

**Ma**

KEY STAGE

**2**

LEVELS

**3–5**

Mathematics tests

## Mark schemes

Test A, Test B and  
mental mathematics



National curriculum assessments

**2011**

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# Marking the mathematics tests

As in 2010, external markers, employed by the external marking agencies under contract to QCDA, 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 from the *Pupil results* section of the QCDA website at [www.qcda.gov.uk/tests](http://www.qcda.gov.uk/tests) from Tuesday 5 July 2011.

## 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 (U1) 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, 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.

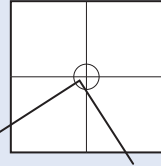
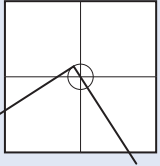
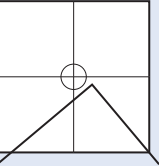
The '**Additional guidance**' column indicates alternative acceptable responses, and provides details of specific types of response which are unacceptable. Other guidance, such as the range of acceptable answers, is provided as necessary.

Additionally, for the mental mathematics test, general guidance on marking is given on page 18, followed by the marking information for each question.

### Applying the mark schemes

In order to ensure consistency of marking, the most frequent procedural queries are listed on pages 2 and 3 along 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	
<i>The pupil's response is numerically or algebraically equivalent to the answer in the mark scheme.</i>	Markers will award the mark unless the mark scheme states otherwise.	
<i>The pupil's response does not match closely any of the examples given.</i>	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.	
<i>The pupil has responded in a non-standard way.</i>	Calculations, formulae and written responses do not have to be set out in any particular format. Pupils 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.	
<i>There appears to be a misreading affecting the working.</i>	This is when the pupil 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.	
<i>No answer is given in the expected place, but the correct answer is given elsewhere.</i>	Where a pupil has shown understanding of the question, the mark(s) will be given. In particular, where a word or number response is expected, a pupil may meet the requirement by annotating a graph or labelling a diagram elsewhere in the question.	
<i>The pupil's answer is correct but the wrong working is shown.</i>	A correct response will always be marked as correct.	
<i>The response in the answer box is wrong, but the correct answer is shown in the working.</i>	<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 pupil has continued to give redundant extra working which does not contradict work already done</li> <li>■ the pupil has continued to give redundant extra working which does 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>

What if...	Marking procedure
<i>The correct response has been crossed out and not replaced.</i>	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.
<i>More than one answer is given.</i>	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.
<i>The answer is correct but, in a later part of the question, the pupil has contradicted this response.</i>	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.
<i>The pupil has drawn lines which do not meet at the correct point.</i>	<p>Markers will interpret the phrase 'slight inaccuracies in drawing' to mean 'within or on a circle of radius 2mm with centre at the correct point'.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>within the circle accepted</p> </div> <div style="text-align: center;">  <p>on the circle accepted</p> </div> <div style="text-align: center;">  <p>outside the circle <b>not</b> accepted</p> </div> </div>

### Recording marks awarded on the test paper

In the margin there is a marking space alongside each question part.

For the mental mathematics test, the external marker will record '1' for a correct response or '0' otherwise.

For the written tests, the external marker will record one of the following in each marking space:

'1' for a correct response

'0' for an incorrect response

'-' if no response is made.

A two-mark question which is correct will have '1' entered in both marking spaces. 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 marking space and '0' in the second. Otherwise '0' will be entered in both marking spaces, unless no response is made in which case '-' will be entered in both marking spaces.

For the written tests, the total number of marks gained on each double page will be written in the space 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.

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 2011 key stage 2 mathematics tests and mark schemes were developed by the Test Development Team at Pearson Research and Assessment on behalf of QCDA.

## Marking specific types of question – summary of additional guidance

### Responses involving money

	Accept	Do not accept
<p><b>Where the £ sign is given</b></p> <p>for example: £3.20, £7</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px;">£</div>	<p>£3.20                    £7                                   £7.00</p> <p>Any unambiguous indication of the correct amount, eg</p> <p>£3.20p £3 20 pence £3 20 £3,20 £3-20 £3:20</p>	<p>Incorrect placement of pounds or pence, eg</p> <p>£320 £320p</p> <p>Incorrect placement of decimal point, or incorrect use or omission of 0, eg</p> <p>£3.2 £3 200 £32 0 £3-2-0</p>
<p><b>Where the p sign is given</b></p> <p>for example: 40p</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px;">p</div>	<p>40p</p> <p>Any unambiguous indication of the correct amount, eg</p> <p>£0.40p</p>	<p>Incorrect or ambiguous use of pounds or pence, eg</p> <p>0.40p £40p</p>
<p><b>Where no sign is given</b></p> <p>for example: £3.20, 40p</p> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 5px;"></div>	<p>£3.20                    40p 320p                    £0.40</p> <p>Any unambiguous indication of the correct amount, eg</p> <p>£3.20p                    £0.40p £3 20 pence            £.40p £3 20                    £.40 £3,20                    40 £3-20                    0.40 £3:20 3.20 320 3 pounds 20</p>	<p>Incorrect or ambiguous use of pounds or pence, eg</p> <p>£320                    £40 £320p                    £40p £3.2                    0.4 3.20p                    0.40p</p>

**Responses involving time**

	Accept	Do not accept
<b>A time interval</b> for example: 2 hours 30 minutes	2 hours 30 minutes Any unambiguous, correct indication, eg 2½ hours 2.5 hours 2h 30 2h 30 min 2 30 150 minutes 150 Digital electronic time, ie 2:30	Incorrect or ambiguous time interval, eg 2.30 2-30 2,30 230 2.3 2.3 hours 2.3h 2h 3 2.30 min
<b>A specific time</b> for example: 8:40am, 17:20	8:40am 8:40 twenty to nine Any unambiguous, correct indication, eg 08.40 8.40 0840 8 40 8-40 8,40 Unambiguous change to 12 or 24 hour clock, eg 17:20 as 5:20pm or 17:20pm	Incorrect time, eg 8.4am 8.40pm Incorrect placement of separators, spaces, etc or incorrect use or omission of 0, eg 840 8:4:0 8.4 084

**Responses involving measures**

	Accept	Do not accept
<b>Where units are given</b> (eg kg, m, l) for example: 8.6kg <div style="border: 1px solid black; display: inline-block; padding: 2px 5px;">kg</div>	8.6kg Any unambiguous indication of the correct measurement, eg 8.60kg 8.6000kg 8kg 600g	Incorrect or ambiguous use of units, eg 8600kg

**Note**

If a pupil 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.

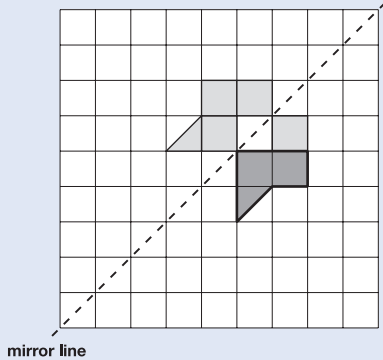

If a pupil changes the unit given in the answer box, then their answer must be equivalent to the correct answer using the unit they have chosen, unless otherwise indicated in the mark scheme.

## Test A questions 1–8

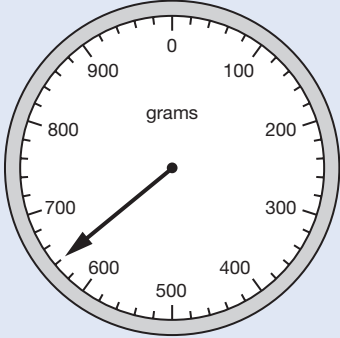

Question	Requirement	Mark	Additional guidance
1	845	1m	
2	$\boxed{5} \times \boxed{6} - \boxed{30}$ OR $\boxed{5} \times \boxed{8} - \boxed{40}$	1m	
3a	450	1m	Accept an answer in the range 440 to 460 inclusive.
3b	125	1m	
4	Five coins which total £1.60, ie £1 20p 20p 10p 10p OR 50p 50p 20p 20p 20p OR 50p 50p 50p 5p 5p	1m (U1)	Coins may be given in any order.
5	A AND D AND E	1m	Letters may be given in any order.
6a	54	1m	
6b	63	1m	
7a	7:55am	1m	The answer is a specific time (see page 5 for guidance).
7b	40 minutes	1m	The answer is a time interval (see page 5 for guidance).
8	Award <b>TWO</b> marks for all three pairs of numbers correct as shown: $\boxed{5} + \boxed{6}$ $\boxed{3} + \boxed{7}$ $\boxed{1} + \boxed{8}$ $\boxed{2} + \boxed{4}$ If the answer is incorrect, award <b>ONE</b> mark for two pairs of numbers correct.	Up to 2m (U1)	Numbers within pairs may be given in either order.



### Test A questions 9–13

Question	Requirement	Mark	Additional guidance
9	Two numbers circled as shown: 255 <b>650</b> 735 <b>900</b> 995	1m	Accept alternative unambiguous indications, eg numbers ticked, crossed or underlined.
10	Diagram completed as shown: 	1m	Accept inaccurate drawing provided the intention is clear.
11	Award <b>TWO</b> marks for all four symbols correct, as shown:  If the answer is incorrect, award <b>ONE</b> mark for three symbols correct.	Up to 2m	
12	Award <b>TWO</b> marks for the correct answer of £3.05 If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg: ■ $£5.00 - £1.05 = £3.95$ $£7.00 - £3.95 = \text{wrong answer}$ <b>OR</b> ■ $7 - 5 = 2$ $2 + 1.05 = \text{wrong answer}$	Up to 2m	Accept for <b>ONE</b> mark £305 <b>OR</b> £305p as evidence of appropriate working. Working must be carried through to reach an answer for the award of <b>ONE</b> mark.
13a	14	1m	
13b	C	1m	Accept 5

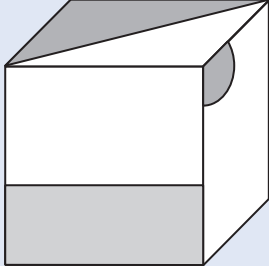
Test A questions 14–18

Question	Requirement	Mark	Additional guidance
14	<p>Arrow drawn to 640, as shown:</p> 	1m	<p>Arrow should be closer to 640 than to 620 or 660</p> <p>Accept any unambiguous indication of the correct point on the scale, including an arrow not originating from the centre of the dial.</p> <p>Accept answer given on upper diagram provided no answer is given on lower diagram.</p>
15	<p>An explanation which recognises that the shaded area is equivalent to one-third, eg:</p> <ul style="list-style-type: none"> <li>■ <math>\frac{2}{6}</math> is shaded and that is equivalent to <math>\frac{1}{3}</math></li> <li>■ '2 out of 6 is the same as 1 out of 3'</li> <li>■ '2 out of 6'</li> <li>■ <math>\frac{2}{6}</math> is shaded and <math>\frac{4}{6}</math> is not shaded, which is the same as <math>\frac{1}{3}</math> shaded and <math>\frac{2}{3}</math> not shaded'</li> <li>■ 'There are 3 squares, and 2 halves are shaded, and 2 halves make one whole'</li> <li>■ 'The two shaded triangles are the same as one square and that is one out of three squares'</li> <li>■ '1 square out of 3'</li> <li>■ 'If you add the shaded parts together it makes one square'</li> </ul> 	<p>1m</p> <p>U1</p>	<p>No mark is awarded for circling 'Yes' alone.</p> <p><b>Do not</b> accept vague or incomplete explanations, eg:</p> <ul style="list-style-type: none"> <li>■ 'It's equivalent to <math>\frac{1}{3}</math>'</li> <li>■ '<math>\frac{1}{3}</math> is shaded and <math>\frac{2}{3}</math> is not shaded'</li> <li>■ 'The two parts shaded add up to <math>\frac{1}{3}</math>'</li> <li>■ 'Half of 2 squares are shaded'.</li> </ul> <p>If 'No' is circled but a correct, unambiguous explanation is given, then award the mark.</p>
16a	2	1m	<b>Do not</b> accept nuts and fruit bar.
16b	4	1m	
16c	banana	1m	Accept unambiguous abbreviations or recognisable misspellings.
17	22.11	1m	
18	4	1m	Accept 21 <b>AND</b> 22 <b>AND</b> 23 <b>AND</b> 24

## Test A questions 19–21

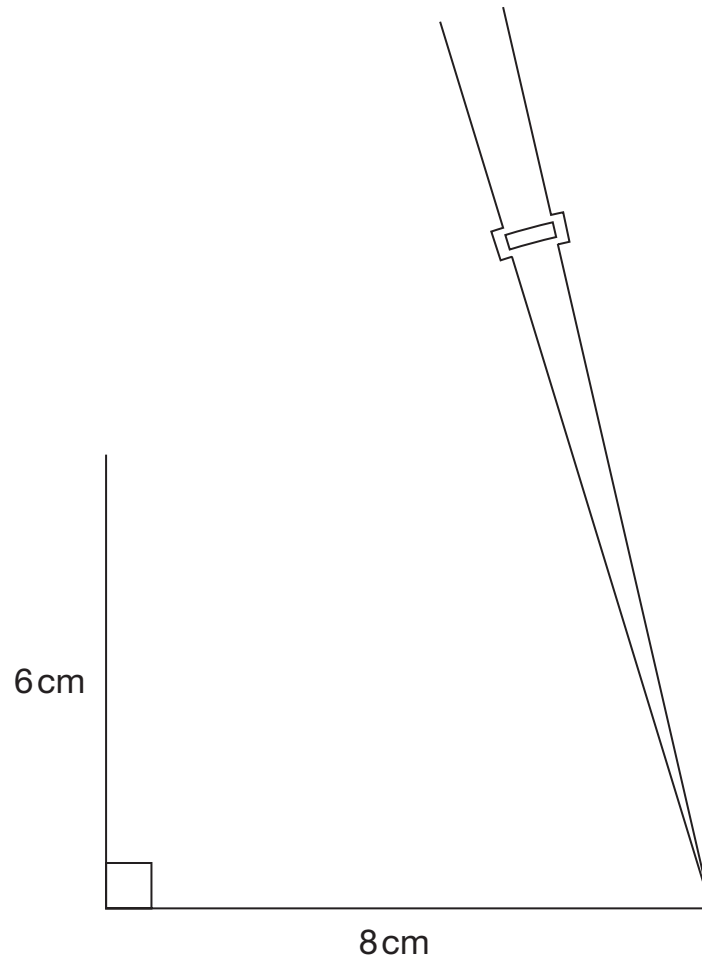
Question	Requirement	Mark	Additional guidance
19a	16	1m	
19b	A whole number in the range 180 to 190 inclusive	1m	
20	$47 \div \boxed{100} = \boxed{0.47}$ AND $\boxed{4.07} \times \boxed{10} = 40.7$	1m	Numbers within calculations may be given in either order.
21	<p>Award <b>TWO</b> marks for the correct answer of 17</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working which contains no more than <b>ONE</b> arithmetical error, eg:</p> <ul style="list-style-type: none"> <li>■ repeated addition/subtraction methods, eg           <math display="block">\begin{array}{r} 544 \\ -320 \\ \hline 224 \\ -160 \\ \hline 64 \\ -64 \\ \hline 0 \end{array} \begin{array}{l} 10 \times 32 \\ 5 \times 32 \\ 2 \times 32 \\ \text{wrong answer} \end{array}</math> </li> <li>■ repeated halving, eg           <math display="block">\begin{array}{l} 544 \div 2 = 272 \\ 272 \div 2 = 136 \\ 136 \div 2 = 68 \\ 68 \div 2 = 34 \\ 34 \div 2 = \text{wrong answer} \end{array}</math> </li> <li>■ fraction method, eg           <math display="block">\frac{544}{32} = \frac{136}{8} = \frac{34}{2} = \text{wrong answer}</math> </li> <li>■ short division algorithm           <math display="block">\begin{array}{r} \text{wrong answer} \\ 32 \overline{) 544} \\ \underline{16} \phantom{0} \\ 18 \phantom{0} \\ \underline{16} \phantom{0} \\ 24 \\ \underline{24} \\ 0 \end{array}</math> </li> <li>■ long division algorithm           <math display="block">\begin{array}{r} \text{wrong answer} \\ 32 \overline{) 544} \\ \underline{320} \phantom{0} \\ 224 \\ \underline{-224} \\ 0 \end{array}</math> </li> </ul>	Up to 2m	<p>In all cases accept follow-through of <b>ONE</b> error in working.</p> <p>Working must be carried through to reach an answer for the award of <b>ONE</b> mark.</p> <p><b>Do not</b> award any marks if the final answer is missing.</p> <p>Variations on algorithms are acceptable, provided they represent a viable and complete method.</p> <p><b>No mark</b> is awarded for repeated addition/subtraction/halving the wrong number of times.</p> <p>Short division methods must be supported by evidence of appropriate carrying figures to indicate use of a division algorithm.</p>

## Test A questions 22–23

Question	Requirement	Mark	Additional guidance
22a	Triangle drawn on the diagram as shown: 	1m	Accept inaccurate drawing provided the intention is clear. Triangle must be shaded.
22b	Quarter circle drawn on the diagram as shown above.	1m	Accept inaccurate drawing provided the intention is clear. The size of the quarter circle is not important, provided it does not touch the shaded rectangle. Quarter circle need not be shaded.
23a	13 for the $x$ coordinate	1m	Accept unambiguous answers written on the diagram.
23b	15 for the $y$ coordinate	U1 1m	Accept unambiguous answers written on the diagram.  If the answer to 23a is 15 <b>AND</b> the answer to 23b is 13, then award <b>ONE</b> mark for 23b.

## Test A question 24

Markers will use a transparent overlay of this page to mark pupils' answers to this question. A copy is enclosed.

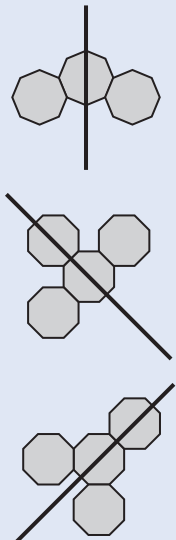


Question	Requirement	Mark	Additional guidance
24	<p>Award <b>TWO</b> marks for a quadrilateral drawn with an angle in the range <math>73^\circ</math> to <math>77^\circ</math> inclusive <b>AND</b> length of sloping line in the range 9.1cm to 9.3cm inclusive (ie upper vertex of quadrilateral within inner box on diagram).</p> <p>If the answer is incorrect, award <b>ONE</b> mark for:</p> <ul style="list-style-type: none"> <li>■ a completed quadrilateral drawn with an angle in the range <math>73^\circ</math> to <math>77^\circ</math> inclusive</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>■ a completed quadrilateral drawn with an angle in the range <math>72^\circ</math> to <math>78^\circ</math> inclusive <b>AND</b> length of sloping line in the range 9.0cm to 9.4cm inclusive.</li> </ul>	<b>Up to 2m</b>	<p>Accept drawings where any side has been extended past a vertex.</p> <p>Accept drawings which do not use the given 8cm base line, provided they have used a line with a length in the range 7.8cm to 8.2cm inclusive.</p> <p>Accept for <b>ONE</b> mark drawings not using the given 8cm base line which have a base line outside the range 7.8cm to 8.2cm, provided they have an angle in the range <math>73^\circ</math> to <math>77^\circ</math> inclusive <b>AND</b> a sloping line in the range 9.1cm to 9.3cm inclusive.</p> <p>Accept for <b>ONE</b> mark drawings of incomplete quadrilaterals, provided they have an angle in the range <math>73^\circ</math> to <math>77^\circ</math> inclusive <b>AND</b> a sloping line in the range 9.1cm to 9.3cm inclusive.</p>

## Test A question 25

Question	Requirement	Mark	Additional guidance		
25	<p>Award <b>TWO</b> marks for the correct answer of 39</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg:</p> <ul style="list-style-type: none"> <li>■ <math>36 \div 3 = 12</math></li> <li><math>36 \div 4 = 9</math></li> <li><math>12 + 9 + 9 + 9 = \text{wrong answer}</math></li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>■ <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td style="padding: 2px 10px;">12</td></tr> <tr><td style="padding: 2px 10px;">9</td></tr> </table></li> <li><math>12 - 9 = 3</math></li> <li><math>36 + 3 = \text{wrong answer}</math></li> </ul>	12	9	<p>Up to 2m</p> <p style="text-align: center;">(U1)</p>	<p>Accept for <b>ONE</b> mark an answer of 42 supported by appropriate working, eg</p> <p><math>36 + 3 + 3</math></p> <p>Working must be carried through to reach an answer for the award of <b>ONE</b> mark.</p>
12					
9					

### Test B questions 1–5

Question	Requirement	Mark	Additional guidance										
1	Number circled as shown: 70    120    85 <b>111</b> 909	1m	Accept alternative unambiguous indications, eg number ticked, crossed or underlined.										
2	Calculations completed as shown: $10 + 30 = 40$ $20 + 30 = 50$	1m	Calculations may be given in either order. The first two numbers within each calculation may be given in either order.										
3	Award <b>TWO</b> marks for one line of symmetry positioned correctly on each diagram as shown:  If the answer is incorrect, award <b>ONE</b> mark for two diagrams completed correctly.	Up to 2m	For the first diagram, accept slight inaccuracies in drawing (see page 3 for guidance). For the second and third diagrams, accept inaccurate drawing provided the intention is clear.										
4	Award <b>TWO</b> marks for four rows correct as shown: <table border="0" style="display: inline-table; vertical-align: middle;"> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr> </table> If the answer is incorrect, award <b>ONE</b> mark for three rows correct.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Up to 2m	Accept alternative unambiguous indications, eg * or Y.
<input checked="" type="checkbox"/>	<input type="checkbox"/>												
<input type="checkbox"/>	<input checked="" type="checkbox"/>												
<input checked="" type="checkbox"/>	<input type="checkbox"/>												
<input checked="" type="checkbox"/>	<input type="checkbox"/>												
<input type="checkbox"/>	<input checked="" type="checkbox"/>												
5a	2.5 OR $2\frac{1}{2}$	1m											
5b	5	1m											

## Test B questions 6–13


Question	Requirement	Mark	Additional guidance
6a	£63.25	1m	
6b	28	1m	
7a	$1\frac{1}{2}$ OR 1.5	1m	
7b	1	1m	
8	$\frac{3}{4}$	1m	Accept equivalent fractions or decimals.
9	A AND D	1m	Letters may be given in either order.
10a	19	1m	
10b	14	1m	
11	$\frac{1}{5}$	1m	Accept equivalent fractions, eg $\frac{3}{15}$ Accept 0.2 OR 20%
12	5	1m	<b>Do not</b> accept a list of dates.
13	<p>Award <b>TWO</b> marks for the correct answer of 75</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 50 = 1500</math> <math>1500 \div 20</math></li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>■ <math>30 \times 50p = £15</math> 5 20p coins make £1 <math>5 \times 15</math></li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>■ <math>50p \div 20p = 2.5</math> <math>30 \times 2.5</math></li> </ul>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.



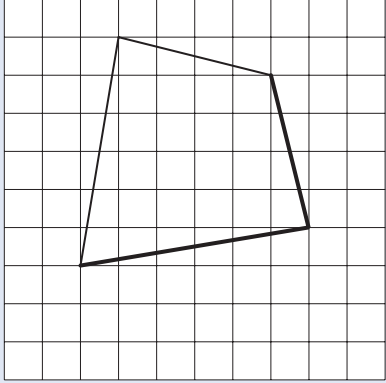
## Test B questions 14–18

Question	Requirement	Mark	Additional guidance
14a	E	1m	
14b	D	1m	
15	<p>Award <b>TWO</b> marks for a multiple of 15 which is greater than 100, eg 105 <b>OR</b> 120 <b>OR</b> 135 <b>OR</b> 150 <b>OR</b> 300</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>■ 90 93 96 99 102 105 108 ... 90 95 100 105 110 115 ...</li> <li>■ 90 93 96 98 101 104 107 (110) ... 90 95 100 105 (110) 115 ...</li> <li>■ 15 30 45 60 75 80 95 110 (125)</li> <li>■ <math>3 \times 5 \times 20</math> <b>OR</b> <math>15 \times 10</math></li> </ul>	Up to 2m	<p>Accept more than one answer if all are correct.</p> <p>Accept for <b>ONE</b> mark 30, 45, 60, 75 <b>OR</b> 90</p> <p>Not spotting matching number (105)</p> <p>One step size incorrect (96 to 98)</p> <p>One step size incorrect (75 to 80)</p> <p>Multiple greater than 100 but not calculated</p> <p>Answer need not be obtained for the award of <b>ONE</b> mark.</p>
16	<p>Masses in order, as shown:</p> <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 5px;"><math>\frac{1}{2}</math> kg</div> <div style="border: 1px solid black; padding: 2px 5px;">800g</div> <div style="border: 1px solid black; padding: 2px 5px;">2kg</div> <div style="border: 1px solid black; padding: 2px 5px;">1 tonne</div> </div>	1m	Accept answers with missing or incorrect units.
17	<div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 5px;">1</div> <div style="border: 1px solid black; padding: 2px 5px;">1</div> <span>×</span> <div style="border: 1px solid black; padding: 2px 5px;">1</div> <div style="border: 1px solid black; padding: 2px 5px;">6</div> </div>	1m	Numbers may be given in either order.
18	<p>An explanation which gives a counter-example to illustrate that halving a number that ends in 8 does not always give a number ending in 4, eg:</p> <ul style="list-style-type: none"> <li>■ '18 doesn't work'</li> <li>■ 'It could end in a 9'</li> <li>■ 'Double 49 is 98'</li> <li>■ '<math>58 \div 2 = 29</math>'</li> <li>■ 'Half of 8 is 4 but half of 18 doesn't end in 4'</li> <li>■ '18, 28, 38, 48, 58, 68 – only half of them work'</li> <li>■ 'It has to have an even number of 10s, like 28 or 88'</li> <li>■ '38'</li> </ul>	<p>1m</p> <p>(U1)</p>	<p>No mark is awarded for circling 'No' alone.</p> <p><b>Do not</b> accept vague or incomplete explanations, eg:</p> <ul style="list-style-type: none"> <li>■ 'Half of them don't'</li> <li>■ 'Half of 28 is 14'</li> <li>■ 'Double 44 is 88'</li> </ul> <p>If 'Yes' is circled but a correct, unambiguous explanation is given, then award the mark.</p>

## Test B questions 19–22

Question	Requirement	Mark	Additional guidance
19	<p>Award <b>TWO</b> marks for the correct answer of 16</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>56 \div 7 = 8</math></li> <li>   <math>2 \times 8</math></li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>■ 7 quarter-circles    2 triangles</li> <li>   14 quarter-circles    4 triangles</li> <li>   28 quarter-circles    8 triangles</li> <li>   56 quarter-circles ...</li> </ul>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.
20a	07:33	1m	The answer is a specific time (see page 5 for guidance).
20b	07:35	1m	The answer is a specific time (see page 5 for guidance).
21	<p>An explanation which recognises that there are two counters labelled 35 and only one counter labelled 45, eg:</p> <ul style="list-style-type: none"> <li>■ 'For 35 there's a white and a green, but for 45 there's only a green'</li> <li>■ 'There are two 35s and one 45'</li> <li>■ 'There are twice as many 35s as 45s'</li> <li>■ 'The only 45 is green'</li> <li>■ 'There is only one 45'</li> <li>■ 'White counters only go up to 40, so 35 would be more likely to win'</li> <li>■ </li> </ul>	<p>1m</p> <p style="text-align: center;">(U1)</p>	<p>No mark is awarded for circling 'Yes' alone.</p> <p><b>Do not</b> accept vague or incomplete explanations, eg:</p> <ul style="list-style-type: none"> <li>■ 'There are more counters below 40'</li> <li>■ '45 is green'</li> <li>■ 'White goes up to 40'</li> <li>■ 'There are more greens'.</li> </ul> <p>If 'No' is circled but a correct, unambiguous explanation is given, then award the mark.</p>
22	<p>Award <b>TWO</b> marks for all four letters in the correct order as shown:</p> <p>99    <b>J</b></p> <p>29    <b>G</b></p> <p>-83    <b>A</b></p> <p>-15    <b>E</b></p> <p>44    <b>H</b></p> <p>If the answer is incorrect, award <b>ONE</b> mark for three letters correct.</p>	Up to 2m	

Test B questions 23–26

Question	Requirement	Mark	Additional guidance
23	Diagram completed correctly as shown: 	1m	Accept slight inaccuracies in drawing (see page 3 for guidance).
24	60%	1m <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; text-align: center; line-height: 20px; margin: 0 auto;">U1</div>	
25	Award <b>TWO</b> marks for Joe <div style="border: 1px solid black; padding: 2px 5px;">10</div> AND <div style="border: 1px solid black; padding: 2px 5px;">16</div> AND Dev <div style="border: 1px solid black; padding: 2px 5px;">9</div> AND <div style="border: 1px solid black; padding: 2px 5px;">15</div> If the answer is incorrect, award <b>ONE</b> mark for: ■ three numbers correctly attributed OR ■ 9 AND 10 AND 15 AND 16 with some or all attributed to the wrong child.	Up to 2m <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; text-align: center; line-height: 20px; margin: 0 auto;">U1</div>	Joe's even numbers may be given in either order.  Dev's odd numbers may be given in either order.
26	Award <b>TWO</b> marks for the correct answer of 3.6  If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg: ■ $10 \div 0.05 = 200$ $200 \times 1.8 = 360$ $360 \div 100$ OR ■ 20 5p coins make £1 $200 \text{ 5p coins make } \pounds 10$ $200 \times 0.018$	Up to 2m	Answer must be in metres for the award of <b>TWO</b> marks. Accept for <b>ONE</b> mark 360 centimetres. If the answer is incorrect, accept for <b>ONE</b> mark an answer of 36 multiplied by any power of 10 with no evidence of an incorrect method. Answer need not be obtained for the award of <b>ONE</b> mark.

# Mark scheme for the mental mathematics test

## Applying the mark scheme

Please note that pupils 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 pupil'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. Pupils 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 pupil's intended answer. Accept also any other way of indicating the correct answer, eg underlining.

# Mental mathematics 2011 quick reference mark scheme

## Practice question

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## Time: 5 seconds

<b>1</b>	<b>6204</b>
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<b>2</b>	<b>28</b>
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<b>3</b>	<b>4250</b>
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<b>4</b>	<b>7.5</b>	Accept $7\frac{1}{2}$
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<b>5</b>	<b>65</b> mm
----------	--------------

## Time: 10 seconds

<b>6</b>	£ <b>5</b>
----------	------------

<b>7</b>	<b>180</b>
----------	------------

<b>8</b>	<b>75</b> min
----------	---------------

<b>9</b>	<b>3</b>	Accept 9r3 or remainder 3
----------	----------	------------------------------

<b>10</b>	<b>1.3</b>
-----------	------------

<b>11</b>	<b>416</b>
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<b>12</b>	<b>15</b> 20 25 40 45
-----------	-----------------------

<b>13</b>	<b>621</b>
-----------	------------

<b>14</b>	<b>200</b>	Do not accept 200%
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<b>15</b>	<b>41</b>
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## Time: 15 seconds

<b>16</b>	<b>£1.10</b>
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<b>17</b>	<b>18</b> cm
-----------	--------------

<b>18</b>	<b>114</b>
-----------	------------

<b>19</b>	<b>21</b>
-----------	-----------

<b>20</b>	<b>0.999</b>
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## Mental mathematics questions 1–20

Question	Requirement	Mark	Additional guidance
1	6204	1m	Answer must be in figures.
2	28	1m	
3	4250	1m	
4	7.5	1m	Accept $7\frac{1}{2}$
5	65mm	1m	
6	£5	1m	
7	180	1m	
8	75 minutes	1m	
9	3	1m	Accept 9r3 Accept remainder 3
10	1.3	1m	
11	416	1m	
12	<div style="display: flex; align-items: center; gap: 10px;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">15</span> <span>20</span> <span>25</span> <span>40</span> <span>45</span> </div>	1m	Accept alternative unambiguous indications, eg underlining. <b>Do not</b> accept if more than one answer is indicated unless the intention is clear.
13	621	1m	
14	200	1m	<b>Do not</b> accept 200%
15	41	1m	
16	£1.10	1m	
17	18cm	1m	
18	114	1m	
19	21	1m	
20	0.999	1m	





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