

General Certificate of Secondary Education

Mathematics 3302

Specification B

Module 3 Tier F 33003F

Mark Scheme

2005 examination - June 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.

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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|--------------|--|
| M | Method marks awarded for a correct method. |
| A | Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied. |
| B | Marks awarded independent of method. |
| M dep | A method mark which is dependent on a previous method mark being awarded. |
| ft | Follow through marks. Marks awarded for correct working following a mistake in an earlier step. |
| SC | Special Case. Marks awarded for a common misinterpretation which has some mathematical worth. |
| oe | Or equivalent. |
| eeoo | Each error or omission. |

MODULE 3 FOUNDATION TIER**33003F**

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|------|----------------------------------|-------|--|
| 1(a) | 3×78 or 3×0.78 | M1 | $78 + 78 + 78$ or $0.78 + 0.78 + 0.78$ |
| | 2.34(p) | A1 | 234p is allowed if £ sign crossed out |
| (b) | 2.66 | B1 ft | 5 – their (a) |

| | | | |
|------|--|----|---|
| 2(a) | $53 - 18$ | M1 | Can attempt to add from 18 to make 53 |
| | 35 | A1 | Allow one error |
| (b) | 29 | B1 | |
| (c) | i) 16×0.77 or 16×77 | M1 | |
| | 12.32(p) | A1 | 1232p is allowed if £ sign crossed out |
| | ii) $19.25 \div 0.77$ or $1925 \div 77$ or $16 + 9$ | M1 | Do not accept $19.25 \div 77$ or $1925 \div 0.77$ unless leads to correct answer |
| | 25 | A1 | |

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|------|---|--------|---|
| 3(a) | 28×3 and 48×12 or 84 and 576 | M1 | Do not need to add |
| | their 84 + their 576 | M1 dep | Must add |
| | 660 | A1 | |
| (b) | $620 - 10 \times 48 (= 140)$ or $620 - 480$ | M1 | |
| | their $140 \div 28$ | M1 dep | Attempt to add four, five or six 28s or attempt to subtract four, five or six 28s from 140 |
| | 5 | A1 | |

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|------|------------------------------|----|--------------------------------------|
| 4(a) | (Track) A | B1 | Allow 3 min 45 s oe |
| (b) | (Track) D | B1 | Allow 2 min 54 s oe |
| (c) | $3:45 + 2:59$ or $225 + 179$ | M1 | 5 min 104 s or 404 s Condone 6.04 |
| | 6(minutes) 44(seconds) | A1 | 6 min 4 s is M1A0 |
| (d) | 4 | B1 | |

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|------|--------------------------------|-------|---|
| 5(a) | 20 | B1 | |
| (b) | 9.61 | B1 | |
| (c) | $\frac{32}{100} \times 9.5(0)$ | M1 | oe Build up must be totally correct eg 10% = 0.95 30% = 2.85 2% = 0.19 and adds 2.85 and 0.19 |
| | 3.04 | A1 | 304 with no working is M0 |
| (d) | i) 1.38211... | B1 | |
| | ii) 1.4 | B1 ft | ft from any (d)(i) > 1dp |

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|------|---|----|--|
| 6(a) | Sight of 0.75 or $\frac{3}{4}$ | B1 | Allow 75% |
| | 7×0.75 or $7 \times \frac{3}{4}$ | M1 | $7 \times 75(\%)$ is M0 unless recovered |
| | 5.25 or $5\frac{1}{4}$ | A1 | Allow $\frac{21}{4}$ Just 525 seen is no marks SC1 Answer of $1\frac{3}{4}$ oe |
| (b) | $3 \div 0.25$ or $3 \div \frac{1}{4}$ or 3×4 | M1 | $3000 \div 250$ oe |
| | 12 | A1 | Build up must be totally correct (0 or 2) |

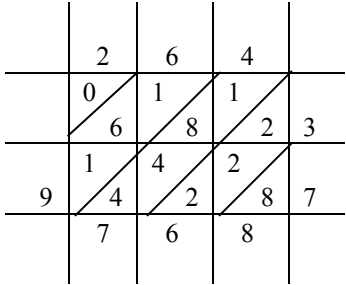
| | | | |
|------|---------------------------|----|---|
| 7(a) | 2164 | B1 | Allow 2,164 and 2 164 Do not allow 2.164 |
| (b) | Four thousand (and) fifty | B1 | Four thousand no hundred (and) fifty No digits |
| (c) | 2800 | B1 | Allow in words |

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|---|------------|----|--|
| 8 | 150 and 46 | B2 | B1 for each |
| | 196 | B1 | Note that the answer is given Do not award B1 if they get 196 and their two numbers do not actually sum to 196 SC3 $30 + 30 + 30 + 30 + 30 + 23$ $+ 23 = 196$ SC2 $30 + 30 + 30 + 30 + 30 + 23$ $+ 23$ and an answer that is not 196 |

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|------|---|----|--|
| 9(a) | $1\frac{1}{2}$ and $2\frac{1}{2}$ | B1 | Either order Do not accept $2 + 2$ |
| (b) | 2 and $1\frac{1}{2}$ | B1 | Either order |
| (c) | 2 and 1 or $\frac{1}{2}$ and $1\frac{1}{2}$ or $1\frac{1}{2}$ and $2\frac{1}{2}$ | B1 | Either order Condone $\frac{1}{2}$ becoming .5 throughout |

| | | | |
|-------|---------------------------------|----|---|
| 10(a) | $\frac{1}{4}$ | B1 | oe fraction |
| (b) | 0.6 | B1 | oe decimal |
| (c) | 0.09 | B1 | oe decimal |
| (d) | 1.5 to 1.6 exclusive | B1 | 1.50 is B0 |
| (e) | $\frac{5}{8}$ (-) $\frac{2}{8}$ | M1 | Allow any pair of correct fractions that have a common denominator Allow 0.625 (-) 0.25 |
| | $\frac{3}{8}$ | A1 | oe fraction or decimal No% |

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|-------|-------|----|--|
| 11(a) | -2 | B1 | Allow $\bar{2}$ Do not allow $2-$, $\bar{2}$ |
| (b) | (+) 6 | B1 | |

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|----|--|--------|---|
| 12 | <p>Column method 1848 or 7920 correct or at least two of 7400, 2220 and 148 correct</p> | M1 | <p>Box method 6000 1400 1800 420 120 28 Allow two errors</p> |
| | <p>Attempt to add their results (1848) + (7920) must have their 7920 ending in 0 or (7400) + (2220) + (148) must have their 7400 ending in 00 and their 2220 ending in 0</p> | M1 dep | <p>Attempt to add their results (7400) + (2220) + (148) or (7920) + (1848)</p> |
| |  <p>4 out of 6 boxes correct M1 Attempt at adding diagonals M1 dep</p> | | |
| | 9768 | A1 | |

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|----|--|-------|--|
| 13 | <p>An attempt to scale to same number of matches eg (5 matches) (Andy scores) $12 \div 2$ and (Ben scores) $21 \div 3$</p> | M1 | <p>eg (30 matches) (Andy scores) 12×3 and (Ben scores) 21×2 Allow $10 \div 12$ and $15 \div 21$ eg (1 match) (Andy scores) $12 \div 10$ and (Ben scores) $21 \div 15$</p> |
| | <p>Correct answers for their scaling eg 6 and 7</p> | A1 | <p>eg 36 and 42 Allow $\frac{5}{6}$ and $\frac{5}{7}$ eg 1.2 and 1.4 Allow $1\frac{2}{10}$ and $1\frac{6}{15}$</p> |
| | Ben | A1 ft | <p>ft if two values found with one correct (and M1 awarded) Note: If $1\frac{2}{10}$ and $1\frac{6}{15}$ must see valid comparison to award A1</p> |

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|-------|-----------|-------|---------------------------|
| 14(a) | i) 623.7 | B1 | |
| | ii) 62.37 | B1 ft | ft as their (i) $\div 10$ |
| (b) | 810 | B1 | |

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|-------|---|----|---|
| 15(a) | (B) no (C) no (D) no (E) yes (F) no (G) yes | B3 | B2 for 4 or 5 correct B1 for 2 or 3 correct Allow \checkmark for Yes and \times for No |
| (b) | Valid explanation and No eg Would need 30 (litres) of white (with 20 litres of red) eg 2 (litres) of red has more than 3 (litres) of white eg $20:35 = 2:3.5$ eg 55 (litres) shared in the ratio 2:3 gives 22 (litres) and 33 (litres) eg $20 \div 2 = 10$, $35 \div 3$ is not 10 | B1 | Note: No may be implied from the explanation Do not accept $20:35 = 4:7$ unless also see $2:3 = 4:6$ |

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|-------|------------------------------------|----|--|
| 16(a) | 27 | B1 | |
| (b) | 1 or 8 or 64 or 125 or 1000 or ... | B1 | Allow 1^3 or 2^3 etc $1 \times 1 \times 1$ etc Do not accept 27 or 216 or ... |