10}$

- $\sqrt{3}$
 - 30°
 - $\frac{1}{\sqrt{2}}$
 - Proof
- $A = 36.87^\circ$
 - $B = 48.59^\circ$
 - $I = 66.04^\circ$
 - $J = 45^\circ$
 - $K = 77.05^\circ$
 - $L = 60^\circ$

6. $26^\circ 56'$

1.3

- 1.75m
 - 174.95m
- $x = 11.55$ m
 - $h = 4.1$ m
- $\alpha = 68.2^\circ, \beta = 59^\circ$
- 35m
 - 61m
- 30m
 - 71.57°
- $h = \sqrt{3}x$
 - $h = 10.39$ m

2

- $x = 12$ cm
- $x = 25$ cm
- $x = 22^\circ$
 - 96.2
- 8





5. 15
6. i. Proof
 ii. Yes. Corresponding angles are equal.
 iii. 15
 iv. 12.6
7. $x = 10$
8. i. Similar triangles - sides are in proportion
 ii. 180 m
9. (a) Peg C in line with the two trees. Peg E and D in line with each other and tree A.
 (b) 36 m
 (c) 50 m

3

3.1

1. $|AB| = \sqrt{29}$ $|BC| = \sqrt{29}$ so isosceles
2. i. Graph
 ii. (0,-1)
 iii. Proof
3. $C = (1, 3)$
 $|AC| = \sqrt{17} = |CB|$
4. i. Graph
 ii. 12.8 m
 iii. $AB \rightarrow \frac{5}{4}$ $BC \rightarrow -\frac{5}{4}$
 iv. No, the slopes do not multiply to -1 .
 v. $\tan X = \frac{5}{4}$
 $X = 51.34^\circ$
 vi. $h = 5.6m$
5. All graphs and proofs

3.2

1. i. $x - y + 1 = 0$
 ii. $x + y - 2 = 0$
 iii. $3x + 4y + 26$
 iv. $x + 2y - 4 = 0$
2. i. $x - y - 1 = 0$
 ii. $2x - y - 3 = 0$
 iii. $3x + 5y + 11 = 0$
 iv. $6x - y + 16 = 0$
3. i. Yes
 ii. Yes
 iii. No
 iv. Yes
 v. No
4. (a) (1,4)
 (b) Graph
 (c) (2,0)
 (d) -2
 (e) $y = -2x + 4$
 (f) -2
 (g) $2x + y + 12 = 0$
 (h) 1:1
5. i. (3,4)
 ii. (7,2)
 iii. (-2,5)
6. (a) No
 (b) (3,-1)
7. i. (4,0) (0,4)
 ii. (-6,0) (0,4)
 iii. (5,0) (0,3)
 iv. (2,0) (0, $-\frac{8}{3}$)





3.3

1. i. $y = -x + 4$
 $m = -1 \quad c = 4$
 - ii. $y = -2x + 3$
 $m = -2 \quad c = 3$
 - iii. $y = 3x + 9$
 $m = 3 \quad c = 9$
 - iv. $y = 2x + 3$
 $m = 2 \quad c = 3$
 - v. $y = -\frac{3}{2}x - 4$
 $m = -\frac{3}{2} \quad c = -4$
2. .

Equation	Line
$y = 2x - 4$	r
$y = x$	n
$y = -x$	s
$y = 2x + 4$	p

3. (a) Neither
(b) Perpendicular
(c) Neither
(d) Perpendicular
(e) Neither
(f) Parallel
4. (a) Line 3 - has a slope of 5
(b) Line 1 and Line 2 both have a slope of 3
(c) sketch
(d) Line 5
(e) Line 6
(f) (3,-4)

5. $3x - 2y - 2 = 0$
6. $2x + y - 2 = 0$
7. i. $\frac{1}{3}$
ii. Proof
iii. $x - 3y - 7 = 0$
8. $2x + 3y + 13 = 0$
9. $x + 3y - 9 = 0$
10. (a) (2.5,0) (0,-5)
(b) 2
(c) i. $-\frac{1}{2}$
ii. $x + 2y - 23 = 0$
11. (a) $A(3,6) \quad B(-6,0) \quad C(4,-2)$
(b) $(-\frac{3}{2}, 3)$
(c) $2x - 3y + 12 = 0$
(d) $3x + 2y - 8 = 0$
(e) $E(0,4)$
(f) $|CE| = \sqrt{52}$ is shorter

4

4.1

1. 25 cm^2
2. 40 cm
3. (a) 13 m
(b) 30 m^2
(c) 169 m^2
(d) 507
4. $7,546 \text{ cm}^2$
5. 6π units
6. 314.16 cm^2
7. 40 cm^2
8. (a) 27 cm^3
(b) 54 cm^2





9. (a) 160 cm^3
 (b) Diagram
 (c) 232 cm^2
10. (a) Incorrect units - Should be m^2
 (b) 4610
 (c) 156 m^3
11. i. 624 cm^3
 ii. Box A: $74,880 \text{ cm}^3$
 Box B: $47,880 \text{ cm}^3$
 iii. 120 phones
 iv. Box A: $11,592 \text{ cm}^2$
 Box B: $10,704 \text{ cm}^2$
 v. €0.72
 vi. €99.95
12. $300\pi \text{ cm}^3$
13. i. Diagram
 ii. 1407.4 cm^2
14. .

Radius (cm)	Height (cm)	Volume (cm^3)
1	K	πK
2	K	$4\pi K$
3	K	$9\pi K$
4	K	$16\pi K$
5	K	$25\pi K$

- (a)
 (b) Quadratic
15. $525\pi \text{ cm}^3$
16. $36\pi \text{ cm}^3$
17. $5,026.5 \text{ cm}^2$

18. (a) 100 cm
 (b) i. $51,030\pi \text{ cm}^3$
 ii. $17,010\pi \text{ cm}^3$
 iii. $\frac{2}{3}$
19. (a) 6 cm
 (b) 658 cm^3
 (c) 23.82%
20. (a) $1,152\pi \text{ cm}^3$
 (b) $65\pi \text{ cm}^3$
 (c) 17

4.2

1. 9 cm
2. 144 cm^2
3. (a) 3 cm
 (b) 18.8 cm
4. $81\pi \text{ cm}^2$
5. 4 cm
6. 4 cm
7. 7 cm
8. (a) 30 cm
 (b) $31,500 \text{ cm}^3$ or 31.5 litres
 (c) 44.6 cm
9. 5 cm



**4.3**

1. (a) $y = 2.8 \text{ cm}$
(b) $y = \frac{2x}{x-2}$
2. (a) $4.5\pi \text{ cm}^3$
(b) $\frac{3\sqrt[3]{3}}{2} \text{ cm}$
3. i. $V = 168\pi \text{ cm}^3$
ii. $7 : 8$
4. (a) $1:4$
(b) $1:8$

5

1. (a) 28 units^2
(b) i. $|AB| = \sqrt{8}$
ii. $|BC| = \sqrt{17}$
iii. $\frac{2\sqrt{17}}{3}$
2. (a) Diagram
(b) i. $x = 10.23 \text{ cm}$
ii. $A = 84 \text{ cm}^2$
 $B = 123 \text{ cm}^2$
 $C = 34 \text{ cm}^2$
3. (a) $A(-1, 3) \quad B(5, 3) \quad C(-1, 8)$
(b) $AB : y = 3 \quad AC : x = -1 \quad BC : 5x + 6y - 43 = 0$
(c) 39.81°
(d) i. $|BC| = \sqrt{61} \text{ units}$
ii. $\frac{61\pi}{4} \text{ units}^2$
(e) $6x - 5y + 21 = 0$
4. (a) Use the circumference to calculate the radius, which will give the distance that Maria is from the centre of the base.
(b) 125 m

