

**MARK SCHEME for the October/November 2011 question paper
for the guidance of teachers**

0581 MATHEMATICS

0581/11

Paper 1 (Core), maximum raw mark 56

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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|---------------|---------------------------------------|-----------------|--------------|
| Page 2 | Mark Scheme: Teachers' version | Syllabus | Paper |
| | IGCSE – October/November 2011 | 0581 | 11 |

Abbreviations

| | |
|-----|----------------------------|
| cao | correct answer only |
| cso | correct solution only |
| dep | dependent |
| ft | follow through after error |
| isw | ignore subsequent working |
| oe | or equivalent |
| SC | Special Case |
| www | without wrong working |

| Qu. | Answers | Mark | Part Marks |
|-----------|---|----------------------------------|---|
| 1 | $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$ | 1 | |
| 2 | 24 or 24 out of 30 | 2 | M1 for $\frac{4}{5} \times 30$ |
| 3 | 1.8 | 2 | M1 for $1.4 \div 7$ or SC1 for answer 180 |
| 4 | 16 | 2 | B1 for 1cm to 0.5km oe or 800 000 (cm) or figs 16 |
| 5 | (a) 25 (b) Green cao | 1 1 | |
| 6 | 7.5(0) cao | 2 | M1 for $\frac{258.75}{4.6}$ |
| 7 | (a) 120 (b) $\frac{9}{25}$ cao | 1 2 | B1 for $\frac{36}{100}$ or $\frac{18}{50}$ |
| 8 | (a) 7853 to 7855 or 7850 or 7860 www (b) 0.7853 to 0.7855 or 0.785 or 0.786 | 2 1ft | M1 for $\pi \times 50^2$ Their (a) $\div 10\ 000$ evaluated |
| 9 | (a) 15 (b) 2 (pm), 6 (pm) (c) 15 | 1 1 1 | Allow -15 |
| 10 | (a) Rectangle or rhombus (b) Isosceles (triangle) (c) 5 cao | 1 1 1 | Either one or both given |

| Page 3 | Mark Scheme: Teachers' version | Syllabus | Paper |
|--------|--------------------------------|----------|-------|
| | IGCSE – October/November 2011 | 0581 | 11 |

| | | | |
|----|---|--------------------|--|
| 11 | $\frac{11k}{24k}$ final answer www | | <p>Method 1 (Addition first)</p> <p>B1 $\frac{8}{12} + \frac{3}{12}$ or $\frac{8+3}{12}$ oe</p> <p>M1 $\frac{1 \times \text{their } 11}{2 \times \text{their } 12}$</p> <p>A1</p> <p>Method 2 (Multiplication first)</p> <p>B1 $\frac{2}{6} + \frac{1}{8}$ or $\frac{1}{3} + \frac{1}{8}$ oe</p> <p>M1 $\frac{ad+bc}{bd}$ for their $\frac{a}{b} + \frac{c}{d}$</p> <p>A1</p> <p>If M0, SC1 if $\frac{11}{12}$ is only followed by $\frac{11}{24}$ or if zero, SC1 if work is entirely in decimals with answer of 0.458$\dot{3}$ to 0.45835</p> |
| 12 | (a) Correct ruled line (b) -2.7, 0.7 | 1 1, 1ft | B2ft their ruled line through (0, 3) for two intersections given to 1 decimal place or B1 for -2.70 to -2.75 and 0.70 to 0.75 or B1ft their ruled line through (0, 3) for two intersections not given to 1 decimal place |
| 13 | 135 cao | 3 | M1 for 720 or $(6-2) \times 180$ oe seen in working and M1 for equation $180 + 4x = \text{their } 720$ or M1 for $(360 - 180) \div 4 (= 45)$ oe seen in working and M1 dep for $180 - \text{their } 45$ |
| 14 | (a) $9x - 10$ final answer (b) $2x^3 - 3x$ final answer | 2 2 | B1 for $6x - 4$ or $3x - 6$ or for answer of $9x + j$, or $kx - 10$ B1 for answer in form $2x^3 + m$ or $n - 3x$ |
| 15 | (a) Negative (b) Correct point (c) (i) Accurate ruled line (ii) English mark | 1 1 1 1ft | Ignore embellishments Follow through their (c)(i) |
| 16 | (a) 70 (b) (i) $(y =) 80$ (ii) $(z =) 40$ (iii) $(t =) 10$ | 2 1 1 1ft | B1 for angle $ABD = 70^\circ$ stated or seen on the diagram Follow through $90 - \text{their } y$ or $50 - \text{their } z$ |

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|---------------|---------------------------------------|-----------------|--------------|
| Page 4 | Mark Scheme: Teachers' version | Syllabus | Paper |
| | IGCSE – October/November 2011 | 0581 | 11 |

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|-----------|---------------------------------|----------|--|
| 17 | (a) 7.42 or 7.416... cao | 3 | M2 for $\sqrt{8^2 - 3^2}$ or complete alternate method or M1 for $x^2 + 3^2 = 8^2$ or better |
| | (b) 67.97 to 68(.0) cao | 2 | M1 for $\cos(y) = \frac{3}{8}$ oe |
| 18 | (a) 75 | 2 | M1 for $\frac{500 \times 5 \times 3}{100}$ oe or SC1 for answer of 575 |
| | (b) 3.81(25) | 4 | M2 for $500 \times 1.05 \times 1.05 \times 1.05$ or M1 for $500 \times 1.05 \times 1.05$ A1 for 578.81(25) or 78.81(25) seen and A1ft for value of $500(1.05)^3 - 500$ – their (a) |