

First published in 2000

© Qualifications and Curriculum Authority 2000

Reproduction, storage, adaptation or translation, in any form or by any means, of this publication is prohibited without prior written permission of the publishers, unless within the terms of licences issued by the Copyright Licensing Agency. Excerpts may be reproduced for the purpose of research, private study, criticism or review, or by educational institutions solely for educational purposes, without permission, provided full acknowledgement is given.

Produced in Great Britain by the Qualifications and Curriculum Authority under the authority and superintendence of the Controller of Her Majesty's Stationery Office and Queen's Printer of Acts of Parliament.

The Qualifications and Curriculum Authority is an exempt charity under Schedule 2 of the Charities Act 1993.

Qualifications and Curriculum Authority  
29 Bolton Street  
London  
W1Y 7PD

[www.qca.org.uk/](http://www.qca.org.uk/)

# Marking the mathematics tests

## Introduction

As in 1999, 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 arithmetic and the level 6 extension test C.

## The structure of the mark schemes

The marking information for each question is set out in the form of tables, which start on page 4 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.

The ‘**requirements**’ 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.

There is guidance on using the mark scheme for the mental arithmetic test on page 16.

## 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. 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 'Requirements' column. Reference will also be made to the additional guidance, and if still uncertain, 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 grey margin, alongside each question part, 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 which is usually 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 marksheet.

All questions in the written tests, even those not attempted by the child, will be marked with a '2', '1' or '0' entered in the mark box. A two-mark question which is correct has '2' entered in the mark box. 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 mark box. Otherwise, '0' will be entered in the mark box. For questions in the mental arithmetic tests, marks of either '1' or '0' are possible.

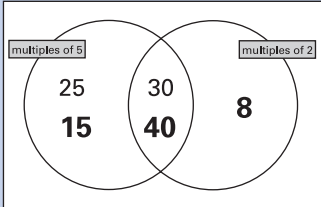
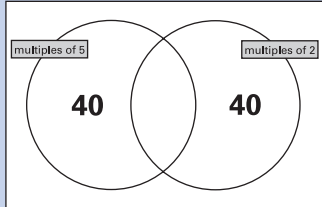
Test A carries a total of 40 marks. Test B also carries a total of 40 marks. The mental arithmetic test carries a total of 20 marks. There is a total of 30 marks available in Test C.

The 2000 key stage 2 mathematics tests and mark schemes were developed by the Mathematics Test Development Team at QCA.

### Test A questions 1–3

Question	Requirement	Mark	Additional Guidance
1	<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 at least two lines correctly drawn.</p>	Up to 2m	<p>Lines need not touch the boxes, provided the intention is clear.</p> <p><b>Do not</b> accept two or more lines emanating from the same left-hand box.</p>
2a	350	1m	
2b	112	1m	
3	C	1m	Accept alternative, unambiguous indications of the answer such as a cross on shape C or a line from C to the hole.

### Test A questions 4–8

Question	Requirement	Mark	Additional Guidance
4	<p>Award <b>TWO</b> marks for all three numbers placed in the regions as shown.</p>  <p>If the answer is incorrect, award <b>ONE</b> mark for two numbers correctly placed.</p>	Up to 2m	<p><b>Do not</b> accept a number repeated in different regions, eg</p>  <p><b>Do not</b> penalise answers which offer additional numbers (other than 8, 15 and 40) on the diagram, whether correctly placed or not.</p>
5	620	1m	
6a	<p>Award <b>TWO</b> marks for the correct answer of 74p <b>OR</b> £0.74</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg</p> <p><math>148 \div 2 =</math> wrong answer</p>	Up to 2m	<p>Accept for <b>TWO</b> marks 74 <b>OR</b> 0.74 <b>OR</b> £0.74p <b>OR</b> .74 <b>OR</b> £.74 <b>OR</b> £.74p</p> <p>Accept for <b>ONE</b> mark £74p <b>OR</b> 0.74p as evidence of appropriate working.</p> <p>Calculation must be performed for the award of <b>ONE</b> mark.</p>
6b	<p>Award <b>TWO</b> marks for the correct answer of 22p <b>OR</b> £0.22</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg</p> <p><math>2 \times 85 - 148 =</math> wrong answer</p>	Up to 2m	<p>Accept for <b>TWO</b> marks 22 <b>OR</b> 0.22 <b>OR</b> £0.22 <b>OR</b> .22 <b>OR</b> £.22 <b>OR</b> £.22p</p> <p>Accept for <b>ONE</b> mark £22p <b>OR</b> 0.22p <b>OR</b> £22 as evidence of appropriate working.</p> <p>Calculation must be performed for the award of <b>ONE</b> mark.</p>
7a	107	1m	Answers must be calculated in each case, eg <b>do not</b> accept $15 + 42 + 50$ as the answer to 7a.
7b	53	1m	
8a	5	1m	<p>Accept '3 degrees below zero' or similar <b>OR</b> '-3' written on either thermometer.</p> <p><b>Do not</b> accept '3-' <b>OR</b> a mark on the thermometers such as a cross, unless the numerical answer is written.</p>
8b	- 3 <b>OR</b> minus 3	1m	

### Test A questions 9–14

Question	Requirement	Mark	Additional Guidance
9	Award <b>TWO</b> marks for the correct answer of A, C, E. Accept for <b>ONE</b> mark either three correct letters and one additional letter <b>OR</b> two correct letters and up to one incorrect letter.	<b>Up to 2m</b>	Accept letters in any order. Accept alternative, unambiguous indications, eg ticks or mirror lines drawn on the correct shapes.
10a	5	<b>1m</b>	
10b	18	<b>1m</b>	
11	0.1 0.5 <u>0.05</u> 0.7 <u>0.07</u> 0.2	<b>1m</b>	Accept alternative indications, eg the numbers crossed or underlined.
12	Any two numbers such that Sara's number is thirteen greater than Leon's, eg Leon 10 Sara 23	<b>1m</b>	Accept decimals, fractions, negative numbers and zero.
13	630	<b>1m</b>	
14a	3 <b>AND</b> 4	<b>1m</b>	Accept numbers in either order.
14b	An explanation which recognises that more than half of the spinner sections have 2 in them, eg <ul style="list-style-type: none"> <li>■ 'More than half are twos';</li> <li>■ 'There are five twos out of the nine';</li> <li>■ 'There are more twos than all the other numbers altogether';</li> <li>■ 'Because 2 has a probability of <math>\frac{5}{9}</math>'.</li> </ul>	<b>1m</b>	<b>Do not</b> accept vague or arbitrary explanations, eg <ul style="list-style-type: none"> <li>■ 'There's more twos than any other number';</li> <li>■ 'It's the easiest one to get';</li> <li>■ 'Twos are the most'.</li> </ul>

### Test A questions 15–19

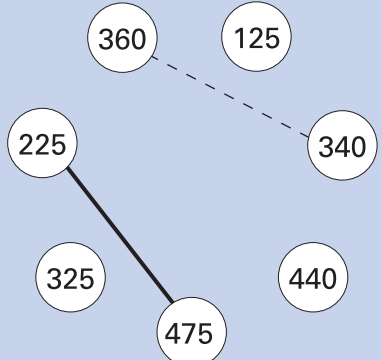
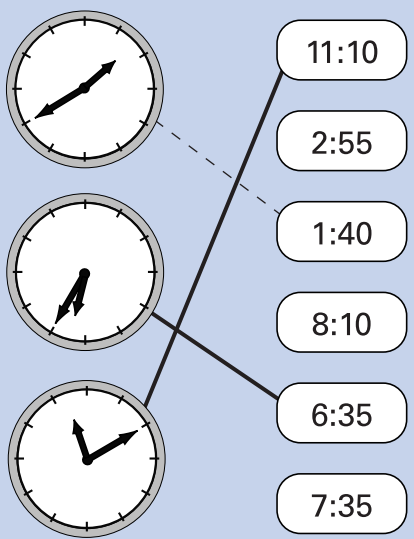
Question	Requirement	Mark	Additional Guidance
<b>15a</b>	<p>Award <b>TWO</b> marks for the correct answer of £2.10 <b>OR</b> 210p</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of appropriate working, eg</p> <p><math>350 \div 100 = 3.5</math>  <math>3.5 \times 60 =</math> wrong answer</p>	<b>Up to 2m</b>	<p>Accept for <b>TWO</b> marks £2.10p <b>OR</b> 210 <b>OR</b> 2.10</p> <p>Accept for <b>ONE</b> mark £2.1 <b>OR</b> £210 <b>OR</b> 2.10p as evidence of appropriate working.</p> <p>Calculation must be performed for the award of <b>ONE</b> mark.</p>
<b>15b</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 working, eg</p> <p><math>200 \div 80 = 2.5</math>  <math>100 \times 2.5 =</math> wrong answer.</p>	<b>Up to 2m</b>	<p>Calculation must be performed for the award of <b>ONE</b> mark.</p>
<b>16a</b>	width = 22	<b>1m</b>	<p>If the correct answers are transposed, award the mark for 16b only.</p>
<b>16b</b>	height = 17	<b>1m</b>	
<b>17a</b>	An answer in the range 21 to 26 inclusive.	<b>1m</b>	<p><b>No mark</b> is awarded for an answer which is not a whole number.</p> <p>No mark is awarded for circling the correct answer of 'Tony'.</p> <p><b>Do not</b> accept vague or arbitrary explanations, eg</p> <ul style="list-style-type: none"> <li>■ 'Tony found loads more';</li> <li>■ 'Gemma found more but Tony's amount is bigger'.</li> </ul> <p>Accept a correct, unambiguous explanation even if the wrong name is circled.</p>
<b>17b</b>	<p>An explanation which recognises that Tony's snails are a quarter of 80 and that Gemma's snails are half of 36, so that Tony found more, eg</p> <ul style="list-style-type: none"> <li>■ 'Tony found 20 and Gemma found only 18';</li> <li>■ 'Quarter of 80 is more than half of 36'.</li> </ul>	<b>1m</b>	
<b>18</b>	<p>10 (100) 1000 (10 000) 100 000</p> <p><b>OR</b></p> <p>(10) 100 1000 10 000 (100 000)</p>	<b>1m</b>	<p>Accept alternative indications such as the numbers crossed or underlined.</p> <p><b>Do not</b> accept 1000 circled twice.</p>
<b>19</b>	54	<b>1m</b>	<p>Accept figures written on the diagram, provided a total is given.</p>



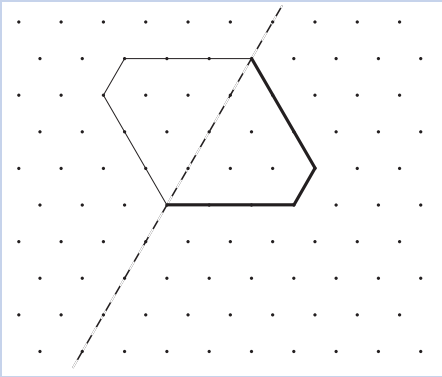
### Test A questions 20–23

Question	Requirement	Mark	Additional Guidance
20	<p>Explanation which recognises that the numbers in the sequence are multiples of 40 and that 2140 is not <b>OR</b> that only the even hundreds in the sequence have the numbers ending in 40, eg</p> <ul style="list-style-type: none"> <li>■ 'it doesn't divide by 40';</li> <li>■ '140 isn't in it so 2140 won't be';</li> <li>■ 'it will go 2000, 2040, 2080, 2120, 2160 . . . so there's no 2140'.</li> </ul>	1m	<p><b>No mark</b> is awarded for circling 'No' alone.</p> <p>Do not accept vague or arbitrary explanations, eg</p> <ul style="list-style-type: none"> <li>■ 'It's odd, so it won't be there';</li> <li>■ 'It's not part of the sequence'.</li> </ul>
21	4.85	1m	
22a	(11,9)	1m	Accept answers written on the diagram with or without brackets and commas. Co-ordinates must be in the correct order.
22b	(15,3)	1m	
23	<p>Explanation which indicates that 300 can be added to 195, eg</p> <ul style="list-style-type: none"> <li>■ 'It's 3 x 100 more';</li> <li>■ 'You add another 300 on';</li> <li>■ '3 x 65 = 195, 3 x 100 = 300 so it's 495';</li> <li>■ '100 has been added to 65, so multiply 100 by 3 and add it to 195'.</li> </ul>	1m	<p>An answer to the multiplication is not required and <b>no mark</b> is awarded for it.</p> <p><b>Do not</b> accept vague answers such as:</p> <ul style="list-style-type: none"> <li>■ 'You work it out';</li> <li>■ 'Do a sum';</li> <li>■ 'It's nearly the same except it has 100 in front of it'.</li> </ul>

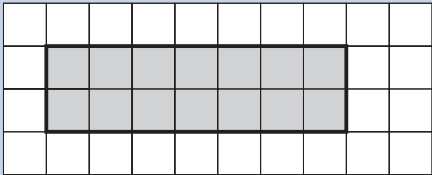
### Test B questions 1–3

Question	Requirement	Mark	Additional Guidance
1	<p>One line drawn as shown.</p> 	1m	<p>Line does not have to touch circles, provided the intention is clear. Accept alternative, unambiguous ways of indicating the answer, eg <math>225 + 475 = 700</math></p>
2	<p>570 (699) 810 852 1050</p>	1m	
3a	<p>Middle clock joined to 6:35</p>	1m	<p>Lines do not have to touch the clocks, provided the intention is clear. Accept alternative, unambiguous ways of indicating the answer, eg correct numerical times written on clocks.</p>
3b	<p>Lower clock joined to 11:10</p> 	1m	

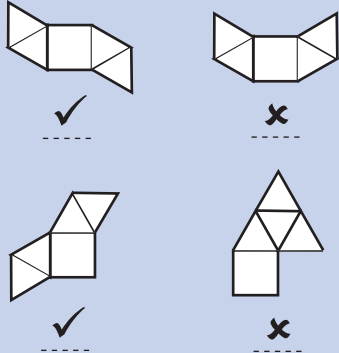
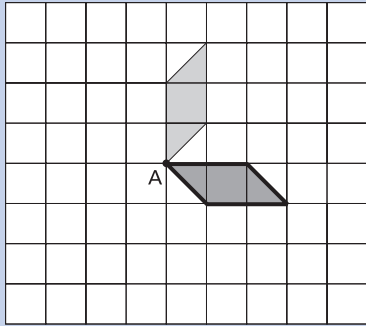
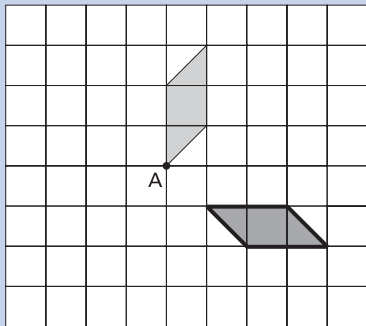
### Test B questions 4–9

Question	Requirement	Mark	Additional Guidance											
4	181	1m												
5a	32	1m												
5b	5	1m												
6	Diagram completed as shown: 	1m	Vertices must be within 2mm of correct points. <b>Do not</b> penalise lines drawn without a ruler, provided the intention is clear.											
7	Any two numbers greater than 100 with a difference of 208, eg <table border="1"> <tr> <td>4</td><td>0</td><td>8</td> <td>-</td> <td>2</td><td>0</td><td>0</td> <td>=</td> <td>2</td><td>0</td><td>8</td> </tr> </table>	4	0	8	-	2	0	0	=	2	0	8	1m	Accept numbers with four or more digits.
4	0	8	-	2	0	0	=	2	0	8				
8a	9	1m												
8b	Friday	1m	Accept recognisable mis-spellings. Accept 9:00 circled.											
8c	40	1m												
9a	£22.50 <b>OR</b> 2250p	1m	Accept £22.50p <b>OR</b> 22.50 <b>OR</b> 2250 <b>OR</b> 22 50. Do <b>not</b> accept £2250 <b>OR</b> 22.50p <b>OR</b> £22.5.											
9b	Award <b>TWO</b> marks for the correct answer of 42 If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg 840 ÷ 20 <b>OR</b> 8.4 ÷ 0.2	<b>Up to 2m</b>	Accept for <b>ONE</b> mark, £42 <b>OR</b> 42p as evidence of an appropriate method. Answer need not be obtained for the award of the mark.  No method mark is awarded for 8.40 ÷ 20 alone.											

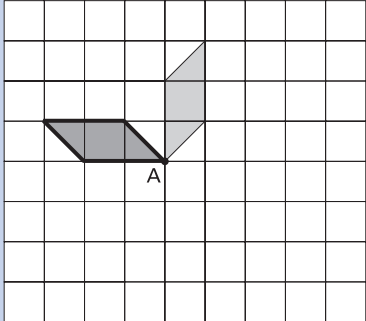
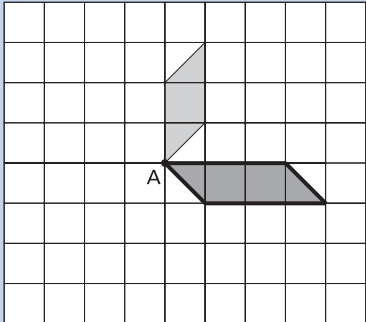
### Test B questions 10–12

Question	Requirement	Mark	Additional Guidance
10a	A number in the range of 270 to 280 inclusive.	1m	
10b	Award <b>TWO</b> marks for the correct answer of £135 <b>OR</b> £135.00 If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg 2.25 x 60	Up to 2m	Accept for <b>TWO</b> marks £135.00p <b>OR</b> £135 00  Accept for <b>ONE</b> mark £135p as evidence of appropriate method.  Calculation need not be performed for the award of the mark.
11	Any rectangle with an area of 14 squares, eg 	1m	Rectangle need not be shaded or coincident with the grid lines. Accept extensions to the grid to allow, for example, a 14 x 1 rectangle.  Accept slight inaccuracies in drawing provided the intention is clear.
12	Explanation which recognises that the largest two-digit number (99) added to itself only gives a three-digit number (198), eg <ul style="list-style-type: none"> <li>■ 'Because if you do 99 + 99 you only get a three-digit number';</li> <li>■ 'If you add any 2 two-digit numbers, you will get a three-digit number or a two-digit number'.</li> </ul>	1m	No mark is awarded for circling the 'Yes' alone. <b>Do not</b> accept vague or arbitrary explanations such as <ul style="list-style-type: none"> <li>■ 'The numbers aren't big enough';</li> <li>■ 'It doesn't work'.</li> </ul> If 'No' is circled but a correct unambiguous explanation is given then award the mark.

### Test B questions 13–15

Question	Requirement	Mark	Additional Guidance
<p><b>13</b></p>	<p>Award <b>TWO</b> marks for a correct answer as shown below:</p>  <p>If the answer is incorrect, award <b>ONE</b> mark for three boxes correctly ticked or crossed <b>OR</b> two boxes correctly ticked and the other two boxes left blank.</p>	<p><b>Up to 2m</b></p>	<p>Accept alternative, unambiguous indications, eg 'Y' or 'N'.</p>
<p><b>14</b></p>	<p><math>1000\frac{1}{2}</math> <b>OR</b> 1000.5</p>	<p><b>1m</b></p>	<p>Accept the answer in words, eg            ■ '1000 and a half'.</p>
<p><b>15</b></p>	<p>Award <b>TWO</b> marks for the correct drawing as shown below:</p>  <p>If the drawing is incorrect, then award <b>ONE</b> mark for the shape correctly orientated but rotated about the wrong point (or a relocated 'A'), eg</p> 	<p><b>Up to 2m</b></p>	<p>Shape need not be shaded.            Accept slight inaccuracies in drawing, provided the intention is clear.</p>

Test B questions 15 (continued)–16

Question	Requirement	Mark	Additional Guidance
<p>15 (continued)</p>	<p>OR shape rotated 90° about A, but anti-clockwise, ie</p>  <p>OR a stretching or contraction, by one square, of the length of the shape, which has otherwise been correctly rotated, eg</p> 		
<p>16</p>	<p>459</p>	<p>1m</p>	

### Test B questions 17–19

Question	Requirement	Mark	Additional Guidance												
<b>17</b>	<p>Award <b>TWO</b> marks for the table correctly completed as shown:</p> <table border="1" style="margin: 10px auto;"> <tr><td></td><td></td><td style="text-align: center;">✓</td></tr> <tr><td style="text-align: center;">✓</td><td></td><td></td></tr> <tr><td></td><td></td><td style="text-align: center;">✓</td></tr> <tr><td></td><td style="text-align: center;">✓</td><td></td></tr> </table> <p>If the table is not correctly completed award <b>ONE</b> mark for any two out of three ticks correct.</p>			✓	✓					✓		✓		<b>Up to 2m</b>	<p><b>Do not</b> accept any line which has two or more ticks in it.</p> <p>Accept unambiguous alternatives to ticks, eg 'yes'.</p>
		✓													
✓															
		✓													
	✓														
<b>18a</b>	98	<b>1m</b>													
<b>18b</b>	8	<b>1m</b>													
<b>19a</b>	40	<b>1m</b>													
<b>19b</b>	Answer in the range 12 to 13 km inclusive	<b>1m</b>													
<b>19c</b>	<p>An explanation which indicates that after 1 hour she has travelled more than 20 km and/or she has travelled less than 20 km in the second hour, eg</p> <ul style="list-style-type: none"> <li>■ 'She did about 40 km and it was about 22 in the first hour';</li> <li>■ 'Half and half would be 20-20, but she does more than 20 then less than 20';</li> <li>■ 'It goes to 23 in the first hour'.</li> </ul>	<b>1m</b>	<p><b>Do not</b> accept vague or arbitrary explanations, eg</p> <ul style="list-style-type: none"> <li>■ 'She got tired in the second half';</li> <li>■ 'It's marked on the graph';</li> <li>■ 'There's more crosses in the first hour than the second';</li> <li>■ 'The gaps are further apart'.</li> </ul>												

### Test B questions 20–22

Question	Requirement	Mark	Additional Guidance				
20	<p>Award <b>TWO</b> marks for the boxes ticked and crossed as shown:</p> <div style="text-align: center;"> <table border="1" style="margin: auto;"> <tr><td style="text-align: center;">✓</td></tr> <tr><td style="text-align: center;">✗</td></tr> <tr><td style="text-align: center;">✗</td></tr> <tr><td style="text-align: center;">✓</td></tr> </table> </div> <p>If the answer is incorrect, award <b>ONE</b> mark for any three boxes ticked or crossed correctly <b>OR</b> two boxes correctly ticked and the other two boxes left blank.</p>	✓	✗	✗	✓	Up to 2m	
✓							
✗							
✗							
✓							
21a	<p>Award <b>TWO</b> marks for the correct answer of 200</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> $320 \div 8 \times 5$	Up to 2m	Calculation need not be performed for the award of the mark.				
21b	<p>Award <b>TWO</b> marks for the correct answer of £4.60</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> $44.85 \div 9.75$	Up to 2m	<p>Accept for <b>TWO</b> marks £4 60 <b>OR</b> £4-60 <b>OR</b> £4.60p</p> <p>Accept for <b>ONE</b> mark £4.6 <b>OR</b> £460p <b>OR</b> £460 as evidence of an appropriate method.</p> <p>Calculation need not be performed for the award of the mark.</p>				
22	<p>An explanation which recognises that the angle at the pivot for the region containing 1 is 180° or half a turn on both spinners, eg</p> <ul style="list-style-type: none"> <li>■ 'It's half the turn of the spinner on each';</li> <li>■ 'They are both 180°';</li> <li>■ 'On both spinners the probability of scoring 1 is <math>\frac{1}{2}</math>'.</li> </ul>	1m	<p><b>Do not</b> accept vague or arbitrary explanation, eg</p> <ul style="list-style-type: none"> <li>■ 'It's one out of three on each';</li> <li>■ '1 is the same space on both';</li> <li>■ 'They are both equally good at spinning';</li> <li>■ 'They have an equal chance of spinning 1'.</li> </ul>				



# Mark scheme for the mental arithmetic 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 pages 18 and 19. In addition a 'quick reference' mark scheme is provided on page 17. This is presented in a similar format to the children's answer sheet.

## General guidance

The general guidance for the marking of the written tests also applies to the marking of the mental test. In addition, please apply the principles below:

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. Do not penalise children 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 arithmetic 2000 quick reference mark scheme

Practice question

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

Time: 5 seconds

<b>1</b>	<b>90</b>
----------	-----------

<b>2</b>	<b>330</b>
----------	------------

<b>3</b>	2.30am   4.30pm   4.30am 1.43pm <b>2.30pm</b>
----------	--

<b>4</b>	<b>30</b>
----------	-----------

<b>5</b>	<b>1500</b> m
----------	---------------

Time: 10 seconds

<b>6</b>	<b>90</b> minutes
----------	-------------------

<b>7</b>	<b>6</b>
----------	----------

<b>8</b>	<b>50</b>
----------	-----------

<b>9</b>	<b>270</b>
----------	------------

<b>10</b>	<b>21</b>
-----------	-----------

<b>11</b>	<b>150</b>
-----------	------------

<b>12</b>	<b>189</b>
-----------	------------

<b>13</b>	<b>8</b>
-----------	----------

<b>14</b>	<b>14</b>	Accept 14.0
-----------	-----------	----------------

<b>15</b>	<b>6</b>	Do not accept 6%
-----------	----------	---------------------

Time: 15 seconds

<b>16</b>	£ <b>14</b> or £ <b>14.00</b>
-----------	-------------------------------

<b>17</b>	<b>2</b>	Accept 19 r 2 or $\frac{2}{5}$ or $19\frac{2}{5}$
-----------	----------	--

<b>18</b>	4 <b>5</b> <b>6</b> 20   60   90
-----------	----------------------------------

<b>19</b>	60°   90°   110° <b>135°</b> 240°
-----------	--------------------------------------

<b>20</b>	<b>£1.11</b> or <b>111p</b> or <b>111</b> or <b>1.11</b> or <b>£1.11p</b>
-----------	--

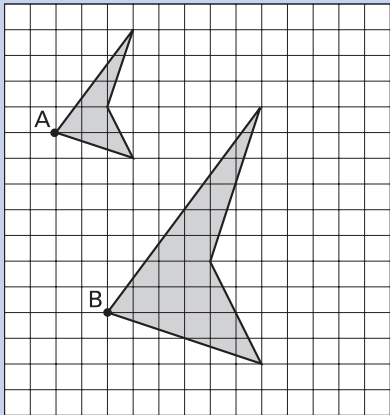
### Mental arithmetic questions 1–15

Question	Requirement	Mark	Additional Guidance
1	90	1m	
2	330	1m	
3	2.30am 4.30pm 4.30am 1.43pm 2.30pm	1m	Accept any other way of indicating the correct answer, eg underlining. <b>Do not</b> accept if more than one answer is indicated unless the child's intention is clear.
4	30	1m	
5	1500	1m	
6	90	1m	
7	6	1m	
8	50	1m	
9	270	1m	
10	21	1m	
11	150	1m	
12	189	1m	
13	8	1m	
14	14	1m	Accept 14.0
15	6	1m	<b>Do not</b> accept 6%

### Mental arithmetic questions 16–20

Question	Requirement	Mark	Additional Guidance
<b>16</b>	£14	<b>1m</b>	Accept any clear indication of the correct cost. Allow variants of £14 such as £14.00 <b>OR</b> £14-00 <b>OR</b> £14 00 <b>Do not</b> accept £1400p <b>OR</b> £1400
<b>17</b>	2	<b>1m</b>	Accept 19 r 2 or 19 remainder 2 <b>OR</b> $\frac{2}{5}$ <b>OR</b> $19\frac{2}{5}$
<b>18</b>	4 <b>⑤</b> <b>⑥</b> 20 60 90	<b>1m</b>	Accept any other way of indicating the correct answer, eg underlining. <b>Do not</b> accept if more than two numbers are indicated unless the child's intention is clear.
<b>19</b>	60° 90° 110° <b>①</b> 135° 240°	<b>1m</b>	Accept any other way of indicating the correct answer, eg underlining. <b>Do not</b> accept if more than one answer is indicated unless the child's intention is clear.
<b>20</b>	£1.11	<b>1m</b>	Accept any clear indication of the distinction between pounds and pence. Allow variants of £1.11 such as £1-11 <b>OR</b> £1 11 <b>OR</b> 111p <b>Do not</b> accept £111 <b>OR</b> £111p <b>OR</b> 1.11p

### Test C questions 1–3

Question	Requirement	Mark	Additional Guidance
1	<p>Award <b>TWO</b> marks for the correct answer of</p> <p>margarine 75g lard 50g</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> <p><math>200 \div 8 = 25</math> margarine = <math>3 \times 25</math> lard = <math>2 \times 25</math></p> <p><b>OR</b> the use of ratio, eg</p> <p>8 : 3 : 2 80 : 30 : 20 40 : 15 : 10 200 : wrong answer : 50 200 : 75 : wrong answer</p>	Up to 2m	
2	<p>Award <b>TWO</b> marks for the correct answer of £7 <b>OR</b> £7.00</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> <p>5% = 35 100% = <math>35 \times 20</math></p>	Up to 2m	<p>Accept for <b>TWO</b> marks £7.00p <b>OR</b> £7 00</p> <p>Accept for <b>ONE</b> mark £700 <b>OR</b> £700p as evidence of an appropriate method.</p>
3	<p>Award <b>TWO</b> marks for a correct drawing as shown below:</p>  <p>If the answer is incorrect, award <b>ONE</b> mark for any two of the three plotted points correctly placed</p> <p><b>OR</b> a correctly enlarged shape drawn anywhere on the grid</p> <p><b>OR</b> a shape showing a consistent error of one grid square in the location of the three plotted vertices, eg</p> <p>all plotted vertices one square too far to the right.</p>	Up to 2m	<p>Shape need not be shaded.</p> <p>Vertices must be within 2mm of the correct grid points.</p>

### Test C questions 4–10

Question	Requirement	Mark	Additional Guidance
4a	Answer in the range £540 to £560	1m	
4b	15 seconds	1m	
5	<p>Award <b>TWO</b> marks for a correct answer of £3.50</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> <ul style="list-style-type: none"> <li>■ adult + child is <math>£17 \div 2 = £8.50</math> adult + 4 children is £19, so 3 children cost £10.50, so 1 child costs <math>£10.50 \div 3</math></li> <li>■ 2 adults + 8 children = £38.00 6 children cost £21, so 1 child costs <math>£21 \div 6</math></li> </ul>	Up to 2m	<p>Accept for <b>TWO</b> marks £3 50 <b>OR</b> £3-50 <b>OR</b> £3.50p</p> <p>Accept for <b>ONE</b> mark £3.5 <b>OR</b> £350p <b>OR</b> £350 <b>OR</b> similar as evidence of appropriate working.</p> <p>Calculation need not be completed for the award of the mark.</p>
6	<p>Award <b>TWO</b> marks for the correct answer of <math>150^\circ</math></p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> <p><math>360 \div 36 = 10</math> <math>15 \times 10</math></p>	Up to 2m	Calculation need not be completed for the award of the mark.
7	<p>Award <b>TWO</b> marks for the correct answer of 14</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> <p>algebraic manipulation to reach <math>4u = 56</math></p>	Up to 2m	<p>Calculation need not be completed for the award of the mark.</p> <p>Accept for <b>ONE</b> mark trial and improvement showing two convergent attempts or two attempts which straddle the correct value and which are within the range 11–17 <b>OR</b> one error in the collection of terms.</p>
8	$\frac{23}{35}$	1m	Accept equivalent fractions.
9a	$55^\circ$	1m	If answers for 9a and 9b are transposed, but otherwise correct, award the mark for 9b only.
9b	$25^\circ$	1m	
10	<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 an appropriate method, eg</p> <p>width = <math>(50 - 40) \div 2</math> length = <math>(50 - 5) \div 3</math> area = <math>5 \times 15</math> <b>OR</b> <math>(50^2 - 40^2) \div 12</math></p>	Up to 2m	Calculation need not be completed for the award of the mark.

### Test C questions 11–14

Question	Requirement	Mark	Additional Guidance
11a	98	1m	
11b	$T = 2R - 2$ <b>OR</b> $R = \frac{T+2}{2}$	1m	<p>Accept equivalent expressions, eg  <math>T = R \times 2 - 2</math>  <math>T = 2 \times (R - 1)</math>  <math>R = \frac{T}{2} + 1</math></p> <p>Accept answers in words, eg</p> <ul style="list-style-type: none"> <li>■ 'to get T, you times R by 2 and then you take away 2';</li> <li>■ 'it's 1 less than R, then you double it and that's T'.</li> </ul>
12	<p>Award <b>TWO</b> marks for the correct answer of <math>\frac{2}{5}</math> <b>OR</b> 0.4 <b>OR</b> 40%.</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> $[(6 \times 0.5) - 1] \div 5$	Up to 2m	<p>Accept for <b>ONE</b> mark, answers such as '2 in 5' <b>OR</b> '2 out of 5' <b>OR</b> '2 : 5' as evidence of an appropriate method.</p> <p>Calculation need not be completed for the award of the mark.</p>
13	<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 an appropriate method, eg</p> $28 = 35\% \text{ of year 6}$ $4 = 5\%, \text{ so } 25\% \text{ is } 4 \times 5$	Up to 2m	<p>Calculation need not be completed for the award of the mark.</p>
14	<p>Explanations which recognise that the product of probability and points distribution is the same for each player, eg</p> <ul style="list-style-type: none"> <li>■ 'There are 3 odds but each is two points that makes 6 for Jane, and there are only two even numbers but Sam gets 3 points for each, that's 6 as well';</li> <li>■ 'If you spun it five times, Jane could get 6 points and so could Sam'.</li> </ul>	1m	<p>No mark is awarded for circling Yes alone.</p> <p>Award a mark for a correct and unambiguous explanation, even if No has been circled.</p> <p><b>Do not</b> accept vague or arbitrary explanations, eg</p> <ul style="list-style-type: none"> <li>■ 'It's a fair spinner';</li> <li>■ 'They've got equal chance';</li> <li>■ 'Jane has more numbers but gets less points'.</li> </ul>

### Test C questions 15–16

Question	Requirement	Mark	Additional Guidance
15	<p>Award <b>TWO</b> marks for the correct answer of 27 <b>AND</b> 37</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> <p>Trial and improvement showing two convergent attempts</p>	Up to 2m	<p>Accept the numbers in either order.</p> <p>Trial and improvement attempts must produce two pairs of numbers within the range of 20 to 50 with a difference of 10</p>
16	<p>Award <b>TWO</b> marks for the correct answer of 64</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, eg</p> <p><math>216 = 6 \times 6 \times 6</math>  <math>6 \div 1.5 = 4</math>                      number of cubes = <math>4 \times 4 \times 4</math>  <b>OR</b> <math>1.5 \times 1.5 \times 1.5 = 3.375</math>                      number of cubes = <math>216 \div 3.375</math></p>	Up to 2m	<p>Calculation need not be completed for the award of the mark.</p>



**This page may be used for your own notes**