# MARK SCHEME for the October/November 2012 series

# 0581 MATHEMATICS

**0581/12**        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 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.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

**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 | $\dfrac{15}{56}$ | 1 | |
| 2 | 620 | 1 | |
| 3 | **(a)** 8000 cao | 1 | |
|   | **(b)** 0.08 cao | 1 | |
| 4 | **(a)** 91 700 000 | 1 | |
|   | **(b)** $9.17 \times 10^7$ | 1 ft | Their **(a)** in standard form. |
| 5 | **(a)** $\dfrac{5}{19}$ oe | 1 | 0.263 |
|   | **(b)** $\dfrac{11}{19}$ oe | 1 | 0.579 or 0.5789 |
| 6 | $[C=]\ \dfrac{F-32}{1.8}$ oe<br><br>final ans. | 2 | **M1** for first or second step correct<br>e.g. $F - 32 = 1.8\,C$ |
| 7 | $\begin{pmatrix} -2 \\ -10 \end{pmatrix}$ | 2 | **B1** for each correct component or $[3\mathbf{b}] = \begin{pmatrix} -6 \\ -9 \end{pmatrix}$ seen |
| 8 | **(a)** –7 | 1 | |
|   | **(b)** (+) 4 | 1 | |
| 9 | 16 | 3 | **M2** for $\dfrac{40.60-35}{35} \times 100$ or $\dfrac{40.6}{35} \times 100 - 100$ or<br><br>**M1** for $40.60 - 35$ or $\dfrac{40.6}{35}$ |
| 10 | **(a)** 12 and/or 18 | 1 | |
|    | **(b)** 16 | 1 | |
|    | **(c)** 13 | 1 | |

| 11 | **(a)** 375 | 1 | |
|----|-------------|---|---|
| | **(b)** 22.5 | 2 ft | **M1** for their **(a)** ÷ 1000 × 60 or 1500 × 15 ÷ 1000<br>If zero **SC1** for answer figs 225 |

| 12 | **(a)** 4 | 1 | |
|----|-----------|---|---|
| | **(b)** 2 | 1 | |
| | **(c)** 1 cao | 1 | |

| 13 | 113 000 or<br><br>112 795 to 112 840 | 3 | **B1** for 85 000<br><br>**M1** for $\pi \times 0.65^2 \times$ figs 85 |
|----|------------------------------------|---|---------------------------------------------------|

| 14 | **(a)** 5 30 pm | 1 | |
|----|----------------|---|---|
| | **(b)** 67 | 2 | **M1** for 10h 45min and 3h 15min, oe seen or 53.75<br>**and** 3.25 or 53.45 **and** 3.15 |

| 15 | **(a)** 50 | 2 | **M1** for method of finding base angle of isosceles<br>triangle (could be on diagram). |
|----|-----------|---|---|
| | **(b)** 65 | 1 ft | 115 – their **(a)** or (180 – their **(a)**) ÷ 2 |

| 16 | ($) 693 (.00) | 3 | **M1** for $600(1 + \dfrac{7.5}{100})^2$ or equivalent in stages.<br>**A1** for 693.4 or 693.37 or 693.38 or 693.375<br>**A1ft** for their answer to the nearest dollar<br>If zero SC2 for 93 and<br>**SC1** for 93.4 or 93.37 or 93.38 |
|----|---------------|---|---|

| 17 | **(a)** $2x\,(3x - 4y)$ final ans. | 2 | **M1** for $x\,(6x - 8y)$ or $2\,(3x^2 - 4xy)$ |
|----|-----------------------------------|---|---|
| | **(b)** $7a^7$ final ans. | 2 | **M1** for $7a^k$ or $ka^7$ $k \neq 0$ for both cases |

| 18 | **(a)** Points plotted correctly | 2 | **B1** 6 or 7 points correct |
|----|----------------------------------|---|---|
| | **(b)** Positive | 1 | |
| | **(c)** Line of best fit ruled | 1 | |

| 19 | **(a)** 4.79[1] or 4.79[06…] | 3 | **M2** for $\sqrt{(5.6^2 - 2.9^2)}$ or better, or<br>**M1** for $2.9^2 + BD^2 = 5.6^2$ or better. |
|----|------------------------------|---|---|
| | **(b)** 37.879 or 37.9[0] | 2 ft | **M1** for sin [*BCD* =] their (a) / 7.8 or better |

| 20 | **(a)** Angle (in a) semi-circle | 1 | |
|----|----------------------------------|---|---|
| | **(b) (i)** 56 | 1 | |
| | **(ii)** 112 | 1 | |
| | **(c)** 540 cao | 2 | **M1** for all attempts to sum all the angles or any<br>correct method for the sum of angles of a pentagon. |