Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students’ responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students’ scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students’ 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.

Further copies of this Mark Scheme are available from aqa.org.uk
**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.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

- **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.
- **Q** Marks awarded for Quality of Written Communication
- **ft** Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
- **SC** Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
- **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.
- **oe** Or equivalent. Accept answers that are equivalent.
  
  eg, accept 0.5 as well as \( \frac{1}{2} \)

- **[a, b]** Accept values between \( a \) and \( b \) inclusive.
- **3.14 ...** Accept answers which begin 3.14 eg 3.14, 3.142, 3.149.

**Use of brackets** It is not necessary to see the bracketed work to award the marks.
Examiners should consistently apply the following principles

**Diagrams**
Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

**Responses which appear to come from incorrect methods**
Whenever there is doubt as to whether a candidate has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the candidate. In cases where there is no doubt that the answer has come from incorrect working then the candidate should be penalised.

**Questions which ask candidates to show working**
Instructions on marking will be given but usually marks are not awarded to candidates who show no working.

**Questions which do not ask candidates to show working**
As a general principle, a correct response is awarded full marks.

**Misread or miscopy**
Candidates often copy values from a question incorrectly. If the examiner thinks that the candidate has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

**Further work**
Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

**Choice**
When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

**Work not replaced**
Erased or crossed out work that is still legible should be marked.

**Work replaced**
Erased or crossed out work that has been replaced is not awarded marks.

**Premature approximation**
Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 1(a) | Positive | B1 | Ignore any other description  
Accept eg strong positive, weak positive correlation |
| 1(b) | [28, 29] seen or  
40 + [24, 30]  
or [64, 70] | M1 | [28, 29] may be seen on graph |
| | [68, 69] | A1 | SC1 Answer [78, 79] with correct point or line(s) marked on graph  
SC1 Answer [91, 92] |

**Additional Guidance**

- [28, 29] seen even with other values or different answer given  
  M1A0
- Correct working up to [68, 69] but then gives the answer 70  
  M1A1
- \( \frac{68}{90} \) or \( \frac{69}{90} \) etc  
  M1A0
- \( \frac{68}{170} \) or \( \frac{68}{180} \) or \( \frac{68}{200} \) etc  
  M1A1
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 2(a) | Suitable hypothesis | Q1 | Strand (i)  
eg  
Girls are more likely to study Economics 
More boys study Economics 
Girls are less likely to study Economics than boys |

**Additional Guidance**
- Must mention girls/ boys and studying Economics
- Must be a suggested outcome and **not a question**
- Condone a correct hypothesis followed by a reason why it may be true
- May start ‘I think’, ‘I predict’, ‘I believe’ and condone ‘should be’
- Condone ‘home economics’

| 2(b) | Two-way table with boys/ girls as row/ column and Yes/ No as column/ row | B2 | oe  
B1 boys/ girls or Yes/ No  
B0 questionnaires intended for individuals to complete |

**Additional Guidance**
- Condone a list where all four options can be worked out ie you can tell how many: (1) boys planning E, (2) boys not planning E, (3) girls planning E, (4) girls not planning E
- This may also be seen as two separate lists/ tally charts
- Condone questions as headings
- Ignore any attempt to fill in cells and allow any extra rows/columns eg Don’t know or Frequency
- If the student gives a data collection sheet and a questionnaire, ignore the questionnaire
- Yes/ No could be indicated by a tick or cross
### Mark Scheme

**GENERAL CERTIFICATE OF EDUCATION MATHEMATICS – 43601H – JUNE 2015**

<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3(a)</td>
<td>9 : 5 : 6</td>
<td>B1</td>
<td></td>
</tr>
<tr>
<td>3(b)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>M1</th>
<th>oe</th>
</tr>
</thead>
</table>
| | | | \[
| \frac{3000}{6000} \times 100 \text{ or } \frac{1800}{6000} \times 100 \text{ or } \frac{1200}{6000} \times 100 |
| | | \frac{50}{100} \text{ or } \frac{30}{100} \text{ or } \frac{20}{100} \text{ or } |
| | | 50 \text{ (white)} \text{ or } 30 \text{ (brown)} \text{ or } 20 \text{ (granary) seen or implied} |

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>A1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>50 \text{ (white)} \text{ and } 30 \text{ (brown)} \text{ and } 20 \text{ (granary) seen or implied}</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>B1ft</th>
<th>± \frac{1}{2} \text{ small square}</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ft their 50, 30 and 20 with bar total 100%</td>
</tr>
</tbody>
</table>

**Additional Guidance**

- Mark the graph first: a correct bar implies all 3 marks [M1A1B1]
- Shading can be incomplete (eg only two parts shaded) as long as unambiguous or can use labelling eg white/ brown/ granary or W/B/G [M1A1B0]
- A bar drawn in the wrong order must have the correct shading [M1A1B0]
- Correct bar with incorrect width or position [M1A1B0]
- Condone a bar in the wrong position if it is a replacement for an incorrect bar in the right position

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>M0A0B0ft</th>
<th>Any correct section in the graph can imply M1 but you must check it is not from incorrect working eg</th>
</tr>
</thead>
<tbody>
<tr>
<td>30, 18, 12 (30 is for white)</td>
<td></td>
<td></td>
<td>6000 \div 3000 = 2 \rightarrow 20%, \ 6000 \div 1800 = 3 \rightarrow 30%, \ 6000 \div 1200 = 5 \rightarrow 50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Then bar drawn 20 : 30 : 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Do <strong>not</strong> award M1 for brown = 30 if this method is seen but they can have B1ft if their bar follows through from their working and totals 100</td>
</tr>
</tbody>
</table>

- Do not award M1 for brown = 30 if this method is seen but they can have B1ft if their bar follows through from their working and totals 100 [M0A0B1ft]
### Q4

<table>
<thead>
<tr>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 – 22 or 18 (female) or (40 – 10) ÷ 2 or 15 (male or female)</td>
<td>M1</td>
<td>Condone 18/40 or 15/30</td>
</tr>
<tr>
<td>their 18 – their 15 or 22 – their 15 or 7 (males sold)</td>
<td>M1dep</td>
<td>Condone 7/30 or 3/30</td>
</tr>
<tr>
<td>(10 – (22 – their 18)) ÷ 2 or 10 – 4/2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 A1

**Additional Guidance**

Answer 13 often comes from 18 – 5 so if 18 is seen award the first mark M1M0A0

3 should not be awarded full marks if it comes from an incorrect method

---

**5(a)**

| Point marked at (100, 0.18)                                           | B1   | ± 1/2 small square |

---

**5(b)**

| 500                                                                    | B2   | B1 0.1 × 5000 oe or answer of 900 or 850 or 750 or 700 or 640 or 600 or 575 or 550 or 475 |

**Additional Guidance**

A correct answer using any relative frequency from the graph or using the average of all of them B1

Answer of 500 out of 5000 B2

Answer \( \frac{500}{5000} \) B1

The calculation for B1 may be seen in stages eg 100 per 1000 and 100 × 5 B1
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>900 × 360 ÷ 120 or 900 × 3 or (900 + 450) × 2</td>
<td>M1</td>
<td>oe</td>
</tr>
<tr>
<td>2700</td>
<td>A1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>their 2700 ÷ 20 × 80</td>
<td>M1</td>
<td>oe</td>
<td></td>
</tr>
<tr>
<td>10 800</td>
<td>A1</td>
<td>ft their 2700 × 4</td>
<td>SC2 13 500</td>
</tr>
</tbody>
</table>

**Additional Guidance**

A wrong start can still pick up the last two marks eg

900 × 120 ÷ 360 = 300
300 ÷ 2 = 150
150 × 8 = 1200

Allow 900 for their 2700 eg 900 × 4 → 3600

1800 said No Answer 7200 (either M can be implied)

1350 = 20% Answer 5400 (either M can be implied)

900 × 12 as a full method, answer 10 800 M1A1M1A1

900 × 12 as a full method with incorrect answer M1A1M1A0
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>7(a)</td>
<td>0.56 + 0.19 + 0.14 + 0.08 or 0.97 or 1 − 0.56 − 0.19 − 0.14 − 0.08 or 100 − 56 − 19 − 14 − 8 or 100 − 97</td>
<td>M1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.03 or 3% or ( \frac{3}{100} )</td>
<td>A1</td>
<td></td>
</tr>
</tbody>
</table>

**Additional Guidance**

- 3 without %  | M1A0
- Embedded answer: 0.97 + 0.03 = 1 (table blank) | M1A0
- Table wins unless blank

| 7(b) | 1.28 or 128% or \( \frac{128}{100} \) | B1 | |
| | 9 400 000 ÷ 1.28 | M1 | oe 9 400 000 ÷ 128 × 100 |
| | 7 343 750 or 7 343 800 or 7 344 000 or 7 340 000 | A1 | Accept 7 300 000 with working SC2 13 055 555.(...) or 13 055 556 |

**Additional Guidance**

- Condone mistakes in number of zeros for M1 and allow recovery for 3 marks
- Accept answers as eg 7.34 million
- For the special case allow the marks if they give full values but then round | SC2
- 6 768 000 | B0M0A0
### Q | Answer | Mark | Comments |
--- | --- | --- | --- |
8(a) | $1.4 \times 10^{-2}$ | B2 | B1 $0.013(8\ldots)$ or $0.014$ oe or $1 \times 10^{-2}$ or B1ft if their answer with at least 3 sf given in standard form to 2 sf SC1 $1.9 \times 10^{-2}$ or $2.2 \times 10^{-2}$ |
8(b) | $(3.9 \times 10^{-7}) \div (1.2 \times 10^{-8})$ | M1 | Digits 325 imply M1 |
| | $32.5$ or $3.2(5) \times 10^{(1)}$ or $33$ or $3.3 \times 10^{(1)}$ | A1 | SC1 $0.03(0769\ldots)$ or $3(0769\ldots) \times 10^{-2}$ |
9(a) | Correct box plot with min 40, lower quartile 42, median 43, upper quartile 43.5 and max 46.5 | B3 | B2 any four values correctly plotted or lower quartile 42, median 43 and upper quartile 43.5 B1 lower quartile 42 or median 43 or upper quartile 43.5 Allow $\pm \frac{1}{2}$ small square tolerance |

**Additional Guidance**

- The box plot wins but if blank the stated values may gain up to B2
- Mark intention throughout
- Accept unconventional plots eg line through middle of box arrows/ dots/ longer vertical lines/ no endings on whiskers any depth of box any vertical alignment but not overlapping Ben’s (max B2 if it overlaps Ben’s)
- Assume a box without a median line represents the LQ and UQ
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>9(b)</td>
<td>Zoe because her inter-quartile range is smaller or Zoe and her inter-quartile range = 1.5 and Ben's = 2</td>
<td>B1ft</td>
<td>oe Accept Zoe because her range is smaller or Zoe and her range = 6.5 and Ben's = 7 ft their complete box plot</td>
</tr>
<tr>
<td><strong>Additional Guidance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If values are quoted they must be correct, but follow through their values from a (completed) box plot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>They must be using inter-quartile range (IQR) or range. Ignore comments about other measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If they do not have a complete box plot, then assume they are using the graph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Must</strong> use the words range or (inter-)quartile range – do not accept a description of the measure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the ‘correct’ answer is seen but it does not match their box plot, please escalate the clip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accept eg Zoe because her IQR is closer/ lower</td>
<td></td>
<td>B1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10(a)</th>
<th></th>
<th>B2</th>
<th>oe B1 at least <strong>two</strong> correct probabilities in the correct position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Additional Guidance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accept decimals or percentages or equivalent fractions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \frac{3}{4} ) may be 0.75 or 75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \frac{3}{5} ) may be 0.6(0) or 60%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \frac{2}{5} ) may be 0.4(0) or 40%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Alternative method 1

\[
\frac{1}{4} \times \text{their} \frac{3}{5} \quad \text{or} \quad \frac{3}{20}
\]

or

\[
\text{their} \frac{3}{4} \times \text{their} \frac{2}{5} \quad \text{or} \quad \frac{6}{20} \quad \text{or} \quad \frac{3}{10}
\]

\[
\frac{1}{4} \times \text{their} \frac{3}{5} + \text{their} \frac{3}{4} \times \text{their} \frac{2}{5}
\]

Mark: M1  oe

\[
\frac{9}{20} \quad \text{or} \quad 0.45 \quad \text{or} \quad 45\%
\]

Mark: A1  ft their tree diagram (for probabilities < 1)

### Alternative method 2

\[
\frac{1}{4} \times \text{their} \frac{2}{5} \quad \text{or} \quad \frac{2}{20} \quad \text{or} \quad \frac{1}{10}
\]

and

\[
\text{their} \frac{3}{4} \times \text{their} \frac{3}{5} \quad \text{or} \quad \frac{9}{20}
\]

\[
1 - \left( \frac{1}{4} \times \text{their} \frac{2}{5} + \text{their} \frac{3}{4} \times \text{their} \frac{3}{5} \right)
\]

Mark: M1  oe

\[
\frac{9}{20} \quad \text{or} \quad 0.45 \quad \text{or} \quad 45\%
\]

Mark: A1  ft their tree diagram (for probabilities < 1)

### Additional Guidance

\[
\frac{9}{20} \quad \text{from} \quad \frac{3}{4} \times \frac{3}{5} \quad \text{(and correct tree diagram)}
\]

Mark: M0M0A0

Allow up to M1 if all four combined probabilities shown next to tree diagram and no work of further merit seen

Mark: M1

Students may restart in part (b) and not use their tree diagram

Correct method seen for top, bottom or middle two probabilities

Mark: M1
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 11(a) | $440 \times 150 \div 1200$  
or $1200 \div 150 = 8$  
or $150 \div 1200 = 0.125$ oe | M1 | oe $440 \div 8$ or $440 \times 0.125$  
Condone $150 \times [0.36, 0.37]$ implied by [54, 55.5] |
| 55 | | A1 | |

**Additional Guidance**

Do not allow 1040 as a misread for 1200 eg  
$440 \times 150 \div 1040 = 63$  
**but** there is a correct method using 1040 where the student works out that there are 130 in the sample from the main school and works out  
$130 \div 1040 \times 440$ oe (which evaluated is 55)  
M0A0  
M1(A1)
### 11(b)

#### Alternative method 1

- $160 \times 150 \div 1200$
- or $150 - 75$ – their 55
- or 20

**Mark:** M1

**Comments:**
- oe eg $160 \div 8$
- Condone $150 \times 0.13(...)$

- 11 and 9
- or $9 \times 1200 \div 150$
- or 88 seen

**Mark:** M1

**Comments:**
- oe
- Condone $8 \times 1200 \div 150$ with 12 or 20 seen

- 72

**Mark:** A1

#### Alternative method 2

- $2 \times 1200 \div 150$
- or $2 \times 8$ or 16

**Mark:** M1

**Comments:**
- oe

- $(160 - \text{their } 16) \div 2$
- or $160 \div 2$ – their 16 ÷ 2
- or 88 seen

**Mark:** M1

**Comments:**
- oe

- 72

**Mark:** A1

### Additional Guidance

- Two numbers with a difference of 16

**Mark:** M1

- Allow eg 12000 or 2000 or 2100 as a misread of 1200 for up to M2

- Check table for possible creditworthy work

- If they use an incorrect scale factor in (b) that follows through from (a), then escalate the clip

- In Alt 1 for the second M1 accept their $9 \times 1200 \div 150$ if their 9 comes from an arithmetic error with full method shown

- 11 and 9 seen even with other wrong working

**Mark:** M2
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>120 and 100 in correct positions in the table</td>
<td>B1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>120 – 140 bar 4.5 large squares high</td>
<td>B1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>140 – 180 bar 1 large square high</td>
<td>B1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Correct vertical scale or key shown</td>
<td>Q1</td>
<td>Strand (ii) 1 large square = 20 ribbons oe</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 small squares = 4 ribbons oe</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>or scale of 2 per cm</td>
</tr>
</tbody>
</table>

**Additional Guidance**

- Only need to show one graduation for scale but if more shown must be correct
- If correct scale is shown ignore any workings on the histogram
- Correct frequency on one bar is equivalent to a key as long as the scale does not contradict
- Look for ‘key’ near table but do not allow it written as working in the working lines
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative method 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifying possible totals as 4, 6 and 5, 6</td>
<td>M1</td>
<td>Ignore 5, 5 and 6, 6 for M1 May be in sample space diagram or list</td>
<td></td>
</tr>
<tr>
<td>At least three of 4, 6 and 6, 4 and 5, 6 and 6, 5 only</td>
<td>M1dep</td>
<td>3 or 4 correct totals chosen in sample space or list (with 30 or 36 outcomes)</td>
<td></td>
</tr>
<tr>
<td>$\frac{1}{6} \times \frac{1}{5}$ or 30 outcomes stated</td>
<td>M1</td>
<td>Denominator of 30</td>
<td></td>
</tr>
<tr>
<td>$\frac{4}{30}$ or $\frac{2}{15}$ or 0.133... or 13.3...%</td>
<td>A1</td>
<td>SC2 $\frac{4}{36}$ oe (from all 4 outcomes) SC1 $\frac{2}{36}$ oe (from 4, 6 and 5, 6)</td>
<td></td>
</tr>
</tbody>
</table>

| **Alternative method 2** | | | |
| Identifying possible totals as 4, 6 and 5, 6 | M1 | Ignore 5, 5 and 6, 6 for M1 May be in sample space diagram or list |
| Complete list of 15 pairs with only 4, 6 and 5, 6 chosen | M1dep | Condone list with any of 1, 1 and 2, 2 etc included |
| 15 outcomes stated | M1 | Denominator of 15 |
| $\frac{2}{15}$ or 0.133... or 13.3...% | A1 | SC2 $\frac{4}{36}$ oe (from all 4 outcomes) SC1 $\frac{2}{36}$ oe (from 4, 6 and 5, 6) |

**Additional Guidance**

The special cases must come from either no working or the methods stated in brackets

If a sample space or list is used the possible totals must be identified eg ringed for M1M1 but a correct numerator with a correct sample space or list may imply the correct pairs for M1M1

A sample space diagram may be incomplete if unambiguous

In any list or diagram allow one error or omission or repeat and always allow 1, 1 and 2, 2 etc

Sample space with 36 outcomes and 6 possible pairs chosen (including 5, 5 and 6, 6) is likely to lead to the answer $\frac{6}{36}$ or $\frac{1}{6}$ |

M1M0M0A0
<table>
<thead>
<tr>
<th>Q</th>
<th>Answer</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative method 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5 or 9.5 or 0.145 or 0.155 seen</td>
<td>B1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.5 ÷ 0.145 or 65.5...</td>
<td>M1</td>
<td>Condone ( (9, 9.5] \div [0.145, 0.15) )</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>A1</td>
<td>Must be using 9.5 and 0.145</td>
<td></td>
</tr>
<tr>
<td><strong>Alternative method 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5 or 9.5 or 0.145 or 0.155 seen</td>
<td>B1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( 0.145 \times 65 = 9.425 ) and ( 0.145 \times 66 = 9.57 )</td>
<td>M1</td>
<td>Condone ( [0.145, 0.15) \times n = a ) and ( [0.145, 0.15) \times (n + 1) = b ) where ( a &lt; 9.5 ) and ( b &gt; 9.5 )</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>A1</td>
<td>Must be using (9.5 and) 0.145</td>
<td></td>
</tr>
<tr>
<td><strong>Additional Guidance</strong></td>
<td></td>
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</tr>
<tr>
<td>( 9.49 \div 0.145 = 65.4... ) answer 65</td>
<td>B1M1A0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Answer only of 65</td>
<td>B0M0A0</td>
<td></td>
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<tr>
<td>Allow conversion to millilitres throughout</td>
<td></td>
<td></td>
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<tr>
<td>( 9.4\dot{9} ) is equivalent to 9.5 so can score full marks but do not accept use of eg 9.499 for the A mark</td>
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</tbody>
</table>