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KEY STAGE

2

LEVELS

3–5

Mathematics tests

## Mathematics mark schemes

Paper 1, Paper 2 and  
mental mathematics

National curriculum assessments

2014

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# Introduction

The Standards and Testing Agency (STA) is responsible for the development and delivery of statutory tests and assessments. The STA is an executive agency of the Department for Education (DfE).

This booklet contains the mark schemes for the assessment of levels 3–5 mathematics. Level threshold tables will be available at [www.education.gov.uk/ks2](http://www.education.gov.uk/ks2) from Tuesday 8 July, 2014.

The levels 3–5 mathematics test is made up of three papers and contains a total of 100 marks.

Mathematics **Paper 1** and **Paper 2** (40 marks each).  
**Mental mathematics paper** (20 marks).

From 2014 calculators can no longer be used by any children sitting the levels 3–5 mathematics test. Calculators are still permitted in paper 2 of the level 6 mathematics test.

As in previous years, external markers will mark the key stage 2 national curriculum tests. The mark schemes are made available to teachers after the tests have been taken.

The mark schemes were written and developed alongside the questions. Children's responses from trialling have been added as examples to the mark schemes to ensure they reflect how children respond to the questions. The mark schemes indicate the criteria on which judgements should be made. In applying these principles, markers use professional judgement based on the training they have received.

## The mathematics test mark schemes

The marking information for each question is set out in the form of tables, which start on page 8 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 '**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 '**Mark**' column indicates the total number of marks available for each question part. On some occasions the symbol (U<sub>1</sub>) 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 '**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.

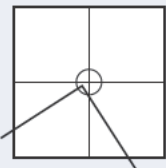
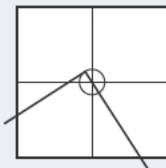
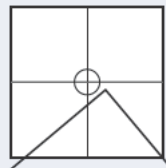
Additionally, for the mental mathematics test, general guidance on marking is given on page 18, followed by the marking information for each question.

### Applying the mark schemes

To ensure consistency of marking, the most frequent queries about applying the mark schemes are listed on pages 4 and 5 along with the action the marker will take. This is followed by further guidance on pages 6 and 7 relating to the marking of questions that involve money, time and other measures. Unless otherwise specified in the mark schemes, markers will apply the following guidelines in all cases.

## General Guidance in marking the levels 3–5 mathematics tests

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' column 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.	
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 child's answer is correct but the wrong working is shown.	A correct response will always be marked as correct.	
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 does not contradict work already done</li> <li>■ the child 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
<b>The correct response has been crossed out and not replaced.</b>	Any legible crossed-out work that has not been replaced will be marked according to the mark schemes. If the work is replaced, then crossed-out work will not be considered.
<b>More than one answer is given.</b>	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 schemes. If both correct and incorrect responses are given, no mark will be awarded.
<b>The answer is correct but, in a later part of the question, the pupil has contradicted this response.</b>	A mark given for one part will not be disallowed for working or answers given in a different part, unless the mark schemes specifically states otherwise.
<b>The child has drawn lines which do not meet at the correct point.</b>	<p>Markers will interpret the phrase 'slight inaccuracies in drawing' to mean 'within or on a circle of radius 2mm with its 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 accepted</b></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.

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

### Responses involving money

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

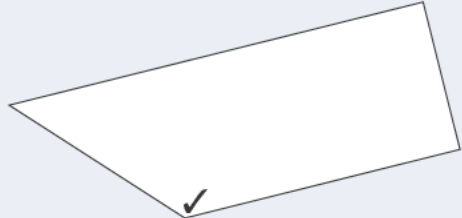
	Accept	Do not accept
<b>Where units are given (eg: kg, m, l)</b> for example: 8.6kg <div style="border: 1px solid black; display: inline-block; padding: 2px 10px; margin-top: 5px;">kg</div>	8.6kg Any unambiguous indication of the correct measurement, eg: 8.60kg 8.6000kg 8kg 600g	Incorrect or ambiguous use of units, eg 8600kg

**Note**

If a 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.

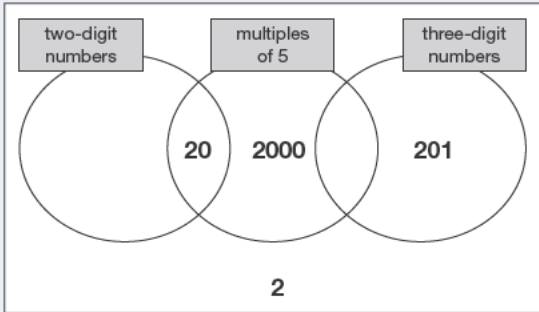
If a child changes the unit given in the answer box, then their answer must be equivalent to the correct answer using the unit they have chosen, unless otherwise indicated in the mark schemes.

Paper 1: Calculator **not** allowed

Question	Requirement	Mark	Additional guidance																
1	C	1m	Accept alternative unambiguous indications, eg correct shape ticked or circled.																
2a	570 in the first box.	1m																	
2b	730 in the last box	1m																	
3a	blue <b>AND</b> white	1m	Colours may be given in either order.																
3b	600	1m	Accept unambiguous abbreviations or recognisable misspellings.																
3c	75	1m																	
4a	13	1m	The answer is a time interval (see page 7 for guidance).																
4b	11:10	1m	The answer is a specific time (see page 7 for guidance).																
5	<p>Award <b>TWO</b> marks for all three numbers correct as shown:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>×</td> <td>8</td> <td>5</td> <td><b>7</b></td> </tr> <tr> <td>4</td> <td><b>32</b></td> <td>20</td> <td>28</td> </tr> <tr> <td>5</td> <td>40</td> <td><b>25</b></td> <td>35</td> </tr> <tr> <td>3</td> <td>24</td> <td>15</td> <td>21</td> </tr> </tbody> </table> <p>If the answer is incorrect, award <b>ONE</b> mark for two numbers correct.</p>	×	8	5	<b>7</b>	4	<b>32</b>	20	28	5	40	<b>25</b>	35	3	24	15	21	Up to 2m	
×	8	5	<b>7</b>																
4	<b>32</b>	20	28																
5	40	<b>25</b>	35																
3	24	15	21																
6a	C <b>AND</b> E	1m	Letters may be given in either order.																
6b	B	1m																	
7	<p>Award <b>TWO</b> marks for the correct answer of 18</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg:</p> <p>■ <math>100 - 64 = 36</math></p> <p><math>36 \div 2 =</math> wrong answer</p>	Up to 2m	<p>Accept for <b>ONE</b> mark 0.18 as evidence of appropriate working.</p> <p>Working must be carried through to reach an answer for the award of <b>ONE</b> mark.</p>																
8	<p>Correct angle indicated as shown:</p> 	1m	Accept alternative unambiguous indications, eg correct angle crossed or circled.																



Paper 1: Calculator **not** allowed

Question	Requirement	Mark	Additional guidance
9	<p>Award <b>TWO</b> marks for all four numbers correctly placed as shown:</p>  <p>If the answer is incorrect, award <b>ONE</b> mark for three numbers correctly placed.</p>	Up to 2m	<p><b>Do not</b> accept numbers written in more than one region.</p> <p>Accept alternative unambiguous indications, eg lines drawn from the numbers to the appropriate regions of the diagram.</p>
10a	2	1m	
10b	99	1m	
11a	6	1m	
11b	8	1m	
		(U1)	
12a	Wednesday	1m	Accept unambiguous abbreviations or recognisable misspellings.
12b	6	1m	<b>Do not</b> accept –6
13	<p>Award <b>TWO</b> marks for the correct answer of 80p <b>OR</b> £0.80</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>■ £2.00 – £0.05 = £1.95</li> <li>£5.00 – £2.25 = £2.75</li> <li>£2.75 – £1.95 = wrong answer</li> </ul>	Up to 2m	<p>Accept for <b>ONE</b> mark £80 <b>OR</b> £80p <b>OR</b> 0.80p as evidence of appropriate working.</p> <p>Working must be carried through to reach an answer for the award of <b>ONE</b> mark.</p>

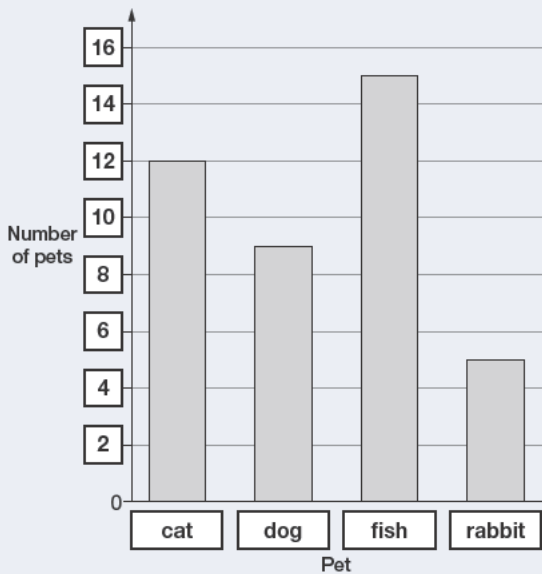
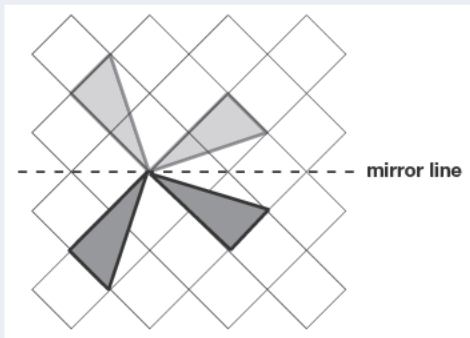
**Paper 1: Calculator not allowed**

Question	Requirement	Mark	Additional guidance												
14	<p>Award <b>TWO</b> marks for all four boxes ticked or crossed correctly as shown:</p> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">✓</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">✗</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">✗</div> <div style="border: 1px solid black; padding: 2px;">✓</div> </div> <p>If the answer is incorrect, award <b>ONE</b> mark for three boxes ticked or crossed correctly.</p>	Up to 2m	<p>Accept alternative unambiguous indications eg <b>Y</b> or <b>N</b>.</p> <p>For <b>TWO</b> marks accept:</p> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">✓</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">□</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">□</div> <div style="border: 1px solid black; padding: 2px;">✓</div> </div>												
15	<p>Award <b>TWO</b> marks for the correct answer of 42</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>28 \div 4 = 7</math> <math>7 \times 6 =</math> wrong answer</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>■ <math>28 \div 2 = 14</math> <math>14 + 28 =</math> wrong answer</li> </ul>	Up to 2m	<p>Working must be carried through to reach an answer for the award of <b>ONE</b> mark.</p>												
16	<p>Award <b>TWO</b> marks for the correct answer of 24180</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>■ long multiplication algorithm, eg                     <div style="margin-left: 20px;"> <math display="block">\begin{array}{r} 465 \\ \times 52 \\ \hline 23250 \\ 930 \\ \hline \end{array}</math> <p>wrong answer</p> </div> </li> <li>■ grid method, eg                     <div style="margin-left: 20px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td></td> <td>400</td> <td>60</td> <td>5</td> </tr> <tr> <td>50</td> <td>20000</td> <td>3000</td> <td>250</td> </tr> <tr> <td>2</td> <td>800</td> <td>120</td> <td>10</td> </tr> </table> <p>= wrong answer</p> </div> </li> <li>■ partitioning method, eg                     <div style="margin-left: 20px;"> <math display="block">\begin{array}{l} 465 \times 10 = 4650 \\ 465 \times 20 = 9300 \\ 465 \times 20 = 9300 \\ 465 \times 2 = 930 \\ \hline \end{array}</math> <p>wrong answer</p> </div> </li> </ul>		400	60	5	50	20000	3000	250	2	800	120	10	Up to 2m	<p>In all cases accept follow-through of <b>ONE</b> error in working.</p> <p><b>Do not</b> award any marks if:</p> <ul style="list-style-type: none"> <li>■ the error is in the place value, eg the omission of the zero when multiplying by tens, eg                     <div style="margin-left: 20px;"> <math display="block">\begin{array}{r} 465 \\ \times 52 \\ \hline 2325 \\ 930 \\ \hline \end{array}</math> <p>wrong answer</p> </div> </li> <li>■ the final (answer) line of digits is missing.</li> </ul> <p>Variations on algorithms are acceptable, provided they represent viable and complete methods.</p> <p>Working must be carried through to reach an answer for the award of <b>ONE</b> mark.</p>
	400	60	5												
50	20000	3000	250												
2	800	120	10												

Paper 1: Calculator **not** allowed

Question	Requirement	Mark	Additional guidance
17	Numbers in order, as shown: 1.28   1.8   8.118   8.12   8.2	1m	
18a	$6\frac{1}{4}$	1m	Accept equivalent fractions. <b>Do not</b> accept $5\frac{5}{4}$
18b	$1\frac{1}{2}$	1m	Accept equivalent fractions, eg $1\frac{2}{4}$ , $\frac{3}{2}$ , 1.5, 150%
19	An explanation which recognises that 10% of 55 is not a whole number, eg: <ul style="list-style-type: none"> <li>■ '10% of 55 is <math>5\frac{1}{2}</math>, and you can't have <math>5\frac{1}{2}</math> people'</li> <li>■ 'It wouldn't be a whole number of people'</li> <li>■ 'No whole number out of 55 will give you 10%'</li> <li>■ 'If it was 5 people, 5 out of 55 isn't 10%. 6 out of 55 isn't 10% either'</li> <li>■ 'Because you can't have half a person.'</li> <li>■ '<math>5\frac{1}{2}</math>'</li> </ul>	1m <b>U1</b>	<b>Do not</b> accept vague or incomplete explanations, eg: <ul style="list-style-type: none"> <li>■ 'You can't get 10% of 55'</li> <li>■ 'Some children write with both hands'.</li> </ul>
20	Award <b>TWO</b> marks for the correct answer of 1.05kg If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg: <ul style="list-style-type: none"> <li>■ <math>12 \div 4 = 3</math> <math>350 \times 3 = 1050</math> <math>1050 \div 1000 = \text{wrong answer}</math></li> </ul>	Up to 2m	<b>Do not</b> accept 1050g  Accept for <b>ONE</b> mark 10.5 or 105 as evidence of appropriate working.  Working must be carried through to reach an answer for the award of <b>ONE</b> mark.
21	2 AND 2 AND 7 OR 2 AND 2 AND -3	1m <b>U1</b>	Numbers may be given in any order.
22	Award <b>TWO</b> marks for four numbers correct as shown: 16 AND 17 AND 18 AND 19 If the answer is incorrect, award <b>ONE</b> mark for: <ul style="list-style-type: none"> <li>■ three numbers correct and none incorrect</li> </ul> OR <ul style="list-style-type: none"> <li>■ all four numbers correct and one incorrect</li> </ul>	Up to 2m <b>U1</b>	Numbers may be given in any order.

**Paper 2: Calculator not allowed**

Question	Requirement	Mark	Additional guidance										
1	38	1m											
2a 2b	Vertical axis completed correctly as shown. Horizontal axis completed correctly as shown.	1m 1m <b>U1</b>	Accept unambiguous abbreviations or recognisable misspellings.										
	 <table border="1"> <caption>Data for Bar Chart</caption> <thead> <tr> <th>Pet</th> <th>Number of pets</th> </tr> </thead> <tbody> <tr> <td>cat</td> <td>12</td> </tr> <tr> <td>dog</td> <td>9</td> </tr> <tr> <td>fish</td> <td>15</td> </tr> <tr> <td>rabbit</td> <td>5</td> </tr> </tbody> </table>	Pet	Number of pets	cat	12	dog	9	fish	15	rabbit	5		
Pet	Number of pets												
cat	12												
dog	9												
fish	15												
rabbit	5												
3	Diagram completed as shown:	1m	Accept slight inaccuracies in drawing (see page 5 for guidance). Diagram need not be shaded.										
													
4	Three numbers circled as shown: <table border="0"> <tr> <td>(450)</td> <td>350</td> <td>(250)</td> <td>150</td> <td>(50)</td> </tr> </table> OR <table border="0"> <tr> <td>450</td> <td>(350)</td> <td>(250)</td> <td>(150)</td> <td>50</td> </tr> </table>	(450)	350	(250)	150	(50)	450	(350)	(250)	(150)	50	1m	Accept alternative unambiguous indications, eg numbers ticked, crossed or underlined.
(450)	350	(250)	150	(50)									
450	(350)	(250)	(150)	50									

**Paper 2: Calculator not allowed**

Question	Requirement	Mark	Additional guidance
5a	43	1m	Working must be carried through to reach an answer for the award of <b>ONE</b> mark.
5b	Award <b>TWO</b> marks for the correct answer of 24 If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg: ■ $77 - 18 - 35 =$ wrong answer OR ■ $35 + 18 = 53$ $77 - 53 =$ wrong answer	Up to 2m	
6a	$8 \ominus 7 \oplus 6 \ominus 5 = 2$	1m <b>U1</b>	
6b	$8 \oplus 7 \ominus 6 \ominus 5 = 4$	1m <b>U1</b>	
7	<div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; padding: 2px;">20p</div> <div style="border: 1px solid black; padding: 2px;">20p</div> <div style="border: 1px solid black; padding: 2px;">20p</div> <div style="border: 1px solid black; padding: 2px;">10p</div> <div style="border: 1px solid black; padding: 2px;">10p</div> <div style="border: 1px solid black; padding: 2px;">10p</div> <div style="border: 1px solid black; padding: 2px;">10p</div> </div>	1m <b>U1</b>	Coins may be listed in any order. Accept coins with missing units.
8a	Two numbers from the sequence that total 96, eg: 43 <b>AND</b> 53 OR 23 <b>AND</b> 73	1m	Numbers may be given in either order. Accept negative numbers, eg $-7$ <b>AND</b> 103
8b	An explanation that recognises that adding three numbers ending in 3 will produce a number ending in a 9 eg: ■ ‘They all end in 3 so adding three will give a number ending in 9’ ■ ‘If you add three numbers in the sequence you will always get a number ending in 9’ ■ ‘All the numbers are odd and 96 is even’	1m <b>U1</b>	Do not accept vague or incomplete explanations, eg: ■ ‘All the numbers end in three’ ■ ‘It only works with two numbers’ ■ ‘3 odds add to make an even’


**Paper 2: Calculator not allowed**

Question	Requirement	Mark	Additional guidance
9	<p>Fractions connected correctly to decimals as shown:</p>	1m	
10	<p>Award <b>TWO</b> marks for the correct answer of <b>B AND C</b></p> <p>If the answer is incorrect, award <b>ONE</b> mark for:</p> <ul style="list-style-type: none"> <li>■ B only</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>■ C only</li> </ul>	Up to 2m	Letters may be given in either order.
11	24.56	1m	
12	<p>Award <b>TWO</b> marks for all three values correct as shown:</p> <p><u>banana</u></p> <p>2cm    <b>20cm</b>    2mm    2m    20m</p> <p><u>apple</u></p> <p>2g    20kg    200kg    <b>200g</b>    2kg</p> <p><u>fruit juice</u></p> <p>2ml    2l    20ml    <b>200ml</b>    20l</p> <p>If the answer is incorrect, award <b>ONE</b> mark for two correct measurements.</p>	Up to 2m	Accept alternative unambiguous indications, eg correct value filled in.
13	<p>Award <b>TWO</b> marks for the diagram completed correctly as shown:</p> <p>If the answer is incorrect, award <b>ONE</b> mark for three shapes positioned correctly.</p>	Up to 2m	<p>Accept inaccurate drawing, provided the intention is clear.</p> <p>Orientation of the triangle must be unambiguous.</p> <p>Dots need not be shaded.</p>

Paper 2: Calculator **not** allowed

Question	Requirement	Mark	Additional guidance
14a	<p>A <input type="text" value="50"/> B <input type="text" value="15"/></p> <p>C <input type="text" value="20"/> D <input type="text" value="25"/></p>	1m	
14b	<p>A <input type="text" value="110"/> B <input type="text" value="45"/></p> <p>C <input type="text" value="50"/> D <input type="text" value="55"/></p>	1m U1	
15	<p>Award <b>TWO</b> marks for a correct answer of 30</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>■ 10% of 200 = 20</li> <li>25% of 200 = 50</li> <li>50 – 20 = wrong answer</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>■ 25% – 10% = 15%</li> <li>15% of 200 = wrong answer</li> </ul>	Up to 2m	Working must be carried through to reach an answer for the award of <b>ONE</b> mark.
16a	109	1m	
16b	<p>An explanation that recognises that 100 people get up before 9am which is two-thirds of the total (150).</p> <ul style="list-style-type: none"> <li>■ '13 + 28 + 59 = 100 which is two-thirds of the total'</li> <li>■ '<math>\frac{1}{3}</math> of 150 = 50 and <math>2 \times 50 = 100</math>'</li> <li>■ '<math>\frac{2}{3}</math> of 150 is 100'</li> <li>■ '36 + 14 = 50 which is one-third after 9am'</li> </ul>	1m U1	<p><b>Do not</b> accept vague or incomplete explanations, eg:</p> <ul style="list-style-type: none"> <li>■ 'One-third are 9 o'clock or later'</li> <li>■ '100 got up at 9am'</li> <li>■ 'Twice as many got up before 9am.'</li> <li>■ '13 + 28 + 59 = 100'</li> </ul>
17	<p>Any two numbers which total 40, eg:</p> <ul style="list-style-type: none"> <li>■ 10 and 30</li> <li>■ 20 and 20</li> <li>■ 0 and 40</li> <li>■ 1 and 39</li> </ul>	1m	Accept negative numbers and decimals.

Paper 2: Calculator **not** allowed

Question	Requirement	Mark	Additional guidance
18a	Accept answers in the range 22.2 to 22.8 exclusive.	1m	Do not accept 22.2 or 22.8
18b	Accept answers in the range 2:48pm to 2:52pm inclusive.	1m	The answer is a specific time (see page 7 for guidance).
18c	5	1m	
19	Award <b>TWO</b> marks for the correct answer of 45 <b>AND</b> 35 If the answer is incorrect, award <b>ONE</b> mark for: ■ either 35 <b>OR</b> 45 <b>OR</b> ■ evidence of appropriate working, eg 80 – 10 = 70 70 ÷ 2 = 35 35 + 10 = wrong answer	Up to 2m 	Numbers may be given in either order. Working must be carried through to reach an answer for the award of <b>ONE</b> mark.
20a	A is (12, 6)	1m	Coordinates must be given in the correct order.
20b	B is (19, 3)	1m	If the answer to 20a is (19, 3) <b>AND</b> the answer to 20b is (12, 6) then award <b>ONE</b> mark for 20b Accept unambiguous answers written on the diagram.
21	Award <b>TWO</b> marks for the correct answer of 15 If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg: ■ 61 ÷ 2 = 30.5 30.5 + 0.5 = 31 31 ÷ 2 = 15.5 15.5 – 0.5 = wrong answer <b>OR</b> ■ 61 ÷ 2 = 30.5 30.5 – 0.5 = 30 (step error) 30 ÷ 2 = 15 15 – 0.5 = 14.5 (wrong answer)	Up to 2m	Working must be carried through to reach an answer for the award of <b>ONE</b> mark.

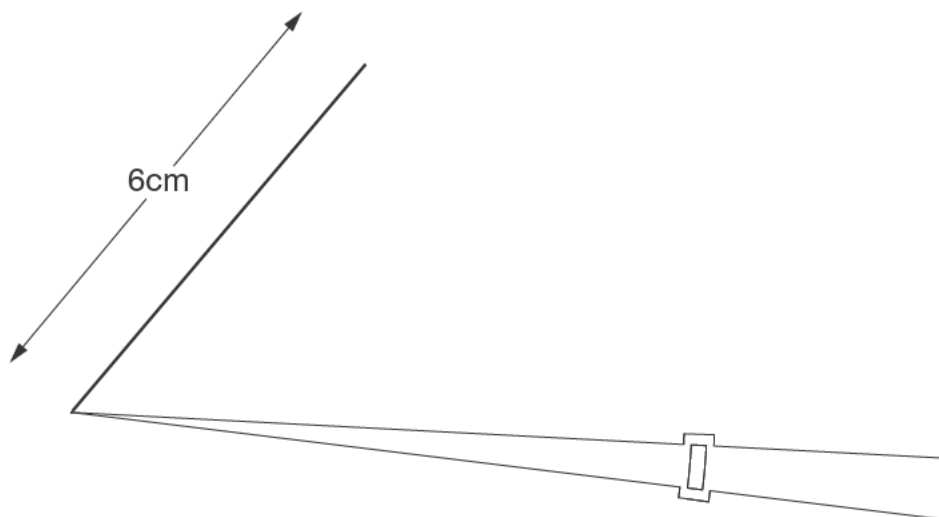


**Paper 2: Calculator not allowed**

Question	Requirement	Mark	Additional guidance
22	<p>Award <b>TWO</b> marks for a triangle drawn with an angle in the range <math>53^\circ</math> to <math>57^\circ</math> inclusive <b>AND</b> length of base line in the range 8.2cm to 8.4cm inclusive (ie lower vertex of the triangle within the inner box on the diagram, see overlay).</p> <p>If the answer is incorrect, award <b>ONE</b> mark for:</p> <ul style="list-style-type: none"> <li>■ a completed triangle drawn with an angle in the range <math>53^\circ</math> to <math>57^\circ</math> inclusive.</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>■ a completed triangle drawn with an angle in the range <math>52^\circ</math> to <math>58^\circ</math> inclusive <b>AND</b> length of base line 8.1cm to 8.5cm 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 6cm line, provided they have used a line with a length in the range 5.9cm to 6.1cm inclusive.</p> <p>Accept for <b>ONE</b> mark drawings not using the given 6cm line which have used a line <b>outside</b> the range 5.9cm to 6.1cm inclusive, provided they have an angle in the range <math>53^\circ</math> to <math>57^\circ</math> inclusive <b>AND</b> a base line in the range 8.2cm to 8.4cm inclusive.</p> <p>Accept for <b>ONE</b> mark drawings of <b>incomplete triangles</b>, provided they have an angle in the range <math>53^\circ</math> to <math>57^\circ</math> inclusive <b>AND</b> a base line in the range 8.2cm to 8.4cm inclusive.</p>
23	3 AND 5 AND 7	<b>1m</b>	Numbers may be given in any order.

**Paper 2: question 22 copy of overlay**

Markers will use a transparent overlay of this diagram to mark children's answers to question 22. The overlay is attached to the printed version of this mark scheme.



# 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. External markers will ignore any annotation, even if in the answer space, and mark only the answer. External 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.

## 2014 mental mathematics

# Quick reference mark scheme

### Practice question

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### Time: 5 seconds

1	31		<input type="text"/>
2	3020	Answer must be in figures	<input type="text"/>
3	81		<input type="text"/>
4	205		<input type="text"/>
5	100 cm		<input type="text"/>

### Time: 10 seconds

6	£ 10.19		<input type="text"/>
7	3pm		<input type="text"/>
8	9		<input type="text"/>
9	7	Accept $\frac{7}{2}$	<input type="text"/>
10	50p		<input type="text"/>

11	0.12 0.21 0.4 <b>0.46</b> 0.55		<input type="text"/>
12	24 cm		<input type="text"/>
13	$\frac{5}{6}$	Do not accept equivalent fractions	<input type="text"/>
14	56		<input type="text"/>
15	23		<input type="text"/>

### Time: 15 seconds

16	72		<input type="text"/>
17	1 2 3 <b>4</b> 5 6	30	<input type="text"/>
18	2.6		<input type="text"/>
19	180		<input type="text"/>
20	60p		<input type="text"/>

**Mental mathematics:** Questions 1–20

Question	Requirement	Mark	Additional guidance
1	31	1m	
2	3020	1m	Answer must be in figures.
3	81	1m	
4	205	1m	
5	100cm	1m	
6	£10.19	1m	
7	3 pm	1m	The answer is a specific time (see page 7 for guidance).
8	9	1m	
9	7	1m	Accept $\frac{7}{2}$
10	50p	1m	
11	0.12    0.21    0.4 <b>0.46</b> 0.55	1m	Accept alternative unambiguous indications, eg number ticked, crossed or underlined.
12	24cm	1m	
13	$\frac{5}{6}$	1m	<b>Do not</b> accept equivalent fractions.
14	56	1m	
15	23	1m	
16	72	1m	
17	1    2    3 <b>4</b> 5    6	1m	Accept alternative unambiguous indications, eg number ticked, crossed or underlined.
18	2.6	1m	
19	180	1m	
20	60p	1m	

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2014 key stage 2 levels 3–5 mathematics: mathematics mark schemes

Print version product code: STA/14/7041/p ISBN: 978-1-78315-162-2

Electronic version product code: STA/14/7041/e ISBN: 978-1-78315-189-9

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