



General Certificate of Secondary Education

Mathematics 3302

Specification B

Module 1 Tier F 33001F

Mark Scheme

2006 examination – March 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.

The following abbreviations are used on the mark scheme:

| | |
|--------------|--|
| 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 1 FOUNDATION TIER**33001F****Note: Probability - Accept fraction, decimal or percentage. Do not accept ratio.**

1 out of 3 or 1 in 3 penalise once on whole paper.

| | | | |
|------|--|-------|---|
| 1(a) | Correct tallies | B1 | |
| | Correct frequencies 7, 6, 6, 3 | B1 ft | |
| 1(b) | Linear vertical scale starting from zero | B1 | Zero can be implied Allow different width bars and/or gap |
| | Their heights of bars | B1 ft | Condone vertical scale not starting from zero but must be linear ft their tallies if no frequencies completed Allow stick diagram If no vertical scale can score B0B1B1 if correct height from 0 |
| | Bars labelled correctly | B1 ft | |
| 1(c) | Mathematics or M | B1 | |
| 1(d) | Any correct similarity | B1 | eg There is not a lot of difference between M, E and S T was the least favourite Not: They both have 4 bars |

| | | | |
|------|---|----|--|
| 2(a) | $\frac{1}{2}$ | B1 | Accept 0.5 oe eg $\frac{180}{360}$, half, 50% NOT $180 \div 360$ |
| 2(b) | $\frac{360}{90}$ or 4 or $\frac{1}{4} = 600$ $\frac{1}{2} = 1200$ | M1 | oe Insurance clearly 1200 |
| | 4×600 | M1 | oe $600 + 600 + 2 \times 600 =$ M2 Allow sensible build up |
| | $= \text{£}2400$ | A1 | |

| | | | |
|------|--------------------|----|--|
| 3(a) | $1 - (0.7 + 0.02)$ | M1 | For misread must see working “1-” can be implied from ans |
| | 0.28 | A1 | |
| 3(b) | 0.02×1200 | M1 | Misread must see working |
| | 24 | A1 | Incorrect further working deduct 1 |

| | | | |
|------|---|----|--|
| 4(a) | 70 | B1 | |
| 4(b) | $0 \times 3 (+) 1 \times 12 (+) 2 \times 21 + \dots$ | M1 | At least 3 correct products seen eg $0 (+) 12 (+) 42 + \dots$ or $12 (+) 42 (+) 72$ etc |
| | = 168 | A1 | |
| 4(c) | their 'sensible' (b)* \div their (a) *sensible b from adding at least 3 products | M1 | Not $15 \div$ their (a) and not $6 \div$ their (a) their (a) $\neq 6.5$ nor 15 |
| | = 2.4 | A1 | 2 alone scores 0 but correct working seen with 2 on ans line \Rightarrow M1A0 |

| | | | |
|------|-----------|----|---|
| 5(a) | 32 | B1 | |
| 5(b) | $46 + 24$ | M1 | Adding two values with at least one correct reading |
| | = 70 | A1 | |
| 5(c) | 3 | B1 | |

| | | | |
|------|--|----|--|
| 6(a) | 0, 2, 3, 6, 7, 8, 9 | M1 | Ordering, from either end, at least 4 values correctly |
| | = 6 | A1 | |
| 6(b) | There is no mode because each value occurs only once | B1 | |
| 6(c) | "No" followed by some explanation | B1 | If ans YES: B0B0 |
| | Because his results are <u>all less</u> than 10 or most he saw was 9 | B1 | or because the median is (only) "6" or because the mean is (only) "5" |

| | | | | | | | | | | |
|------|-------------|--------------|----------|----------|-------------|----------|----------|----------|----|--|
| 7(a) | | | | | Dice | | | | | |
| | | | 1 | 2 | 3 | 4 | 5 | 6 | | |
| | Coin | Heads | 2 | 3 | 4 | 5 | 6 | 7 | B1 | |
| | | Tails | -1 | 0 | 1 | 2 | 3 | 4 | B1 | |

| | | | |
|----------|----------------|-------|---|
| 7(b)(i) | $\frac{1}{12}$ | B1 ft | ft from a completed table or correct ft may be cancelled eg $(\frac{6}{12}) = \frac{1}{2}$ |
| 7(b)(ii) | $\frac{5}{12}$ | B2 ft | ft from a completed table or correct ft may be cancelled eg $(\frac{6}{12}) = \frac{1}{2}$ |
| | | | Allow B1 for numerator 5 of any fraction < 1 |

| | | | |
|------|---|----|--|
| 8(a) | Both linear horizontal and vertical scales seen | B1 | Condone 0's missing (At least 2 values on each scale) Allow ≤ 10 , ≤ 20 , ≤ 30 , ≤ 40 |
| | Equal class widths for 'histogram' (no gaps) or plotting at correct midpoints. Dependent on using a linear horizontal scale seen eg $0 < t \leq 10$, $10 < t \leq 20$ etc for frequency polygon | B1 | All four |
| | Correct heights for 'histogram' or their midpoints joined by "straight" lines for frequency polygon | B1 | Their bars or midpoints must be clearly within the class interval $0 < t \leq 10$ etc $\pm \frac{1}{2}$ sq SC2 Perfect with either no horizontal scale or $0 < t \leq 10$ or wrong scale |
| 8(b) | $22 + 3$ or 25 seen | M1 | |
| | $\frac{(22+3)}{100} \times 800$ | M1 | 25% (or $\frac{1}{4}$) $\times 800$ |
| | = 200 | A1 | SC1 for any correct individual calc eg $\frac{22}{100} \times 800 = 176$ or $22 \times 8 = 176$ or $3 \times 8 = 24$ etc even if $\frac{40}{100} \times 800$ is included 176 or 24 seen \Rightarrow SC1 |