



General Certificate of Secondary Education November 2010

Mathematics 4306

Specification A

Paper 1 Foundation

Final

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| <i>Mark Scheme</i> |
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Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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Glossary for Mark Schemes

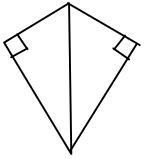
GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

| | |
|--------------|--|
| M | Method marks are awarded for a correct method which could lead to a correct answer. |
| A | Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied. |
| B | Marks awarded independent of method. |
| M dep | A method mark dependent on a previous method mark being awarded. |
| B dep | A mark that can only be awarded if a previous independent mark has been awarded. |
| ft | Follow through marks. Marks awarded following a mistake in an earlier step. |
| SC | Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth. |
| oe | Or equivalent. Accept answers that are equivalent. eg, accept 0.5 as well as $\frac{1}{2}$ |

| Q | Answers | Mark | Comment |
|------------|---|-------|---|
| 1 (a) (i) | 1367 | B1 | |
| 1 (a) (ii) | 7316 | B2 | B1 for any even number |
| 1 (b) | $7 + 6 = 13$ | B1 | or $6 + 7 = 13$ |
| 1 (c) | 8 | B1 | accept 78 in box |
| 2 (a) | £1 50p 20p 10p | B1 | or any other correct combination |
| 2 (b) | £1 £1 20p 10p 10p 10p and £1 50p 50p 50p and £1 £1 50p | B3 | any order B2 for 2 correct B1 for 1 correct |
| 2 (c) | (£)4.1(0) or (£)2.05 or (£)2 and (£)2.1(0) | M1 | or 2 correct lists for £2 and £2.10 with or without totals or 10(p) left over or no 5(p)s |
| | No ticked | A1 | |
| 3 | $33.5(0) - 2 \times 8.5(0) (= 16.5(0))$ | M1 | |
| | their $16.5(0) \div 5.5(0)$ | M1dep | oe eg $5.5(0) \times 3$ |
| | 3 | A1 | |
| 4 (a) | 24 | B1 | |
| 4 (b) | 7 | B1 | |
| 4 (c) | 18 | B1 | |
| 5 (a) | 24 | B1 | |
| 5 (b) | 12 | B1 | |
| 5 (c) | difficult to show a number that is not a multiple of 4 (or 2) | B1 | oe eg difficult to show 3 or an odd number |
| 6 (a) | line drawn through <i>B</i> and parallel to <i>x</i> -axis | B1 | minimum length 2 cm through <i>B</i> need not be ruled |
| 6 (b) | line drawn through <i>D</i> and parallel to <i>y</i> -axis | B1 | minimum length 2 cm through <i>D</i> need not be ruled |
| 6 (c) | <i>E</i> correct | B1 | |

| Q | Answers | Mark | Comment |
|-------------|---|------|--|
| 7 (a) | 10 | B1 | |
| 7 (b) | subtract 5 | B1 | oe |
| 7 (c) | $40 - 5n$ circled | B1 | |
| 8 (a) (i) | cylinder | B1 | do not accept prism |
| 8 (a) (ii) | cone | B1 | |
| 8 (b) | 6 | B1 | |
| 8 (c) | 5 | B1 | |
| 8 (d) | 3 | B1 | |
| 9 (a) | 680 | B1 | |
| 9 (b) | $\frac{20}{100} \times 800$ or 2×80 or 160 | M1 | oe eg $\frac{120}{800} \times 100$ or $\frac{120}{8}$ or 15(%) |
| | 160 and No ticked | A1 | or 15% and No ticked |
| 10 | Profit per pen = 20(p) | B1 | or (£)0.2(0) |
| | $700 \div 20$ | M1 | oe eg (£)7 $\div 20$ or $7 \div 0.2$ or 7×5 |
| | 35 | A1 | |
| 11 (a) | 49 | B1 | if nothing in table, check working |
| | 8 | B1 | |
| | $x + 5$ | B1 | do not accept +5 |
| 11 (b) | $16 + 12 + 5$ | M1 | or 16 + their 8 + 9 |
| | 33 | A1 | |
| 12 (a) (i) | 6.5 | B1 | |
| 12 (a) (ii) | 6.52 | B1 | |
| 12 (b) | 100 | B1 | |

| Q | Answers | Mark | Comment |
|--------------|---|------|---|
| 12 (c) | 12 | B1 | accept -12 |
| 12 (d) | $2^3 = 8$ or $2 \times 2 \times 2 = 8$ | B1 | accept 'he did 2×3 instead of 2^3 ' or 'he did $2 + 2 + 2$ instead of $2 \times 2 \times 2$ ' |
| 13 (a) | 50 | B1 | |
| 13 (b) | 105 | B1 | |
| 13 (c) | (150 min) = 2 hr and 30 min | M1 | oe eg $2\frac{1}{2}$ hours or 2.30 |
| | No and it finishes at 10 (pm) | A1 | oe eg No and he will be 15 mins late |
| 14 (a) | 6 | B1 | |
| 14 (b) (i) | B | B1 | |
| 14 (b) (ii) | D | B1 | |
| 14 (b) (iii) | E | B1 | |
| 15 (a) | 5 | B1 | |
| 15 (b) | $4x = 10 + 2$ or $4x = 12$ | M1 | |
| | 3 | A1 | |
| 15 (c) | - 6 | B1 | |
| 15 (d) | $(5t + 12 =) 3t + 15$ | B1 | |
| | $5t - 3t = 15 - 12$ | M1 | ft from their 4 term equation allow 1 sign error from their equation |
| | 1.5 | A1ft | oe eg $\frac{3}{2}$ |
| 16 (a) | 8 or 4 or 5 seen | M1 | on diagram or in working |
| | 18 | A1 | |
| 16 (b) | $\frac{1}{2} \times \text{their } 8 \times \text{their } 3$ | M1 | oe |
| | 12 | A1ft | |
| | cm^2 | B1 | independent units mark |

| Q | Answers | Mark | Comment |
|-------------|--|------------|--|
| 16 (c) | sketch of kite showing two right angles | B1 |  |
| 17 | 4×60 or 240 | M1 | or $30(^{\circ}) = 20$ or $90^{\circ} \div 60$ or $1\frac{1}{2}^{\circ}$ or $\frac{60}{90}$ |
| | their $240 \div 3$ | M1dep | or 20×4 or $120 \div$ their $1\frac{1}{2}$ or $\frac{60}{90} \times 120$ or $60 + 20$ |
| | 80 | A1 | |
| 18 (a) | difference of two squares with a non-prime answer | B1 | eg $6^2 - 2^2 = 32$ |
| 18 (b) | difference of two squares with a prime answer | B1 | eg $6^2 - 5^2 = 11$ |
| 19 (a) (i) | 0.9 | B1 | oe |
| 19 (a) (ii) | 120×0.1 | M1 | oe |
| | 12 | A1 | |
| 19 (b) | $P(6) = \frac{1}{6}$ | M1 | oe or 20 |
| | $\frac{1}{6} > 0.1$ and Yes ticked | A1 | $20 > 12$ and Yes ticked |
| 20 | $\frac{50 \times 100}{20}$ or $\frac{52 \times 100}{20}$ | M1 | allow one error in numerator |
| | 250 or 260 | A1 | |
| 21 (a) | 7 points correctly plotted | B2 | B1 for 5 or 6 points correctly plotted |
| 21 (b) | strong negative | B1 B1ft | ft from (a) |
| 21 (c) | line of best fit drawn | B1ft | |
| 21 (d) | eg 76 | B1ft | ft from their line |
| 21 (e) | no data around this point | B1 | oe eg the trend may not continue |
| 22 (a) | c | B1 | |

| Q | Answers | Mark | Comment |
|-------------|---|-------|---|
| 22 (b) | d | B1 | |
| 22 (c) | g | B1 | |
| 23 (a) | 14 | B1 | |
| 23 (b) | 12 | B1 | |
| 23 (c) (i) | line drawn from (1036, 50) to (1110, 50) and line drawn from (1110, 50) to (1150, 0) | B1 | line need not be ruled allow curve |
| 23 (c) (ii) | $50 \div 40 (\times 60)$ | M1 | oe eg $50 \div 2 \times 3$ or 25×3 |
| | 75 | A1 | SC1 for 1.25 (km/min) |
| 24 | $30000 \times 5 (\div 100)$ or $30000 \div 20$ or 300×5 or 1500 | M1 | allow place value errors and failure to divide by 100 |
| | their $1500 \times 1.2(0)$ or 1800 | M1 | |
| | their 1800×3 or 5400 or 450×3 or 1350 | M1 | |
| | their $5400 + \text{their } 1350 + 500$ | M1dep | complete correct method |
| | 7250 | A1 | |
| 24 alt | 30000×3 or 90000 or 450×3 or 1350 | M1 | allow place value errors and failure to divide by 100 |
| | $90000 \times 5 (\div 100)$ or $90000 \div 20$ or 900×5 or 4500 | M1 | |
| | their $4500 \times 1.2(0)$ or 5400 | M1 | |
| | their $5400 + \text{their } 1350 + 500$ | M1dep | complete correct method |
| | 7250 | A1 | |