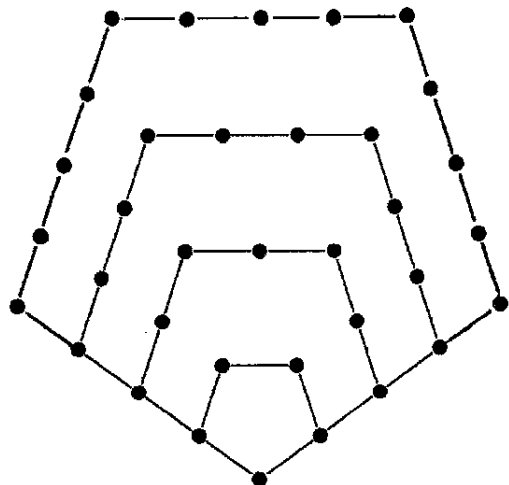


1996 — CREDIT LEVEL ANSWERS

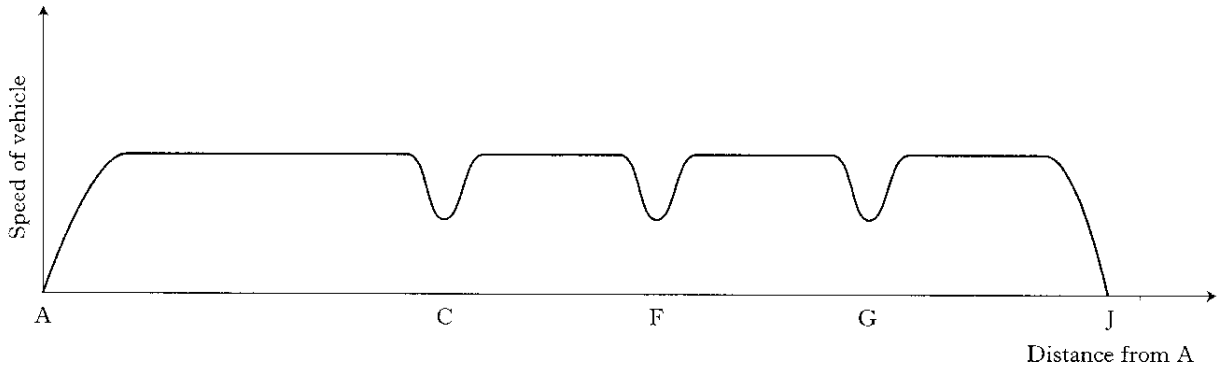
1. $x \leq 6$ 2. 21 m^3 3. 66.8° 4. 76 cm^2
 5. (a) $\pounds 117.50$ (b) $E = 0.15t + 35$ 6. 1.52×10^8
 7. (a) Tank was refilled (b) BC and DE {the gradient is less}
 8. $P = 2t + 3$ 9. NO; {short by 1.67 l }
 10. (a) $(3x+1)(x-2)$ (b) $m = \frac{3}{8}$ {or 0.375 } (c) $y = 0$ or 6
 11. $PR = 237.7 \text{ m}$ 12. 62.3p per litre
 13. $x = 60.9$ or 240.9
 14. (a) 16 (b) (i) 8 (ii) Number = $\left[\frac{1300}{\text{B}} \right] \times \left[\frac{1000}{\text{L}} \right]$
 15. Height $\doteq 47.7 \text{ m}$ 16. (a) $b+1$ (b) $\frac{3\sqrt{2}}{2}$ (c) $T = \frac{Q-p^2}{3}$
 17. (a) 35 (b) $a = \frac{3}{2}$ $b = \frac{1}{2}$



18. (a) Root is $x \doteq 1.2$ (b) $\frac{2x-10}{x(x-2)}$
 19. (a) $w = 18 - 2x \text{ cm}$ (b) Proof {Hint use $V = l \times b \times h$. Here $V = l \times w \times d$ }
 (c) Dimensions are $100 \text{ cm} \times 9 \text{ cm} \times 4.5 \text{ cm}$

1997 — CREDIT LEVEL ANSWERS

1. $AB \doteq 84$ cm
2. (a) 650 m^3 (b) 4.2 m
3. (a) $C = 15d$ (b) $C = 10d + 50$ (c) Apex Hire
4. Area $\doteq 7500 \text{ m}^2$
5. £223.19
6. $P = 90$ mm
7. (a) A, B, E, H, I and J
(b)



8. (a) -42 (b) (i) $2x(x-3)$ (ii) $\frac{2x}{x+3}$
9. (a) $\frac{7^2 \times 8^2}{4}$ (b) $\frac{n^2 \times (n+1)^2}{4}$ (c) $\frac{n^2 \times (n+1)^2 - 7^2 \times 8^2}{4}$
10. (a) $L = kD\sqrt{S}$ (b) 42 litres
11. (a) $6a^2 - 17ab + 5b^2$ (b) $x = -\frac{1}{2}$ or 5 (c) $x = 26$
12. $GE \doteq 64$ km
13. $a = 2; k = 3$
14. (a) 20 (b) Proof (c) $2q - p = 5$ (d) $p = 1; q = 3$
15. (a) $10\sqrt{2}$ (b) $2y^3$
16. (a) 2.2 m (b) 1.75 m (c) After 2 seconds

1998 — CREDIT MATHEMATICS ANSWERS

1. £101
2. (a) X (b) X, because graph shows two rates of descent
3. (a) 0.75 m (b) 7.2 m³
4. (a) 9×17 (b) $n(2n - 1)$
5. $y = 2x + 1$
6. 5 cm
7. (a) 2.48 m (b) 26.72 m
8. 4.7 m
9. (a) £68 (b) $C = 4p + 6(d - 2)$
10. 409.7 m
11. (a) $a = 1.5; b = -2.5$ (b) $k = dt + m$ (c) $x = 0$ and $x = 7$
12. 16.6 m
13. (a) $T \propto \frac{S}{E}$ or $T = k \frac{S}{E}$ (b) 18 minutes
14. (a) $(15 \times 3) - (1 \times 17) = 28$ {other answers possible}
 (b) Prove that $(n + 14)(n + 2) - n(n + 16) = 28$ where n is top left hand number in square
15. $x = 73.4$ and 286.6
16. $v = 13$
17. (a) $(2a + 3b)(2a - 3b)$ (b) $\frac{1}{6}x$
18. (a) 19.2 m (b) 19 m
19. (a) $2\sqrt{3} - 2$ (b) b

**Pocket answer section for
SQA Mathematics Standard Grade Credit Level
1999, 2000 and 2001**

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**Mathematics
Credit Level
1999**

1. £12 000
2. 2.4×10^5
3. $x < \frac{2}{3}$
4. DG = 35.5 km
5. $T = \frac{1}{2}S - 2$
6. $(3x + 1)(x - 2)$
7. (a) £26.95
(b) $C = 12.25 + 0.35t$
8. (a) 3, 7, 10
(b) $S_6 = -4$
(c) $[p] + [q] + [p + q] + [p + 2q] + [2p + 3q] + [3p + 5q] = 8p + 12q = 4(2p + 3q) = 4 \times 5^{\text{th}} \text{ term}$
9. 367.45 cm
10. 0.45 m^3
11. 2.7 litres
12. $x = 221.8, 318.2$
13. (a) $2x + 3y = 580$
(b) $x + y = 250$
(c) $x = 170$
14. 9.38 m

15. (a) $x + x + BC + CD = 6$
 $2BC = 6 - 2x$
 $BC = 3 - x$
(b) $x(3 - x) + x(3 - x - x)$
 $= 3x - x^2 + 3x - x^2 - x^2$
 $= 6x - 3x^2$
(c) $A(1) = 3\text{m}^2$
16. (a) $4\sqrt{2}$
(b) $a^{-3} + 4a^2$
(c) $x^3 + x^2 - 10x + 8$
17. (a) 32.7 m
(b) length of side = l
 $2l^2 = (32.7)^2$
 $l = 23.122$
 $l \approx 23 \text{ m}$
18. (a) $f(4) = 81$
(b) $x = 3/2$
19. (a) $d = kt^2$ or $\frac{d}{t^2}$ is a constant
(b) $d = 5t^2$
(c) distance is multiplied by 36

**Mathematics
Credit Level
2000**

1. 3410
2. 2.36×10^{-2}
3. $V = \frac{3}{4}t + 5$

Mathematics

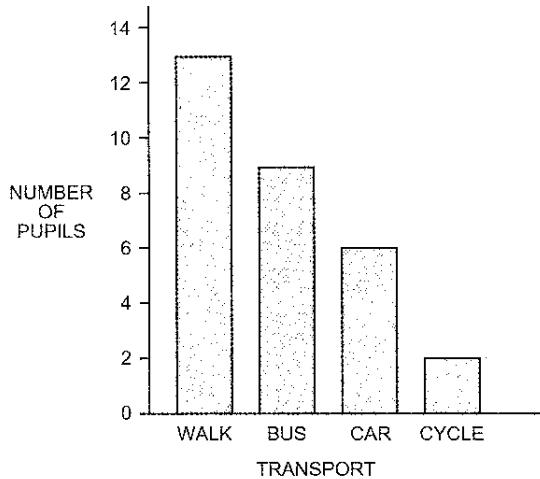
Credit Level

2000 (cont.)

4. $a + b = y$

5. $x = 1.2, -4.2$

6.



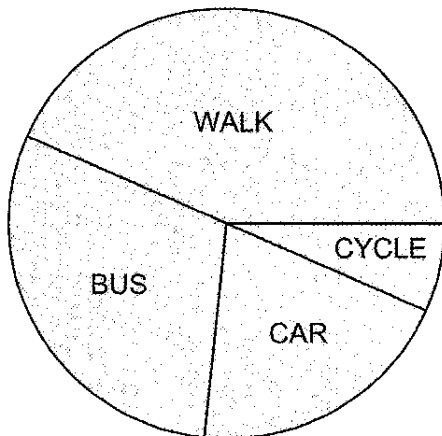
OR

Walk: $\frac{13}{30} \times 360 = 156^\circ$

Bus: $\frac{9}{30} \times 360 = 108^\circ$

Car: $\frac{6}{30} \times 360 = 72^\circ$

Cycle: $\frac{2}{30} \times 360 = 24^\circ$



7. (a) $l + b = 130$

(b) $5l + 8b = 770$

(c) $l = 90, b = 40$

8. $W = \frac{5}{P-4}$

9. $ED = 10.2 \text{ cm}$

10. $d^2 \neq 22.5^2 + 30^2$
Frame is not rectangular

11. (a) $7 = 4^2 - 3^2$

(b) $19 = 10^2 - 9^2$

(c) n^{th} odd number $= n^2 - (n-1)^2$
 $= 2n - 1$

(d) n^{th} odd number $= 2n - 1$
 $(n+1)^{\text{th}}$ odd number $= 2n + 1$
product $= (2n-1)(2n+1) = 4n^2 - 1$ which is always odd

12. $y < -1$

13. (a) $F = \frac{kV^2}{R}$

(b) 80 kilonewtons

14. 112.3 m

15. $PR = 94.99 \text{ cm}$

16. $A = 41.8, 138.18$

17. (a) $(x+4)(x-4)$

(b) $\frac{5}{2x+3}$

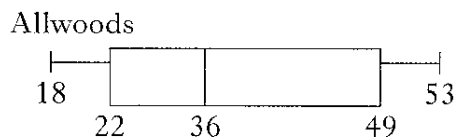
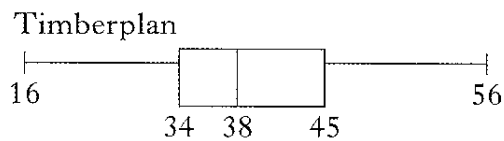
18. Volume of space = volume of cylinder - volume of vase
 $= \pi \times 6^2 \times 20 - \frac{1}{2} \times 12 \times 12 \times 20$
 $= 720\pi - 1440$

Mathematics Credit Level 2000 (cont.)

19. (a) $(90^\circ, 1)$
 (b) T $(30^\circ, 0.5)$
 P $(150^\circ, 0.5)$
20. (a) $a^{3/2} + \frac{1}{a^{1/2}}$ or $a^{3/2} + a^{-1/2}$
 (b) $3\sqrt{2} - \sqrt{2} = 2\sqrt{2}$
21. (a) 1527.2 cm^2
 (b) Minimum = 45 cm

Mathematics Credit Level—Paper 1 (Non-calculator) 2001

1. 13.5
2. $8\frac{7}{24}$
3. $f(-5) = (-5)^2 - 3(-5)$
 $= 40$
4. $x = 3$
5. (a)



- (b) **Timberplan**
 Smaller Interquartile Range (or equivalent)

$$\begin{aligned} 6. \text{ gradient} &= \frac{\text{distance up}}{\text{distance along}} \\ &= \frac{t-a}{t^2-a^2} \\ &= \frac{1}{t+a} \end{aligned}$$

7. (a) $\frac{310}{600}$ or equivalent
 (b) 70
8. (a) A $(0, -3)$
 (b) B $(-\frac{3}{2}, 0)$ C $(\frac{1}{2}, 0)$
 (c) -4
9. (a) $(7+1)(7^2-7+1)$
 (b) $(n+1)(n^2-n+1)$
 (c) $(2p+1)(4p^2-2p+1)$
10. $\frac{\sqrt{72}}{24}$ or $\frac{6\sqrt{2}}{24}$ or $\frac{\sqrt{2}}{4}$
11. (a) $I = \frac{20}{8}$
 (b) $c = 1$
 (c) 2^c is a Minimum
 $2^c = 1$
 $I = 20$

Mathematics Credit Level—Paper 2 2001

1. 5.256×10^9
2. (a) Mean = 84.3
 Standard deviation = 1.28
 (b) Rural prices are higher on average, and
 Rural prices have a greater spread

Mathematics

Credit Level—Paper 2

2001 (cont.)

3. Total = £150 907.53

4. (a) gradient = $m = \frac{(6-2)}{12-0}$
 $= \frac{1}{3}$

intercept = $c = 2$

$$y = \frac{1}{3}x + 2$$

$$3y = x + 6$$

(b) (6,4)

5. 7.3 centimetres

6. 157.8°

7. $x^\circ = 184.6^\circ, 355.4^\circ$

8. 275.7 cm^3

9. $R = \frac{kL}{d^2}$; 6.75 millimetres

10. (a) 107.5°

(b) 66.8 cm

11. (a) $30 + x$

(b) $A = (30 + x)(20 + x)$
 $= 600 + 30x + 20x + x^2$
 $= 600 + 50x + x^2$

(c) Minimum dimensions are
35 cm and 25 cm

Mathematics
Credit Level 2002
Paper 1 (Non-calculator)

1. 0.88

2. $1\frac{1}{2}$ or $\frac{3}{2}$

3. $x < 1$

4. -6

5. (a) $(p - 2q)(p + 2q)$

(b) $\frac{(p - 2q)(p + 2q)}{3(p + 2q)} = \frac{p - 2q}{3}$

6. $h = 2L + t$

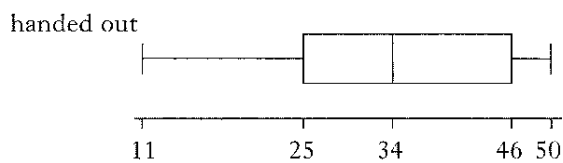
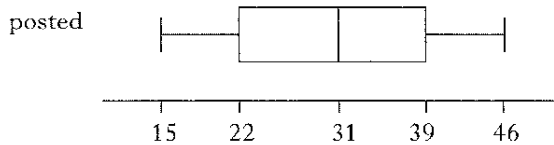
7. Proof

$$\begin{aligned}\cos A &= \frac{b^2 + c^2 - a^2}{2bc} \\ &= \frac{5^2 + 4^2 - 6^2}{2 \times 5 \times 4} \\ &= \frac{25 + 16 - 36}{40} \\ &= \frac{5}{40} \\ &= \frac{1}{8}\end{aligned}$$

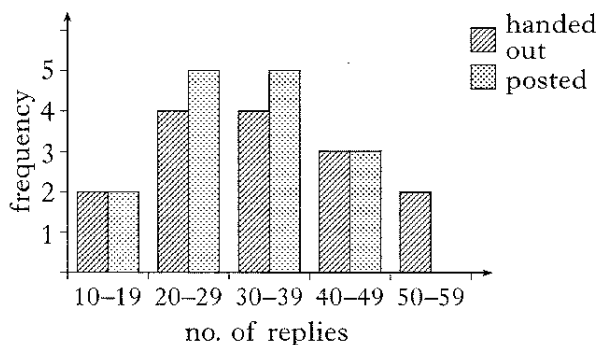
8. Stem + leaf diagram

posted						handed out					
				5	1	1					
			2	1	2	2	5	5	9		
	6	5	3	2	3	1	4	6	8		
				6	4	0	6	9			
					5	0	0				

Box plot



Bar chart



9. $x = -1, 4$

10. $5\sqrt{3}$

11. y^2

12. $g = \frac{7}{9}h + 12$

13. (a) $4p + 3g = 130$

(b) $2p + 4g = 120$ or equivalent

(c) 92 pence or £0.92

Mathematics

Credit Level 2002

Paper 2

1. $3.43 \times 10^{-3} \text{ kg}$

2. £127.66

3. 1.3 or -2.8

4. 190.8 km

5. 1.2 m^3

6. (a) 3.3 m

(b) 0.8 m

7. 41 one-kg tins

8. **A** 23.6° , **B** 156.4°

9. (a) 110 p

(b) $c = 75 + 5(m - 3)$

(c) $c = 80 + 2(m - 2)$

(d) 6 minutes

10. (a) $T = \frac{kv^2}{r}$

(b) Tension is multiplied by 18

11. (a) $n = 5$

(b) $(1 + 2 + 4 + 8 + 16) = 32 - 1$

(c) $2^n - 1$

12. 3 m

Mathematics
Credit Level 2003
Paper 1 (Non-calculator)

1. 6.24
2. $\frac{17}{28}$
3. $-6x - 16$
4. (a) 15
(b) $-\frac{1}{2}$
5. $(2x + 3)(x - 5)$
6. (a) 2
(b) $y = 2x - 5$
(c) $k = 1$
7. (a) $3n + 2b = 145$
(b) $5n + 3b = 240$
(c) £5
8. (a) $\frac{1}{10}$
(b) $\frac{1}{40}$
9. 25%
10. (a) 9
(b) 75
11. (a) 9
(b) n^2
(c) $2n + 1$
12. (a) 4
(b) $2\sqrt{3}$
13. $3x$

Mathematics
Credit Level 2003
Paper 2

1. 5090
2. (a) 46
(b) 4.0987
(c) Less variation in price of sugar than there is in milk
3. 47.7 km
4. (a) 1099 cm^3
(b) 7.6 cm
5. 8
6. 6.6 cm
7. 37°
8. (a) -1, 3
(b) 2
(c) (1, -8)
9. 101.25 millilitres
10. 3.25 m
11. (a) $\frac{x}{75}$ hours
(b) 60 km/h

Mathematics

Credit Level

Paper 1 2004

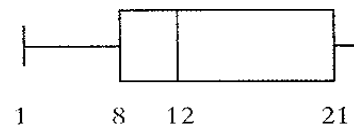
1. 2.77

2. $\frac{11}{5}$

3. 2

4. $\frac{7m + 3}{m(m + 1)}$

5. Average Monthly Temperat



6. 400 g

7. School raffle

8. (a) 1st term x

2nd term y

3rd term $x + y$

4th term $x + 2y$

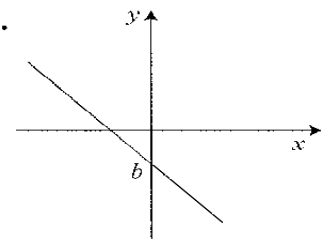
5th term $2x + 3y =$

(b) $3y + 5x = 17$

(c) $x = 4, y = -1$

9. $a = 2, b = 4$

10.



11. (a) $10\sqrt{3}$

(b) $1\frac{1}{3}$

12. $10 = 2\pi r, r = \frac{5}{\pi}$

$$A = \pi \times \left(\frac{5}{\pi}\right)^2$$

$$A = \frac{25}{\pi}$$

Mathematics Credit Level Paper 2 2004

- 8.64×10^{12}
- (a) $v = -\frac{2}{3}t + 100$
(b) 45 minutes
- $\bar{x} = 51, s.d = 1.41$
- 128 mg
- 1190 m
- 18.4°
- 80 cm
- 800 mm
- 1902 cm^3
- $228.6^\circ, 311.4^\circ$
- (a) area of lawn = $3x^2$
area of path = $5x + 2$
 $3x^2 = 5x + 2$
 $3x^2 - 5x - 2 = 0$
(b) 6 m

Mathematics Credit Level Paper 1 2005

- 2.88
- $\frac{21}{6}$ $3\frac{1}{2}$
- £17.50
- $\frac{9}{36}$
- $y = -2x + 6$
- $\frac{2}{5}$
- 80 (km/h)

Speed	f	Cumulative Frequency
30	1	1
40	4	5
50	9	14
60	14	28
70	38	66
80	47	113
90	51	164
100	32	196
110	4	200
	200	

- (a) $5^2 - 3^2$
(b) $4n$
- (a) 25 litres
(b) $R = \frac{2000}{c} - kt$
- 6cm
- (a) $25\sqrt{2}$
(b) $t = \frac{1}{2}$
- 3.5 cm

**Mathematics
Credit Level
Paper 2 2005**

1. 3.24×10^{15}
2. 79.5, 7.09
3. 187.5cm^2
4. 2.2, -4.2%
5. not right-angled
6. 48 metres
7. 11.0 km
8. 6 cm
9. (a) £10
(b) 5 pence
- 10.(a) 23°
(b) 10.0 m
- 11.(a) 35.3° , 144.7°
(b) 17.6° or 72.4°

**Mathematics
Credit Level Paper 1
2006 (non-calculator)**

1. 6.4
2. $4\frac{6}{35}$ or $\frac{146}{35}$
3. -5
4. $y = \frac{2}{3}x + 8$
5. (a) $(2x - y)(2x + y)$
(b) $\frac{2x - y}{3}$
6. -10
7. 540 ml
8. $y = (x - 1)^2 - 4$
9. (a) $x + y = 20$
(b) $5x + 2y = 79$
(c) 13
- 10.(a) 150m^2
(b) 12m
- 11.(a) $3x$
(b) (i) £38
(ii) $2x + 8$
(c) 9

Mathematics

Credit Level

Paper 2 2006

1. $3 \cdot 12 \times 10^8$ km

2. (a) 76.5, 6.75

(b) *Valid comments**for example:*

- The children's pulse rates tend to be higher.
- There is less variation in the children's pulse rates.

3. £300

4. (a) $3x^2 + 11x - 4$

(b) $2m^{\frac{1}{2}} + m^{\frac{5}{2}}$

(c) $\sqrt{5}$

5. $11 \cdot 3^\circ$

6. (a) 124°

(b) 305 m

7. (a) 504 cm^3

(b) 327 cm

8. 2230 grams

9. (a) 14

(b) $65 = \frac{1}{2}n(n-3)$

$$n^2 - 3n - 130 = 0$$

(c) 13

10.(a) 3.87 metres

(b) 150.6 seconds

(c) 209.4 seconds

11.(a) $(3 + x)$ cm

(b) Method 1:

$$\frac{PQ}{8} = \frac{3 + x}{6}$$

$$6PQ = 8(3 + x)$$

$$PQ = 4 + \frac{4}{3}x$$

Method 2:

$$SF = \frac{3 + x}{6}$$

$$PQ = \left(\frac{3 + x}{6}\right) \times 8$$

$$PQ = 4 + \frac{4}{3}x$$