

**Ma**

KEY STAGE

**2**

LEVELS

**3-5**

**2003**

Mathematics tests

# Mark schemes

Test A, Test B and Mental mathematics test

**2003**

**2**  
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Guarding standards

department for

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# Marking the mathematics tests

As in 2002, external markers, employed by the external marking agencies under contract to QCA, will mark the test papers. The markers will follow the mark schemes in this booklet, which is supplied to teachers for information.

This booklet contains the mark schemes for the levels 3–5 tests A, B and mental mathematics. Level threshold tables will be available on the QCA website on 23 June 2003 ([www.qca.org.uk/](http://www.qca.org.uk/)).

## General guidance

### *The structure of the mark schemes*

The marking information for each question is set out in the form of tables, which start on page 6 of this booklet. The ‘question’ column on the left-hand side of each table provides a quick reference to the question number and the question part. The ‘mark’ column indicates the total number of marks available for each question part. On some occasions, the symbol  $\textcircled{U1}$  or  $\textcircled{U2}$  may be shown in the mark column. The ‘U’ indicates that there is a ‘Using and Applying Mathematics’ element in the question. The number, 1 or 2, shows the number of marks attributed to using and applying mathematics in this question.

The ‘requirement’ column may include two types of information:

- a statement of the requirements for the award of each mark, with an indication of whether credit can be given for correct working;
- examples of some different types of correct response.

The ‘additional guidance’ column indicates alternative acceptable responses, and provides details of specific types of response which are unacceptable. Other guidance, such as the range of acceptable answers, is provided as necessary.

Additionally, for the mental mathematics test, general guidance on marking is given on page 18, together with a ‘quick reference’ mark scheme.

### *Applying the mark schemes*

In order to ensure consistency of marking, the most frequent procedural queries are listed on pages 2 and 3 with the action the marker will take. This is followed by further guidance on pages 4 and 5 relating to the marking of questions that involve money, time and other measures. Unless otherwise specified in the mark scheme, markers will apply the following guidelines in all cases.

| What if ...   | Marking procedure   |  |
|---|---|--|
| The child's response is numerically or algebraically equivalent to the answer in the mark scheme. | Markers will award the mark unless the mark scheme states otherwise.  |  |
| The child's response does not match closely any of the examples given.                            | Markers will use their judgement in deciding whether the response corresponds with the statement of the requirements given in the 'requirement' column. Reference will also be made to the additional guidance and, if there is still uncertainty, markers will contact the supervising marker.   |  |
| The child has responded in a non-standard way.  | Calculations, formulae and written responses do not have to be set out in any particular format. Children may provide evidence in any form as long as its meaning can be understood. Diagrams, symbols or words are acceptable for explanations or for indicating a response. Any correct method of setting out working, however idiosyncratic, will be accepted.   |  |
| There appears to be a misreading affecting the working.   | This is when the child misreads the information given in the question and uses different information without altering the original intention or difficulty level of the question. For each misread that occurs, one mark only will be deducted. In one-mark questions – 0 marks are awarded. In two-mark questions that have a method mark – 1 mark will be awarded if the correct method is correctly implemented with the misread number(s).  |  |
| No answer is given in the expected place, but the correct answer is given elsewhere.              | Where a child has shown understanding of the question, the mark(s) will be given. In particular, where a word or number response is expected, a child may meet the requirement by annotating a graph or labelling a diagram elsewhere in the question.  |  |
| The response in the answer box is wrong, but the correct answer is shown in the working.          | <p>Where appropriate, detailed guidance will be given in the mark scheme, which markers will follow. If no guidance is given, markers will examine each case to decide whether:</p> <ul style="list-style-type: none"> <li>the incorrect answer is due to a transcription error;</li> <li>the child has continued to give redundant extra working which <b>does not</b> contradict work already done;</li> <li>the child has continued to give redundant extra working which <b>does</b> contradict work already done.</li> </ul> | <p>If so, the mark <b>will</b> be awarded.</p> <p>If so, the mark <b>will</b> be awarded.</p> <p>If so, the mark <b>will not</b> be awarded.</p> |

| <b>What if ...</b>  | <b>Marking procedure</b>  |
|---|---|
| The child's answer is correct but the wrong working is shown.   | A correct response will always be marked as correct.  |
| The correct response has been crossed out and not replaced.   | Any legible crossed-out work that has not been replaced will be marked according to the mark scheme. If the work is replaced, then crossed-out work will not be considered.   |
| More than one answer is given.  | If all answers are correct (or a range of answers is given, all of which are correct), the mark will be awarded unless prohibited by the mark scheme. If both correct and incorrect responses are given, no mark will be awarded. |
| The answer is correct but, in a later part of the question, the child has contradicted this response. | A mark given for one part will not be disallowed for working or answers given in a different part, unless the mark scheme specifically states otherwise.  |

### ***Recording marks awarded on the test paper***

In the shaded margin there is a mark box for each question part. For the written tests, the number of marks gained on each double page will be written in the total box at the bottom of the right-hand page. For all of the tests, the total number of marks gained on each paper will be recorded on the front of the test paper, and on the mark sheet.

All questions in the tests, even those not attempted by the child, will be marked with a '1' or '0' entered in the mark box.

A two-mark question which is correct has '1' entered in both mark boxes. A two-mark question which is incorrect, but which has sufficient evidence of working or method as required by the mark scheme will have '1' entered in the first mark box and '0' in the second. Otherwise '0' will be entered in both mark boxes.

Test A carries a total of 40 marks. Test B also carries a total of 40 marks. The mental mathematics test carries a total of 20 marks.

The 2003 key stage 2 mathematics tests and mark schemes were developed by the Mathematics Test Development Team at QCA.

## Marking specific types of question

### Responses involving money

| Where the £ sign is given  |  |
|--|--|
| For example: £3.20 £7  |  |
| <b>£</b>   |  |
| Accept ✓   | Do not accept ✗  |
| <ul style="list-style-type: none"> <li>✓ £3.20, £7, £7.00</li> <li>✓ Any unambiguous indication of the correct amount               <ul style="list-style-type: none"> <li>eg £3.20p, £3 20 pence</li> <li>£3 20, £3,20, £3-20, £3:20</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous use of pounds or pence               <ul style="list-style-type: none"> <li>eg £320, £320p</li> </ul> </li> <li>✗ Incorrect placement of decimal point, or incorrect use or omission of 0               <ul style="list-style-type: none"> <li>eg £3.2</li> <li>£3 200, £32 0, £3-2-0</li> </ul> </li> </ul> |

| Where the p sign is given  |   |
|--|---|
| For example: 40p   |   |
| <b>p</b>   |   |
| Accept ✓   | Do not accept ✗   |
| <ul style="list-style-type: none"> <li>✓ 40p</li> <li>✓ Any unambiguous indication of the correct amount               <ul style="list-style-type: none"> <li>eg £0.40p</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous use of pounds or pence               <ul style="list-style-type: none"> <li>eg 0.40p</li> <li>£40p</li> </ul> </li> </ul> |

| Where no sign is given   |  |
|--|--|
| For example: £3.20, 40p  |  |
| <b></b>  |  |
| Accept ✓   | Do not accept ✗  |
| <ul style="list-style-type: none"> <li>✓ £3.20, 40p, £0.40</li> <li>✓ 320p</li> <li>✓ Any unambiguous indication of the correct amount               <ul style="list-style-type: none"> <li>eg £3.20p, £3 20 pence</li> <li>£3 20, £3,20, £3-20, £3:20</li> <li>3.20, 320, 3 pounds 20</li> <li>£0.40p, £.40p</li> <li>40, 0.40, £.40</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous use of pounds or pence               <ul style="list-style-type: none"> <li>eg £320, £320p</li> <li>£3.2</li> <li>3.20p</li> <li>£40, £40p</li> <li>0.4</li> </ul> </li> </ul> |

**Responses involving time**

| <b>A time interval</b><br>For example: 2 hours 30 minutes   |  |
|---|--|
| <b>Accept ✓</b>   | <b>Do not accept ✗</b>   |
| <ul style="list-style-type: none"> <li>✓ 2 hours 30 minutes</li> <li>✓ Any unambiguous indication<br/>eg 2½ hours, 2.5 hours<br/>2h 30, 2h 30 min</li> <li>✓ Digital electronic time<br/>ie 2:30</li> </ul> | <ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous time interval<br/>eg 2.30, 2-30, 2,30<br/>2.3, 2.3 hours, 2.3h, 2h 3<br/>2.30 min</li> </ul> |

| <b>A specific time</b><br>For example: 8:40am, 17:20   |  |
|--|--|
| <b>Accept ✓</b>  | <b>Do not accept ✗</b>   |
| <ul style="list-style-type: none"> <li>✓ 8:40am, 8:40, twenty to nine</li> <li>✓ Any unambiguous, correct indication<br/>eg 08.40, 8.40, 0840<br/>8 40, 8-40, 8,40</li> <li>✓ Unambiguous change to 12 or 24<br/>hour clock<br/>eg 17:20 as 5:20pm or 17:20pm</li> </ul> | <ul style="list-style-type: none"> <li>✗ Incorrect time<br/>eg 8.4am, 8.40pm</li> <li>✗ Incorrect placement of separators,<br/>spaces, etc or incorrect use or<br/>omission of 0<br/>eg 840, 8:4:0<br/>8.4, 084, 84</li> </ul> |

**Responses involving measures**

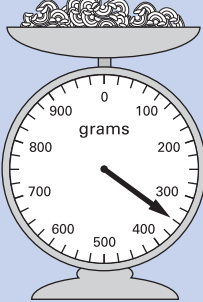
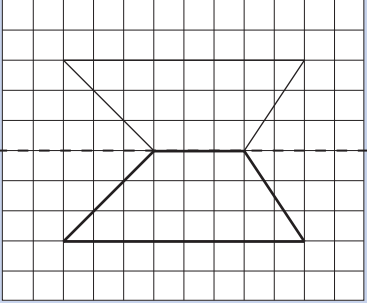
| <b>Where units are given (eg kg, m, l)</b>  |   |
|---|---|
| <b>kg</b>   |   |
| <b>Accept ✓</b>   | <b>Do not accept ✗</b>  |
| <ul style="list-style-type: none"> <li>✓ 8.6kg</li> <li>✓ Any unambiguous indication of the<br/>correct measurement<br/>eg 8.60kg, 8.6000kg<br/>8kg 600g</li> </ul> | <ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous use of units<br/>eg 8600kg</li> </ul> |

**Note**

If a child leaves the answer box empty but writes the answer elsewhere on the page, then that answer must be consistent with the units given in the answer box and the conditions listed above.

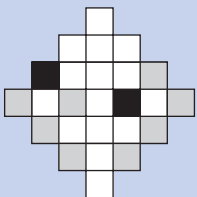
If a child changes the unit given in the answer box, then their answer must be equivalent to the correct answer using the unit they have chosen, unless otherwise indicated in the mark scheme.

### Test A questions 1–4

| Question | Requirement  | Mark | Additional guidance  |
|----------|--|------|--|
| 1a       | 65   | 1m   |  |
| 1b       | 2400   | 1m   |  |
| 2        | <p>Arrow drawn to 350, as shown:</p>  | 1m   | <p>Arrow should be closer to 350 than to 325 or 375 for award of the mark.</p> <p>Accept arrows not originating from the centre of the dial.</p>                             |
| 3        | <p>Diagram completed as shown:</p>   | 1m   | <p>Accept slight inaccuracies in drawing provided the intention is clear.</p>  |
| 4        | <p>Two numbers circled as shown:</p> <p>84   87   72   76   90</p>   | 1m   | <p><b>Do not</b> award the mark if additional incorrect numbers are circled.</p> <p>Accept alternative unambiguous indications, eg ticks, numbers crossed or underlined.</p> |



### Test A questions 5–10

| Question     | Requirement  | Mark                                  | Additional guidance  |    |     |     |           |     |          |    |   |
|--------------|--|---------------------------------------|--|----|-----|-----|-----------|-----|----------|----|---|
| 5            | 111  | 1m                                    |  |    |     |     |           |     |          |    |   |
| 6a           | £112   | 1m                                    | <b>Do not</b> accept 36 or Tuesday or £1.12  |    |     |     |           |     |          |    |   |
| 6b           | £16  | 1m                                    |  |    |     |     |           |     |          |    |   |
| 7            | Diagram marked as shown:<br>  | 1m                                    | Both squares must be correctly marked.<br><br>Accept alternative indications, eg squares ticked, crossed or circled.   |    |     |     |           |     |          |    |   |
| 8            | Table completed as shown:<br><table border="1"> <thead> <tr> <th>Type of coin</th> <th>Number of coins</th> </tr> </thead> <tbody> <tr> <td>1p</td> <td>160</td> </tr> <tr> <td>10p</td> <td><b>16</b></td> </tr> <tr> <td>20p</td> <td><b>8</b></td> </tr> </tbody> </table> | Type of coin                          | Number of coins  | 1p | 160 | 10p | <b>16</b> | 20p | <b>8</b> | 1m | Both numbers must be correct for the award of the mark. |
| Type of coin | Number of coins  |                                       |  |    |     |     |           |     |          |    |   |
| 1p           | 160  |                                       |  |    |     |     |           |     |          |    |   |
| 10p          | <b>16</b>  |                                       |  |    |     |     |           |     |          |    |   |
| 20p          | <b>8</b>   |                                       |  |    |     |     |           |     |          |    |   |
| 9a           | Tom <input type="text" value="4"/> Nadia <input type="text" value="28"/>   | 1m                                    |  |    |     |     |           |     |          |    |   |
| 9b           | 4  | 1m                                    |  |    |     |     |           |     |          |    |   |
| 10a          | <input type="text" value="11"/> AND <input type="text" value="16"/>  | 1m                                    | Both numbers must be correct for the award of the mark.<br><br>Answers may be written in either order.   |    |     |     |           |     |          |    |   |
| 10b          | An explanation which recognises that the numbers in circles are multiples of 5, eg<br><ul style="list-style-type: none"> <li>■ 'Because all the circles are multiples of 5';</li> <li>■ 'Because 35 is in the five times table'.</li> </ul>  | 1m<br><input type="text" value="U1"/> | <b>Do not</b> accept vague or arbitrary explanations, eg<br><ul style="list-style-type: none"> <li>■ 'Because you keep on adding 5';</li> <li>■ 'Because the circles are 5 more each time'.</li> </ul> |    |     |     |           |     |          |    |   |

### Test A questions 11–15

| Question | Requirement   | Mark     | Additional guidance  |
|----------|---|----------|--|
| 11a      | 42  | 1m       |  |
| 11b      | 11  | 1m       |  |
| 12       | <p>Award <b>TWO</b> marks for the correct answer of 250</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg</p> <p><math>150 \times 5 = 750</math></p> <p><math>1000 - 750 = \text{wrong answer}</math></p>  | Up to 2m | Calculation must be performed for the award of <b>ONE</b> mark.  |
| 13       | 18 456  | 1m       |  |
| 14a      | Teri  | 1m       | Accept recognisable misspellings.  |
| 14b      | 5   | 1m       | <b>Do not</b> accept 16.8  |
| 15       | <p>Award <b>TWO</b> marks for all three shape names written in the correct order as shown:</p> <ul style="list-style-type: none"> <li>■ rectangle</li> <li>■ kite</li> <li>■ square</li> </ul> <p>If the answer is incorrect, award <b>ONE</b> mark for two shape names written in the correct order.</p> | Up to 2m | <p>Accept recognisable misspellings.</p> <p>For the first shape, accept oblong or parallelogram.</p> <p>For the third shape, accept rhombus or parallelogram but <b>do not</b> accept diamond.</p> |

### Test A questions 16–18

| Question         | Requirement   | Mark  | Additional guidance                                 |
|------------------|---|---|---|
| <p><b>16</b></p> | <p>Award <b>TWO</b> marks for all three numbers correct as shown:</p> <p>a multiple of 9 <input type="text" value="2"/> <input type="text" value="7"/> <b>OR</b> <input type="text" value="7"/> <input type="text" value="2"/></p> <p>a square number <input type="text" value="2"/> <input type="text" value="5"/></p> <p>a factor of 96 <input type="text" value="1"/> <input type="text" value="2"/></p> <p>If the answer is incorrect, award <b>ONE</b> mark for two numbers correct.</p> | <p><b>Up to 2m</b></p>                                  |   |
| <p><b>17</b></p> | <p>Award <b>TWO</b> marks for the correct answer of</p> <p><input type="text" value="10.8"/> <b>AND</b> <input type="text" value="17.3"/></p> <p>If the answer is incorrect, award <b>ONE</b> mark for</p> <p><b>either</b><br/> <b>10.8</b> in the first box<br/> <b>or</b><br/> a number in the second box, which is 6.5 greater than the answer given in the first box.</p>  | <p><b>Up to 2m</b></p>                                  | <p><i>Numbers must be in the correct order.</i></p> |
| <p><b>18</b></p> | <p><math>\frac{13}{35}</math></p>   | <p><b>1m</b></p> <p><input type="text" value="U1"/></p> |   |

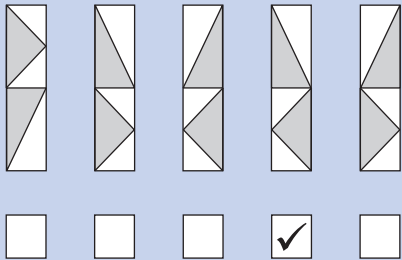
## Test A questions 19–21

| Question   | Requirement   | Mark   | Additional guidance  |
|------------|---|--|--|
| <b>19</b>  | <p>Award <b>TWO</b> marks for the correct answer of 50</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working using common units, eg</p> <p><math>1500 \div 30 =</math> wrong answer</p>  | <b>Up to<br/>2m</b>  | <p><i>Calculation must be performed for the award of <b>ONE</b> mark.</i></p> <p><b>Do not</b> accept <math>1.5 \div 30</math> as evidence of appropriate working.</p>   |
| <b>20</b>  | <p>Award <b>TWO</b> marks for two different answers as shown:</p> <p style="text-align: center;"> <span style="border: 1px solid black; padding: 2px 5px;">5</span> and <span style="border: 1px solid black; padding: 2px 5px;">2</span> OR <span style="border: 1px solid black; padding: 2px 5px;">2</span> and <span style="border: 1px solid black; padding: 2px 5px;">5</span> </p> <p><b>AND</b></p> <p style="text-align: center;"> <span style="border: 1px solid black; padding: 2px 5px;">3.5</span> and <span style="border: 1px solid black; padding: 2px 5px;">3.5</span> </p> <p>If the answer is incorrect, award <b>ONE</b> mark for any one of the above answers.</p> | <b>Up to<br/>2m</b>  | <p><i>The two answers may be given in either order.</i></p> <p><b>Do not</b> accept '5 and 2' <b>AND</b> '2 and 5' for two marks.</p>  |
| <b>21a</b> | <p>Answer in the range 30% to 36% inclusive.</p>  | <b>1m</b>  | <p><i>No mark is awarded for circling 'No' alone.</i></p> <p><b>Do not</b> accept vague or arbitrary explanation, eg</p> <ul style="list-style-type: none"> <li>■ 'The netball team played more games';</li> <li>■ 'Both teams won half their games';</li> <li>■ '30 is more than 24'.</li> </ul> <p><i>If 'Yes' is circled but a correct unambiguous explanation is given, then award the mark.</i></p> |
| <b>21b</b> | <p>An explanation which recognises that both teams won half their games, but both teams played a different number of games, eg</p> <ul style="list-style-type: none"> <li>■ 'Half of 30 is not the same as half of 24';</li> <li>■ 'Because <math>\frac{1}{2}</math> of 30 = 15 but <math>\frac{1}{2}</math> of 24 = 12';</li> <li>■ 'Because 15 is more than 12'.</li> </ul>   | <b>1m</b><br><span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px; display: inline-block;">U1</span> |  |

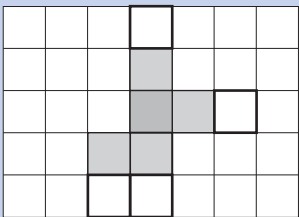
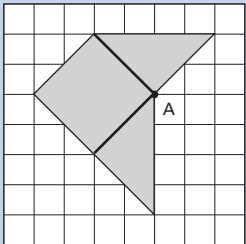
### Test A questions 22–26

| Question | Requirement   | Mark           | Additional guidance   |
|----------|---|----------------|---|
| 22       | 20  | 1m             |   |
| 23       | (10, 9)   | 1m             | Coordinates must be in the correct order.<br><br>Accept unambiguous answers written on the diagram.   |
| 24       | 64  | 1m             |   |
| 25       | <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 2px;">2</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 2px;">5</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 2px;">10</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 2px;">20</div> </div> <p>OR</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 2px;">4</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 2px;">5</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 2px;">10</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 2px;">20</div> </div> | 1m<br>U1       | Accept the four numbers listed in any order.  |
| 26       | <p>Award <b>TWO</b> marks for the correct answer of 20</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate method, eg</p> <ul style="list-style-type: none"> <li>■ <math>30 \times £5 = £150</math><br/><math>£150 - £110 = £40</math><br/><math>£40 \div £2 = 20</math></li> <li>■ <math>£110 \div 30 = £3</math> each, with £20 left over<br/><math>£20 \div £2 = 10</math><br/><math>30 - 10 = 20</math></li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>■ a trial and improvement method, eg<br/><math>30 \times £3 = £90</math><br/><math>10 \times £3 + 20 \times £5 = £130</math><br/><math>15 \times £3 + 15 \times £5 = £120</math></li> </ul>  | Up to 2m<br>U2 | <p>Calculation must be performed for the award of <b>ONE</b> mark.</p> <p><i>A 'trial and improvement' method must show evidence of improvement, but a final answer need not be reached for the award of <b>ONE</b> mark.</i></p> |

### Test B questions 1–5

| Question | Requirement   | Mark                | Additional guidance  |
|----------|---|---------------------|--|
| 1a       | 3   | 1m                  |  |
| 1b       | 75  | 1m                  |  |
| 1c       | 84  | 1m                  |  |
| 2        | <p>All five digits arranged to give a sum of 60, eg</p> $\begin{array}{r} 5 \\ 12 \\ + 43 \\ \hline 60 \end{array} \quad \text{OR} \quad \begin{array}{r} 1 \\ 25 \\ + 34 \\ \hline 60 \end{array}$ | <p>1m</p> <p>U1</p> | <p>Accept digits in any order provided the sum of 60 is achieved.</p> <p><b>Do not</b> accept a digit used more than once, or digits outside the list given.</p> |
| 3a       | 45  | 1m                  |  |
| 3b       | 15:13   | 1m                  |  |
| 4a       | 90  | 1m                  |  |
| 4b       | 13  | 1m                  |  |
| 5        | <p>The correct shape ticked, as follows:</p>   | 1m                  | <p>Accept alternative indications, eg shapes ringed, as long as the intention is clear.</p>  |

### Test B questions 6–11

| Question  | Requirement  | Mark  | Additional guidance   |
|-----------|--|---|---|
| <b>6a</b> | 17   | <b>1m</b>   |   |
| <b>6b</b> | 18   | <b>1m</b>   |   |
| <b>7</b>  | <p>Award <b>TWO</b> marks for the correct answer of</p> <div style="text-align: center; border: 1px solid black; padding: 5px; display: inline-block;"> <span style="border: 1px solid black; padding: 2px 5px;">22</span> AND <span style="border: 1px solid black; padding: 2px 5px;">21</span> </div> <p>If the answer is incorrect, award <b>ONE</b> mark for</p> <p><b>either</b><br/> <b>22</b> in the first box<br/> <b>or</b><br/> a number in the second box, which is 10 more than half the answer given in the first box.</p> | <b>Up to 2m</b>   | <i>Numbers must be in the correct order.</i>  |
| <b>8</b>  | <p>Diagram completed with <b>ONE</b> of the four extra squares shown.</p>    | <b>1m</b>   | <p><i>Accept slight inaccuracies in drawing provided the intention is clear.</i></p> <p><i>Accept alternative indications, eg squares ticked or circled.</i></p> <p><i>Accept more than one square drawn if <b>all</b> are correct.</i></p> |
| <b>9</b>  | <p>Award <b>TWO</b> marks for the correct answer of 73p <b>OR</b> £0.73</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate method, eg</p> $195 + 38 + (70 \times 2) = 373$ $373 - 300$   | <b>Up to 2m</b>   | <p><i>Accept for <b>ONE</b> mark £73p <b>OR</b> 0.73p <b>OR</b> £73 as evidence of appropriate method.</i></p> <p><i>Answer need not be obtained for the award of <b>ONE</b> mark.</i></p>  |
| <b>10</b> | <p>Diagram completed correctly as shown:</p>    | <b>1m</b><br><span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">U1</span> | <i>Accept slight inaccuracies in drawing provided the intention is clear.</i>   |
| <b>11</b> | 50   | <b>1m</b>   | <i>Accept -50</i>   |

### Test B questions 12–15

| Question            | Requirement   | Mark            | Additional guidance  |              |                 |     |      |                     |    |      |                 |  |
|---------------------|---|-----------------|--|--------------|-----------------|-----|------|---------------------|----|------|-----------------|--|
| 12                  | <p>Award <b>TWO</b> marks for both fractions correct as shown:</p> $\frac{3}{6} \quad \text{OR} \quad \frac{6}{12}$ <p>If the answer is incorrect, award <b>ONE</b> mark for one fraction correct.</p>  | <b>Up to 2m</b> | Accept fractions written in either order.  |              |                 |     |      |                     |    |      |                 |  |
| 13                  | <p>Calculation completed correctly as shown:</p> $\begin{array}{ c c } \hline 6 & 3 \\ \hline \end{array} \times \begin{array}{ c } \hline 6 \\ \hline \end{array} = \begin{array}{ c c c } \hline 3 & 7 & 8 \\ \hline \end{array}$ <p>OR</p> $\begin{array}{ c c } \hline 5 & 4 \\ \hline \end{array} \times \begin{array}{ c } \hline 7 \\ \hline \end{array} = \begin{array}{ c c c } \hline 3 & 7 & 8 \\ \hline \end{array}$ <p>OR</p> $\begin{array}{ c c } \hline 4 & 2 \\ \hline \end{array} \times \begin{array}{ c } \hline 9 \\ \hline \end{array} = \begin{array}{ c c c } \hline 3 & 7 & 8 \\ \hline \end{array}$   | <b>1m</b>       |  |              |                 |     |      |                     |    |      |                 |  |
| 14                  | <p>Award <b>TWO</b> marks for one correct number written in each white section of the table, eg</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="background-color: #cccccc;">less than 1000</td> <td style="background-color: #cccccc;">1000 or more</td> </tr> <tr> <td style="background-color: #cccccc;">multiples of 20</td> <td>100</td> <td>2000</td> </tr> <tr> <td style="background-color: #cccccc;">not multiples of 20</td> <td>19</td> <td>1001</td> </tr> </table> <p>If the answer is incorrect, award <b>ONE</b> mark for three sections completed correctly.</p> |                 | less than 1000   | 1000 or more | multiples of 20 | 100 | 2000 | not multiples of 20 | 19 | 1001 | <b>Up to 2m</b> | Accept more than one number in each section as long as <b>all</b> are correct. |
|                     | less than 1000  | 1000 or more    |  |              |                 |     |      |                     |    |      |                 |  |
| multiples of 20     | 100   | 2000            |  |              |                 |     |      |                     |    |      |                 |  |
| not multiples of 20 | 19  | 1001            |  |              |                 |     |      |                     |    |      |                 |  |
| 15                  | <p>Lengths written in correct order as shown:</p> $\begin{array}{ c } \hline 25\text{mm} \\ \hline \end{array} \quad \begin{array}{ c } \hline 3.5\text{cm} \\ \hline \end{array} \quad \begin{array}{ c } \hline 20\text{cm} \\ \hline \end{array} \quad \begin{array}{ c } \hline \frac{1}{2}\text{m} \\ \hline \end{array}$  | <b>1m</b>       | <p>Accept use of equivalent units, eg 2.5cm</p> <p>Accept answers with missing or incorrect units.</p> |              |                 |     |      |                     |    |      |                 |  |



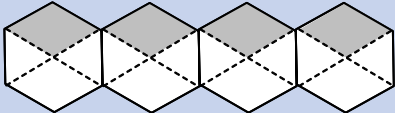
### Test B questions 16–18

| Question | Requirement   | Mark                        | Additional guidance  |
|----------|---|-----------------------------|--|
| 16       | <p>Award <b>TWO</b> marks for the sequence completed as shown:</p> <p><input type="text" value="0.75"/> <input type="text" value="1.5"/> 3 6 12 24 48 <input type="text" value="96"/></p> <p>If the answer is incorrect, award <b>ONE</b> mark for two numbers correct.</p> | Up to 2m                    | <p>Accept answers as fractions, eg <math>\frac{3}{4}, 1\frac{1}{2}</math></p> <p>Accept for <b>ONE</b> mark</p> <ul style="list-style-type: none"> <li>the number in the third box is 96</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>the number in the first box is half of the number in the second box.</li> </ul> <p>eg</p> <p><input type="text" value="0.5"/> <input type="text" value="1"/> <input type="text" value="96"/></p> <p><b>Do not</b> award any marks if all numbers are whole numbers.</p> |
| 17       | 5   | 1m                          |  |
| 18       | <p>Award <b>TWO</b> marks for the correct answer of 54</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate method, eg</p> <p><math>153 - (3 \times 15) = 108</math></p> <p><math>108 \div 2</math></p>                                     | <p>Up to 2m</p> <p>(U1)</p> | <p>Answer need not be obtained for the award of <b>ONE</b> mark.</p>   |

### Test B questions 19–21

| Question   | Requirement   | Mark  | Additional guidance  |
|------------|---|---|--|
| <b>19</b>  | 367.5 <b>OR</b> $367\frac{1}{2}$  | <b>1m</b>   |  |
| <b>20</b>  | <p>Award <b>TWO</b> marks for all three answers correct, as shown:</p> <p>k = <span style="border: 1px solid black; padding: 2px;">500</span>    m = <span style="border: 1px solid black; padding: 2px;">750</span>    n = <span style="border: 1px solid black; padding: 2px;">250</span></p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate method, eg</p> <ul style="list-style-type: none"> <li>■ <math>2n + 3n + n = 1500</math><br/><math>1500 \div 6</math></li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>■ a trial and improvement method, eg</li> </ul> <p style="margin-left: 40px;"><math>1000 + 1500 + 500 = 3000</math><br/> <math>200 + 300 + 100 = 600</math><br/> <math>400 + 600 + 200 = 1200</math></p> | <p><b>Up to 2m</b></p> <p style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">U1</p> | <p>Accept for <b>ONE</b> mark any permutation of the correct answers, eg</p> <p style="text-align: center;"><math>k = 750, m = 250, n = 500</math></p> <p>Answer need not be obtained for the award of <b>ONE</b> mark.</p> <p>A 'trial and improvement' method must show evidence of improvement.</p> |
| <b>21a</b> | £1.50   | <b>1m</b>   |  |
| <b>21b</b> | <p>Award <b>TWO</b> marks for the correct answer of 250</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate method, eg</p> <p><math>360 \div 90 = 4</math></p> <p><math>1000 \div 4</math></p>   | <p><b>Up to 2m</b></p>  | <p>Answer need not be obtained for the award of <b>ONE</b> mark.</p>   |

### Test B questions 22–24

| Question | Requirement  | Mark     | Additional guidance  |
|----------|--|----------|--|
| 22       | <p>Award <b>TWO</b> marks for boxes ticked and crossed as shown:</p> <div style="text-align: center;"> <input type="checkbox"/> x<br/> <input checked="" type="checkbox"/><br/> <input checked="" type="checkbox"/><br/> <input type="checkbox"/> x         </div> <p>If the answer is incorrect, award <b>ONE</b> mark for any three out of four boxes correctly completed.</p> | Up to 2m | <p>Accept alternative unambiguous indications such as <b>Y</b> or <b>N</b>.</p> <p>For <b>TWO</b> marks, accept blank boxes as crosses.</p> <p>For <b>ONE</b> mark, <b>do not</b> accept blank boxes as crosses.</p> |
| 23       | <p>Equivalent of one third of each hexagon shaded, or a total of <math>1\frac{1}{3}</math> hexagons shaded, eg</p>    | 1m       | <p>Accept part shapes shaded as long as the intention is clear.</p> <p>Accept inaccuracies in shading provided the intention is clear.</p>   |
| 24       | <p>Award <b>TWO</b> marks for the correct answer of 112 500</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate method, eg</p> <p>45% of 250 000</p>  | Up to 2m | <p>Answer need not be obtained for the award of <b>ONE</b> mark.</p>   |

# Mark scheme for the mental mathematics test

## ***Applying the mark scheme***

Please note that children will not be penalised if they record any information given in the question or show their working. Markers will ignore any annotation, even if in the answer space, and mark only the answer. Markers will accept an unambiguous answer written in the stimulus box, or elsewhere on the page.

Full mark scheme information is given on page 20. In addition, a ‘quick reference’ mark scheme is provided on page 19. This is presented in a similar format to the children’s answer sheet.

## ***General guidance***

The general guidance for marking the written tests also applies to marking the mental mathematics test. In addition, the following principles apply.

1. Unless stated otherwise in the mark scheme, accept answers written in words, or a combination of words and figures.
2. Where units are specified, they are given on the answer sheet. Children are not penalised for writing in the units again.
3. Where answers are required to be ringed, do not accept if more than one answer is ringed, unless it is clear which is the child’s intended answer. Accept also any other way of indicating the correct answer, eg underlining.

# Mental mathematics 2003

## quick reference mark scheme

### Practice question

|  |  |
|--|--|
|  |  |
|--|--|

Time: 5 seconds

|          |             |                      |
|----------|-------------|----------------------|
| <b>1</b> | <b>1020</b> | Words not acceptable |
|----------|-------------|----------------------|

|          |           |
|----------|-----------|
| <b>2</b> | <b>30</b> |
|----------|-----------|

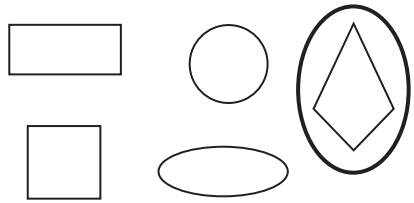
|          |           |
|----------|-----------|
| <b>3</b> | <b>42</b> |
|----------|-----------|

|          |             |
|----------|-------------|
| <b>4</b> | <b>50 %</b> |
|----------|-------------|

|          |                 |
|----------|-----------------|
| <b>5</b> | <b>12 000 g</b> |
|----------|-----------------|

Time: 10 seconds

|          |               |
|----------|---------------|
| <b>6</b> | £ <b>1.10</b> |
|----------|---------------|

|          |   |
|----------|---|
| <b>7</b> |  |
|----------|---|

|          |           |
|----------|-----------|
| <b>8</b> | <b>25</b> |
|----------|-----------|

|          |            |
|----------|------------|
| <b>9</b> | <b>0.8</b> |
|----------|------------|

|           |                                  |  |
|-----------|----------------------------------|--|
| <b>10</b> | <b><math>1\frac{1}{4}</math></b> | Accept 1.25 or $\frac{5}{4}$ or equivalent fractions |
|-----------|----------------------------------|--|

|           |             |
|-----------|-------------|
| <b>11</b> | <b>30 m</b> |
|-----------|-------------|

|           |           |
|-----------|-----------|
| <b>12</b> | <b>20</b> |
|-----------|-----------|

|           |           |
|-----------|-----------|
| <b>13</b> | <b>58</b> |
|-----------|-----------|

|           |                            |
|-----------|----------------------------|
| <b>14</b> | 0.1 <b>0.2</b> 0.3 0.4 0.5 |
|-----------|----------------------------|

|           |            |
|-----------|------------|
| <b>15</b> | <b>375</b> |
|-----------|------------|

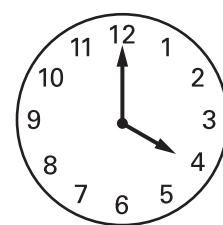
Time: 15 seconds

|           |           |
|-----------|-----------|
| <b>16</b> | <b>92</b> |
|-----------|-----------|

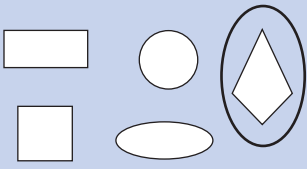
|           |  |       |       |        |       |       |       |
|-----------|--|-------|-------|--------|-------|-------|-------|
| <b>17</b> | <p style="text-align: center;">Pizzas</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>Small</td> <td>£6.50</td> </tr> <tr> <td>Medium</td> <td>£7.50</td> </tr> <tr> <td>Large</td> <td>£8.40</td> </tr> </table> <hr/> <p style="text-align: center;">£ <b>1.90</b></p> | Small | £6.50 | Medium | £7.50 | Large | £8.40 |
| Small     | £6.50  |       |       |        |       |       |       |
| Medium    | £7.50  |       |       |        |       |       |       |
| Large     | £8.40  |       |       |        |       |       |       |

|           |            |
|-----------|------------|
| <b>18</b> | <b>165</b> |
|-----------|------------|

|           |           |
|-----------|-----------|
| <b>19</b> | <b>11</b> |
|-----------|-----------|

|           |   |
|-----------|---|
| <b>20</b> |  |
|           | <b>120 degrees</b>  |

## Mental mathematics questions 1–20

| Question | Requirement   | Mark | Additional guidance  |
|----------|---|------|--|
| 1        | 1020  | 1m   | Words <b>not</b> acceptable.   |
| 2        | 30  | 1m   |  |
| 3        | 42  | 1m   |  |
| 4        | 50%   | 1m   | <b>Do not</b> accept 0.5 <b>OR</b> $\frac{1}{2}$   |
| 5        | 12 000g   | 1m   |  |
| 6        | £1.10   | 1m   |  |
| 7        |  | 1m   | Accept any other way of indicating the answer, eg ticked or crossed.<br><br><b>Do not</b> accept if more than one answer is indicated unless the child's intention is clear. |
| 8        | 25  | 1m   |  |
| 9        | 0.8   | 1m   |  |
| 10       | $1\frac{1}{4}$ <b>OR</b> 1.25 <b>OR</b> $\frac{5}{4}$                             | 1m   | Accept equivalent fractions.   |
| 11       | 30m   | 1m   |  |
| 12       | 20  | 1m   |  |
| 13       | 58  | 1m   |  |
| 14       | 0.1 <b>0.2</b> 0.3    0.4    0.5  | 1m   | Accept any other way of indicating the answer, eg underlining.<br><br><b>Do not</b> accept if more than one answer is indicated unless the child's intention is clear.       |
| 15       | 375   | 1m   |  |
| 16       | 92  | 1m   |  |
| 17       | £1.90   | 1m   |  |
| 18       | 165   | 1m   |  |
| 19       | 11  | 1m   |  |
| 20       | 120 degrees   | 1m   |  |

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