

MARK SCHEME for the October/November 2013 series

0581 MATHEMATICS

0581/22

Paper 2 (Extended), maximum raw mark 70

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.



Cambridge will not enter into discussions about these mark schemes.

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|---------------|--------------------------------------|-----------------|--------------|
| Page 2 | Mark Scheme | Syllabus | Paper |
| | IGCSE – October/November 2013 | 0581 | 22 |

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 |
| soi | seen or implied |

| Qu. | Answers | Mark | Part Marks |
|-----|--|------------|---|
| 1 | 19% 0.719 ⁵ $\sqrt{0.038}$ sin 11.4 1/5 | 2 | B1 for decimals [0.19], [0.2], 0.194..., 0.197..., 0.192... seen Or for four in correct order |
| 2 | (a) -447 (b) 2 | 1 1 | |
| 3 | 15.7 or 15.70 to 15.71 | 2 | M1 for $2 \times \pi \times 2.5$ |
| 4 | 160 | 2 | M1 for $\frac{8}{18} \times 360$ oe |
| 5 | (a)  (b) Some possible answers:  | 1 1 | |
| 6 | $[\pm]\sqrt{y-4}$ final answer | 2 | M1 for first move completed correctly M1 for second move completed correctly on answer line |
| 7 | 170 | 2 | M1 for $\frac{1}{2} \times (12 + 22) \times 10$ oe |
| 8 | 3619 to 3620 | 2 | M1 for $\frac{1}{2} \times \frac{4}{3} \times \pi \times 12^3$ or better |
| 9 | decagon | 3 | M1 for $360 \div 36$ oe A1 for 10 |
| 10 | 10.1[0] | 3 | M1 for 1.3199 and 1.3401 seen and M1 for 500×1.3199 or 500×1.3401 or for $500 \times (\text{their highest} - \text{their lowest})$ oe |
| 11 | 120 | 3 | M1 for $v = \frac{k}{\sqrt{d}}$ A1 for $k = 600$ |

| Page 4 | Mark Scheme | Syllabus | Paper |
|--------|-------------------------------|----------|-------|
| | IGCSE – October/November 2013 | 0581 | 22 |

| | | | |
|----|----------------------------|-----|---|
| 19 | (a) $-2a - 2c$ oe | 2 | M1 for BO = $-a - c$ or for any correct route or correct unsimplified expression |
| | (b) $2a + c$ | 2 | M1 for any correct route or correct unsimplified expression |
| | (c) $-a - c$ oe | 2FT | FT <i>their (a)</i> or correct answer Or M1 for a correct non direct route from O to E or for correct unsimplified expression or for correct FT unsimplified |
| 20 | (a) 4.05 to 4.2 | 1 | |
| | (b) 2.6 to 2.75 | 2 | B1 for 9.6 seen |
| | (c) 2.05 to 2.25 | 2 | B1 for [UQ] 5.0 to 5.1 and [LQ] 2.85 to 2.95 seen |
| | (d) $\frac{5}{48}$ | 2 | M1 for 5 |
| 21 | (a) 37.2 or 37.17 to 37.19 | 3 | M2 for $\sin[] = \frac{4 \times \sin 65}{6}$ or M1 for $\frac{4}{\sin[]} = \frac{6}{\sin 65}$ oe |
| | (b) 11.7 or 11.72 to 11.74 | 3 | M1 for [B =] $160 - 65 - \text{their (a)}$ M1 for $\frac{1}{2} \times 4 \times 6 \times \sin$ <i>their</i> 77.8 |