



General Certificate of Secondary Education

Mathematics 4301

Specification A

Paper 1 Foundation

Mark Scheme

2008 examination - November series

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.

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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 $\frac{1}{2}$

Paper 1F

Note: Probability – Accept fraction, decimal or percentage. Do not accept ratio.
1 out of 3 or 1 in 3, penalise once on whole paper.

| Q | Answer | Mark | Comments |
|----------|---|---------|---|
| 1(a) | Square | B1 | |
| | Hexagon | B1 | |
| 1(b) | Equilateral | B1 | |
| 2 | $\frac{1}{4} \rightarrow 25\%$ $\frac{3}{4} \rightarrow 75\%$ $\frac{1}{5} \rightarrow 20\%$ $\frac{7}{10} \rightarrow 70\%$ | B3 | B2 For 2 or 3 correct B1 For 1 correct |
| 3(a) | 543 | B1 | |
| 3(b) | 124 | B2 | B1 For any other even number |
| 3(c) | Any 3 digit number that is a multiple of 3 | B1 | |
| 4(a) | 4 th and 5 th patterns drawn | B1 + B1 | |
| 4(b) | 10, 15 | B1 | No ft |
| 4(c)(i) | 21 | B1 | |
| 4(c)(ii) | Add 6 to the 5 th triangle number | B1 | oe eg, add 1 more each time |
| 5 | One correct statement | M1 | |
| | Another correct statement | M1 | |
| | ? = 5, ! = 2 and * = 3 | A1 | |
| 6(a) | 12 cm (\pm 2 mm) | B1 | |
| 6(b) | Point X marked (\pm 1 mm) | B1 | |
| 6(c) | Perpendicular drawn | B1 | Ruled, at least 2 cm |

| Q | Answer | Mark | Comments |
|----------|---|------|---|
| 7(a) | 27 | B1 | |
| 7(b) | 35 | B1 | |
| 7(c) | 2.4(0) | B1 | |
| 7(d) | 10 | B1 | |
| 7(e) | 50 | B1 | |
| 8(a) | Beth | B1 | |
| 8(b) | 25 | B1 | |
| 8(c) | 40 + 50 + 35 + 20 + 25 or 17 × 10 or 16 × 10 + 2 × 5 | M1 | Allow 1 error |
| | 170 | A1 | |
| 8(d) | Not easy to show $\frac{1}{5}$ of the shape | B1 | oe eg, £2 is less than $\frac{1}{4}$ |
| 9(a)(i) | 7 | B1 | |
| 9(a)(ii) | -8 | B1 | |
| 9(b) | 6 | B1 | Do not accept -6 |
| 10(a) | $(4^5) = 4 \times 4 \times 4 \times 4 \times 4$ | B1 | Allow 256×4 if table not completed |
| | 1024 | B1 | |
| 10(b) | 4 | B1 | |
| 11(a) | $(4 \times 4) + (4 \times 2)$ | M1 | oe |
| | 24 | A1 | |
| 11(b) | 4×8 | M1 | oe |
| | 32 | A1 | SC1 Correct answers reversed |

| Q | Answer | Mark | Comments |
|-----------|--|-------|--|
| 12(a) | $\frac{3}{10}$ | B1 | oe |
| 12(b) | $\frac{13}{20}$ | B2 | oe B1 For 20 seen as total |
| 12(c) | 2×13 or 26 or $13 - 7$ | M1 | oe |
| | 6 | A1 | |
| 13(a)(i) | 31 | B1 | |
| | Add 6 | B1 | oe |
| 13(a)(ii) | -1 | B1 | |
| | Subtract 3 | B1 | oe |
| 13(b) | $4n + 2$ | B2 | B1 For $4n$ |
| 14 | 25×60 | M1 | or $2000 \div 25$ |
| | 1500 | A1 | 80 |
| | $2000 - \text{their } 1500$ | M1dep | $25 \times (\text{their } 80 - 60)$ |
| | 500 | A1ft | SC2 (£)20 on answer line with no working |
| 15(a) | 7 | B1 | |
| 15(b) | 5 | B1 | |
| 15(c) | $3x = 18$ or $10 + 8$ | M1 | or $3 \times 6 = 18$ |
| | 6 | A1 | |
| 15(d) | $5x + 20 = 10$ or $x + 4 = 2$ | M1 | |
| | $5x = 10 - 20$ or $x = 2 - 4$ | M1 | Correct isolation of x term from their 1 st line |
| | -2 | A1ft | If at least M1 awarded SC1 For $\frac{6}{5}$ or 1.2 with no equation seen |
| 15(e) | $\frac{x}{3} = 15 - 11$ or $\frac{x}{3} = 4$ | M1 | $33 + x = 45$ or $45 - 33 = x$ |
| | 12 | A1 | |

| Q | Answer | Mark | Comments |
|-----------|--|-------|--|
| 16 | 10 or $\frac{1}{5} = 20\%$ | B1 | |
| | 8 or 45% or 55% | B1 | |
| | 22 | B1 | |
| 17(a) | Isosceles | B1 | |
| 17(b)(i) | $a = 65$ | B1 | |
| 17(b)(ii) | 180 – their 65 – 65 | M1 | |
| | $b = 50$ | A1 | |
| 18 | 44 – 34 or 10 | M1 | |
| | 44 – 20 or 34 – 10 or 24 | M1 | |
| | 12(.00) | A1 | |
| 19(a) | 2 | B1 | |
| 19(b) | (2, 1) | B1 | |
| 20 | $\frac{10}{100} \times 24\,000 (= 2400)$ | M1 | 24 000 ÷ 12 (= 2000) |
| | Their 2400 + 24 000 (= 26 400) | M1dep | $\frac{10}{100} \times$ their 2000 (= 200) |
| | Their 26 400 ÷ 12 | M1dep | Their 200 + their 2000 |
| | 2200 | A1 | |
| 21(a)(i) | 300 | B1 | Accept 295 to 305 |
| 21(a)(ii) | 230 | B1 | Accept 228 to 232 |
| 21(b) | Bearing of 110° from <i>A</i> | M1 | Accept 108 to 112 |
| | Bearing of 080° from <i>B</i> | M1 | Accept 078 to 082 |
| | <i>C</i> accurately marked | A1 | ft If both Ms earned |

| Q | Answer | Mark | Comments |
|-------|--|------|--|
| 22(a) | 8 | B1 | |
| 22(b) | $40 < x \leq 60$ | B1 | |
| 22(c) | 5 points at correct heights | B1 | Anywhere within class boundaries |
| | 5 points at mid-intervals and diagram correct | B1 | (10, 4), (30, 12), (50, 16), (70, 6), (90, 2) |
| 23(a) | $\frac{1}{2} \times 10 \times 15$ | M1 | oe |
| | 75 | A1 | |
| 23(b) | $\frac{1}{2} \times 9 \times 6$ or 27 | M1 | oe |
| | Their 75 – their 27 | M1 | 150 – their 75 – their 27 or 150 – (their 75 + their 27) Must be area calculations |
| | 48 | A1 | |
| | cm ² | B1 | Units mark |
| 24(a) | Correct factors of 8 and 12 | M1 | Correct lists of factors or factor trees or prime factors |
| | 4 | A1 | |
| 24(b) | Attempting to find multiples of 8 and 12 | M1 | At least 2 multiples of each |
| | 24 | A1 | SC2 Correct HCF and LCM reversed |