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ASSESSMENT and QUALIFICATIONS ALLIANCE

## General Certificate of Secondary Education

# Mathematics 3302
*Specification B*

*Module 1 Tier H 33001H*

# Mark Scheme

## *2006 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.

**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 HIGHER TIER 33001H

**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) | 475 × 0.6 | M1 | |
| | 285 | A1 | |
| 1(b) | 425 × 0.48 | M1 | |
| | '285' + '204' | M1 dep | |
| | 489 | A1 | Calculating German = 411 ⇒ SC2 |

| | | | |
|---|---|---|---|
| 2(a) | $\frac{5}{20}$, $\frac{7}{20}$, $\frac{8}{20}$ or 0.25, 0.35, 0.4 | B2 | B1 for 2 correct<br>or 1 correct and $\sum p = 1$<br>If boxes wrong but correct ans seen SC1 |
| 2(b) | 0.14 or table b | B1 | |
| | The spinner has been spun more times | B1 dep | Idea of larger sample |

| | | | |
|---|---|---|---|
| 3(a) | $\frac{3}{5}$ seen | B1 | |
| | Complete drawing of tree diagram and label heads/tails | B1 | |
| | All probabilities correctly labelled on tree | B1 | |
| 3(b) | $\left(\frac{2}{5}\times\frac{2}{5}\right)$ or $\left(\frac{2}{5}\times\frac{3}{5}\right)$ or $\left(\frac{3}{5}\times\frac{2}{5}\right)$ | M1 | $1-\left(\frac{3}{5}\times\frac{3}{5}\right)$ M2 |
| | $\frac{4}{25}+\frac{6}{25}+\frac{6}{25}$ | M1 | |
| | $\frac{16}{25}$ | A1 | oe |

| | | | |
|---|---|---|---|
| 4 | 6.8 $cm^2$ = 17 people<br>or 170 small squares = 17 people<br>or 1 $cm^2$ = 2.5 people<br>or 10 small squares = 1 person<br>or 1 person = 0.4 $cm^2$ | M1 | Correct fd scale ⇒ M1<br>For equating area with number of people<br>[Ignore fd scale if incorrect] |
| | Below 160 = 0.8 $cm^2$ or 20 small squares<br>or<br>Above 182 = 3.6 $cm^2$ or 90 small squares | M1 | Finding area below 160<br>or above 182<br>or lines of 5 |
| | 0.8 + 3.6 or 4.4 $cm^2$<br>or 20 + 90 or 110 small squares | A1 | Finding total area below 160 **and** above 182 or lines of 5 |
| | $4.4 \times 2.5$ or $\frac{4.4}{6.8} \times 17$ or $\frac{110}{10}$ | M1 | Their area × scaling factor |
| | = 11 | A1 | |
| | Alternative method<br>1 or 1 or 3 or 6 seen (in correct blocks) ⇒ M1M1 or altogether or clear from method<br>2 or 9 seen in correct blocks ⇒ M1M1A1<br>2 + 9 oe ⇒ M1M1A1M1<br>39 SC3 | | |

| | | | |
|---|---|---|---|
| 5(a) | Question about number of texts with time frame | B1 | |
| | Response - Tick boxes not overlapping, no gaps, covers all possibilities | B1 | |
| 5(b) | Indicating 50th/51st item | M1 | 31 + 24 is sufficient |
| | $10 \leq x < 20$ | A1 | |

| | | | |
|---|---|---|---|
| 6(a) | 32, 63, 75, 80 | B1 | |
| 6(b) | Parts (b) and (c) must be from an attempt at an increasing cf diagram | | |
| | Plotting at upper class boundaries | B1 | |
| | Heights correct | B1 ft | $\pm \frac{1}{2}$ square |
| | Smooth curve or straight lines to join points | B1 | $\pm \frac{1}{2}$ square |
| 6(c) | 48 | B1 ft | |

| | | | |
|---|---|---|---|
| 7(a) | Only Year 7 asked<br>**or** too small a sample | B1 | |
| 7(b) | One correct method seen for 10%<br>eg $\frac{10}{100} \times 215$ | M1 | or one correct decimal seen |
| | 20 | A1 | Not for 20, 20, 20, 20, 20 only |
| | 24 and 18 | A1 | |
| | 21 and 17 or 22 and 16 | A1 | |

| | | | |
|---|---|---|---|
| 8(a) | $\frac{1}{2} \times \frac{4}{9}$ | M1 | |
| | $= \frac{2}{9}$ | A1 | Note: $\frac{4}{18}$ gets M1A0 |
| 8(b) | P(Danny passes) = $\frac{7}{15} \div \frac{3}{5}$<br>or $\frac{7}{15} \times \frac{5}{3}$ | M1 | Setting up equation to find prob of Danny passing |
| | $= \frac{7}{9}$ | A1 | |
| | $\frac{2}{5} \times \frac{2}{9}$ | M1 | Product for prob of both Chloe and Danny failing |
| | $= \frac{4}{45}$ | A1 | |