

**MARK SCHEME for the October/November 2010 question paper
for the guidance of teachers**

0581 MATHEMATICS

0581/13

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.

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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 | Pyramid | 1 | |
| 2 | 1, 4, 25, 100 | 2 | B1 for any two and none incorrect. –1 each incorrect |
| 3 | (a) 2 (b) 2 | 1 1 | |
| 4 | (a) 41 or –41 (b) –7 | 1 1 | |
| 5 | $2x^2 + xy$ final answer | 2 | B1 for $2x^2$ or xy seen in working |
| 6 | 5.5 | 2 | M1 for $2x + 1 = 3 \times 4$ or better or $\frac{2x}{3} = 4 - \frac{1}{3}$ |
| 7 | 6.489 | 2 | B1 for 6.5 or 6.49 or 6.4891.... |
| 8 | 35 | 2 | M1 for $45 \div (7 + 2)$ SC1 for answer = 10 |
| 9 | 46.4 | 2 | M1 for 32×1.45 oe or B1 for answer of 14.4 |
| 10 | $\frac{3}{16}$ | 2 | B1 for $\frac{1875}{10000}$ or any equivalent fraction. |
| 11 | $3a(c - 2d)$ | 2 | B1 for $a(3c - 6d)$ or $3(ac - 2ad)$ or $3a(jc - kd)$ where j and k are non-zero. |
| 12 | $\frac{8}{27}$ | 2 | M1 for $1 \div (1\frac{1}{2})^3$ oe or SC1 for $\frac{27}{8}$ |
| 13 | $(x =) 2, (y =) -1$ | 2 | M1 for correct method for eliminating one variable. Subtract or multiply by 3 and 5, then subtract |

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| | | | |
|----|--|-------------|--|
| 14 | (a) 17 | 1 | |
| | (b) $\sqrt{17}$ or 4.12(...) | 1 | |
| | (c) 0.294 | 1 | |
| 15 | 212.18 final answer cao | 3 | M2 for 200×1.03^2 oe or M1 for $(200 \times 1.03) \times 0.03$ oe |
| 16 | (a) 90 | 1 | |
| | (b) 45 | 1ft | ft $\frac{1}{2}$ (180 – their (a)) |
| | (c) 45 | 1ft | ft 90 – their (b) |
| 17 | (a) $(7 + 2) \times 9$ | 1 | |
| | (b) $36 \div (6 \div 2) = 12$ | 1 | |
| | (c) $5 \times (3 + 6) \times 2 = 90$ | 1 | |
| 18 | (a) (i) $\begin{pmatrix} 4 \\ 5 \end{pmatrix}$ | 1 | |
| | (ii) $\begin{pmatrix} 2 \\ -2 \end{pmatrix}$ | 1 | |
| | (b) (AC) + (CB) = (AB) | 1 | |
| 19 | $(y =) -\frac{1}{3}x + 2$ cao | 3 | B1 for gradient of $\pm\frac{1}{3}$ oe (Allow ± 0.33 or better) B1 ind for $mx + 2$ where $m \neq 0$. |
| 20 | (a) (i) 4 | 1 | |
| | (ii) $\frac{4}{5}$ oe | 1 | |
| | (iii) $\frac{2}{5}$ oe | 1 | |
| | (b) $\frac{2}{4}$ oe | 1 | |
| 21 | (Mode =) 0 (Median =) 2 (Mean =) 2.7 | 1 1 2 | M1 (0 + 0 + 0) + 1 + 2 + 2 + 4 + 4 + 5 + 9 |

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| | | | |
|-----------|--|---|---|
| 22 | <p>(a) Lines connecting (08 00, home) to (08 10, shop)</p> <p>(their 08 10, shop) to (their 08 15, shop)</p> <p>(their 08 15, shop) to (08 30, school)</p> <p>(b) 1.65</p> | 3 | <p>B1 home to shop</p> <p>B1ft horizontal and 5 minute period</p> <p>B1ft for line to 08 30 and school</p> |
| | | 2 | <p>M1 for use of speed \times time</p> <p>SC1 for 1.375 or 1.376 to 1.38</p> |