

## **MARK SCHEME for the May/June 2014 series**

### **0580 MATHEMATICS**

**0580/12**

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.

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### Abbreviations

|      |                            |
|------|----------------------------|
| cao  | correct answer only        |
| dep  | dependent                  |
| FT   | follow through after error |
| isw  | ignore subsequent working  |
| oe   | or equivalent              |
| SC   | Special Case               |
| nfww | not from wrong working     |
| soi  | seen or implied            |

| Qu. | Part | Answers  | Mark | Part Marks  |
|-----|------|--|------|---|
| 1   |      | $4p$   | 1    |   |
| 2   |      | 1.49 or 1.491...                                 | 1    |   |
| 3   | (a)  | 340 000  | 1    |   |
|     | (b)  | 999 999  | 1    |   |
| 4   |      | $\sqrt{0.2}$ $\frac{9}{20}$ 45.4% $\frac{5}{11}$ | 2    | <b>B1</b> for 3 from 0.4545[...], 0.447[2....], 0.454, 0.45 or equivalent percentages seen or three in the correct order.<br>If zero <b>SC1</b> for correct but in reverse order. |
| 5   | (a)  | −9   | 1    |   |
|     | (b)  | 10 or −10  | 1    |   |
| 6   | (a)  | 570 000  | 1    |   |
|     | (b)  | $5.69 \times 10^5$                               | 1    |   |
| 7   |      | $4 \quad 4 \quad 10$                             | 2    | <b>B1</b> for answer of $4 \quad 4 \quad k$<br>or $4 \quad p \quad q$ where $p + q = 14$  |
| 8   | (a)  | (0, 5)   | 1    |   |
|     | (b)  | − 1  | 1    |   |
| 9   |      | $[x =] 2, [y =] - 3$                             | 2    | <b>B1 B1</b><br>or <b>SC1</b> for reversed answers  |
| 10  |      | 7.06 or 7.063 to 7.064                           | 2    | <b>M1</b> for $\frac{[ ]}{8} = \cos 28$ or better   |
| 11  |      | 8750   8850                                      | 1, 1 | If zero, <b>SC1</b> for both correct but reversed   |
| 12  | (a)  | 46   | 1    |   |
|     | (b)  | 20 05 or 8 05 pm                                 | 2    | <b>M1</b> for adding 3 h 20 min and 2 hours to 14 45<br>or <b>B1</b> for 18 05 or 6 05 pm or 16 45 or 4 45 pm<br>or 20 h [0]5 or 20 05 pm or 20 05 am                             |

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|    |          |  |             |  |
|----|----------|--|-------------|--|
| 13 | (a) (i)  | 326 – 330  | 1           | dep on 100 000 or [0].084 seen www scores 0  |
|    | (a) (ii) | 1100 – 1140  | 1           |  |
|    | (b)      | B  | 1           |  |
| 14 | (a)      | 35   | 1           | <b>M1</b> for multiplying by 3 or for dividing by $\frac{1}{3}$<br>or<br><b>M1</b> for dividing by $A$   |
|    | (b)      | $\frac{3V}{A}$ or $3VA^{-1}$   | 2           |  |
| 15 |          | 3.17 or 3.174 to 3.175   | 3           | <b>M2</b> for $\frac{63-61}{63} \times 100$ oe or $100 - \frac{61}{63} \times 100$ oe<br>or <b>M1</b> for $\frac{63-61}{63}$ oe or $\frac{61}{63} \times 100$                          |
| 16 |          | $\left[ \frac{1}{2} \times 1\frac{1}{2} = \right] \frac{3}{4}$ oe                | <b>B1</b>   |  |
|    |          | $\frac{5 \times 2}{6 \times 2}$ and $\frac{3 \times 3}{4 \times 3}$ oe or better | <b>M1FT</b> |  |
|    |          | $\frac{1}{12}$ oe  | <b>A1</b>   |  |
|    |          | <b>working must be shown</b>   |             |  |
| 17 |          | 74   | 4           | <b>M1</b> for $800 \times 1000$ or $180 \div 1000$ soi<br>and <b>M1</b> for figs $8 \div$ figs 18<br>and <b>M1</b> for converting (secs) to mins<br>74.1 or 74.07... implies <b>M3</b> |
| 18 | (a)      | (0).82 oe  | 1           | in (b) penalise consistent incorrect denominator once  |
|    | (b) (i)  | $\frac{5}{14}$ oe  | 1           |  |
|    | (ii)     | $\frac{9}{14}$ oe  | 1           |  |
|    | (iii)    | 0  | 1           |  |

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|    |         |                                |   |  |
|----|---------|--------------------------------|---|--|
| 19 | (a)     | acute                          | 1 |  |
|    | (b)     | reflex                         | 1 |  |
|    | (c)     | parallel                       | 1 |  |
|    | (d)     | perpendicular                  | 1 |  |
| 20 | (a)     | 300.763 cao                    | 2 | <b>M1</b> for $6.7^3$ oe   |
|    | (b)     | 269.34 cao                     | 2 | <b>M1</b> for $6.7^2 \times 6$ oe  |
| 21 | (a)     | 177 or 176.7 to 176.74         | 2 | <b>M1</b> for $\pi \times 7.5^2$ oe  |
|    | (b) (i) | 27                             | 2 | <b>B1</b> for angle <i>CAO</i> marked, or clearly used, as a right-angle (or $90^\circ$ )<br>or <b>M1</b> for $180 - 90 - 63$ oe                                 |
|    | (ii)    | one correct geometrical reason | 1 | [angle between a] radius [and a] tangent [is a] right-angle<br>or [angles in a] triangle [add up to] $180^\circ$<br>or [the] angles [have to] add to $180^\circ$ |