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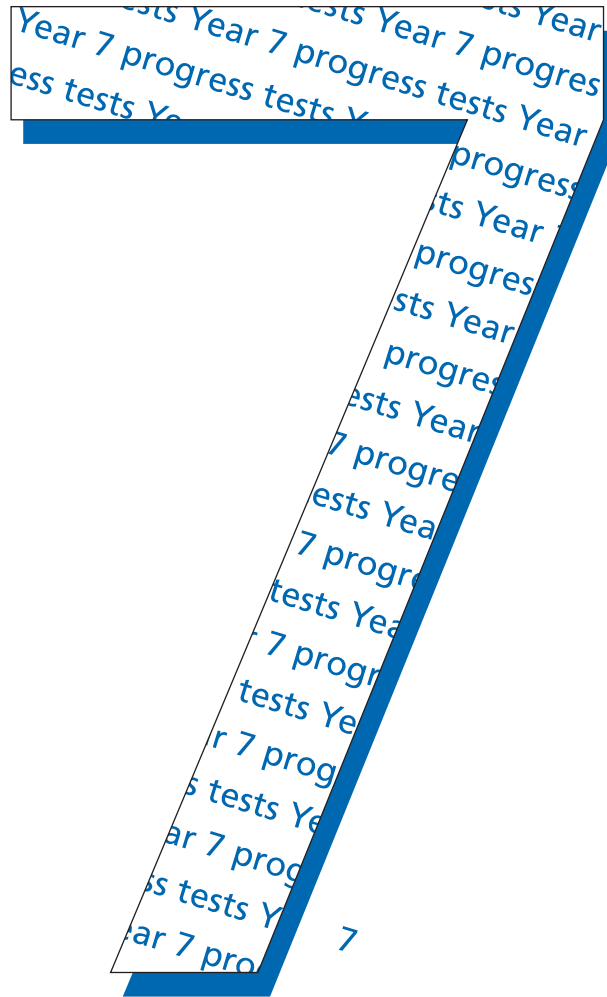
LEVELS  
3-4

2006

# Year 7 progress test in mathematics

## Mark schemes for Paper 1, Paper 2 and Mental mathematics

2006





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# Introduction

The test papers will be marked by external markers. The markers will apply the mark schemes in this booklet, which are provided here to inform teachers.

This booklet contains the mark schemes for Paper 1, Paper 2 and the mental mathematics test. Questions have been named so that each one has a unique identifier.

## The structure of the mark schemes for Paper 1 and Paper 2

The marking information for questions in the written tests is set out in the form of tables, which start on page 13 (Paper 1) and page 25 (Paper 2) of this booklet. The two columns on the left-hand side of each table provide a quick reference to the question number, question part and the total number of marks available for that question part.

The **Correct response** column usually includes 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, and whether the marks are independent or cumulative
- examples of some different types of correct response, including the most common and the minimum acceptable.

The **Additional guidance** column indicates alternative acceptable responses, and provides details of specific types of response that are unacceptable. Other guidance, such as when ‘follow through’ is allowed, is provided as necessary.

Questions with a *Using and applying mathematics* element are identified in the mark scheme by an encircled *U* with a number that indicates the significance of using and applying mathematics in answering the question. The *U* number can be any whole number from 1 to the number of marks in the question.

The 2006 year 7 progress mathematics tests and mark schemes were developed by the Mathematics Test Development Team at Edexcel.

# General guidance

## Using the mark schemes

Answers that are numerically equivalent or algebraically equivalent are acceptable unless the mark schemes state otherwise.

In order to ensure consistency of marking, the most frequent procedural queries are listed on the following two pages with the prescribed correct action. This is followed by further guidance relating specifically to the marking of questions that involve money, negative numbers, algebra, time or coordinates. Unless otherwise specified in the mark schemes, markers should apply the following guidelines in all cases.

**What if ...**

<i>The pupil's response does not match closely any of the examples given.</i>	Markers should use their judgement in deciding whether the response corresponds with the statement of requirements given in the <b>Correct response</b> column. Refer also to the <b>Additional guidance</b> .
<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, is acceptable. Provided there is no ambiguity, condone the continental practice of using a comma for a decimal point.
<i>The pupil has made a conceptual error.</i>	In some questions, a method mark is available provided the pupil has made a computational, rather than conceptual, error. A computational error is a 'slip' such as writing $4 \times 6 = 18$ in an otherwise correct long multiplication. A conceptual error is a more serious misunderstanding of the relevant mathematics; when such an error is seen, no method marks may be awarded. Examples of conceptual errors are: misunderstanding of place value, such as multiplying by 2 rather than 20 when calculating $35 \times 27$ ; subtracting the smaller value from the larger in calculations such as $45 - 26$ to give the answer 21; incorrect signs when working with negative numbers.
<i>The pupil's accuracy is marginal according to the overlay provided.</i>	Overlays can never be 100% accurate. However, provided the answer is within, or touches, the boundaries given, the mark(s) should be awarded.
<i>The pupil's answer correctly follows through from earlier incorrect work.</i>	Follow through marks may be awarded only when specifically stated in the mark schemes, but should not be allowed if the difficulty level of the question has been lowered. Either the correct response or an acceptable follow through response should be marked as correct.
<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. If the original intention or difficulty level of the question is not reduced, deduct one mark only. If the original intention or difficulty level is reduced, do not award any marks for the question part.
<i>The correct answer is in the wrong place.</i>	Where a pupil has shown understanding of the question, the mark(s) should 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.

**What if ...**

<i>The final answer is wrong but the correct answer is shown in the working.</i>	Where appropriate, detailed guidance will be given in the mark schemes and must be adhered to. If no guidance is given, markers will need to examine each case to decide whether:	
	■ the incorrect answer is due to a transcription error	If so, award the mark.
	■ in questions not testing accuracy, the correct answer has been given but then rounded or truncated	If so, award the mark.
	■ the pupil has continued to give redundant extra working which does not contradict work already done	If so, award the mark.
	■ the pupil has continued, in the same part of the question, to give redundant extra working which does contradict work already done.	If so, do not award the mark. Where a question part carries more than one mark, only the final mark should be withheld.
<i>The pupil's answer is correct but the wrong working is seen.</i>	A correct response should always be marked as correct unless the mark schemes state otherwise.	
<i>The correct response has been crossed or rubbed out and not replaced.</i>	Mark, according to the mark schemes, any legible crossed or rubbed out work that has not been replaced.	
<i>More than one answer is given.</i>	If all answers given are correct or a range of answers is given, all of which are correct, the mark should be awarded unless prohibited by the mark schemes. If both correct and incorrect responses are given, no mark should 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 should not be disallowed for working or answers given in a different part, unless the mark scheme specifically states otherwise.	

## Marking specific types of question

<b>Responses involving money</b> For example: £3.20    £7	
<b>Accept ✓</b>	<b>Do not accept ✗</b>
<ul style="list-style-type: none"> <li>✓ Any unambiguous indication of the correct amount eg £3.20(p), £3 20, £3,20, 3 pounds 20, £3-20, £3 20 pence, £3:20, £7.00</li> <li>✓ The unit, £ or p, is usually printed in the answer space. Where the pupil writes an answer outside the answer space with <b>no</b> units, accept responses that are unambiguous when considered alongside the given units eg with £ given in the answer space, accept 3.20 7 or 7.00</li> <li>✓ Given units amended eg with £ crossed out in the answer space, accept 320p 700p</li> </ul>	<ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous indication of the amount eg £320, £320p or £700p</li> <li>✗ Ambiguous use of units outside the answer space eg with £ given in the answer space, do not accept 3.20p outside the answer space</li> <li>✗ Incorrect placement of decimal points, spaces, etc or incorrect use or omission of 0 eg £3.2, £3 200, £32 0, £3-2-0 £7.0</li> </ul>

<b>Responses involving negative numbers</b> For example: -2	
<b>Accept ✓</b>	<b>Do not accept ✗</b>
	<p>To avoid penalising the error below more than once within each question, do not award the mark for the <i>first</i> occurrence of the error within each question. Where a question part carries more than one mark, only the final mark should be withheld.</p> <ul style="list-style-type: none"> <li>✗ Incorrect notation eg 2-</li> </ul>



<b>Responses involving the use of algebra</b>	
For example: $2 + n$ $n + 2$ $2n$ $\frac{n}{2}$ $n^2$	
<b>Accept ✓</b>	<b>Take care ! Do not accept ✗</b>
<p>✓ Unambiguous use of a different case or variable eg <math>N</math> used for <math>n</math> <math>x</math> used for <math>n</math></p> <p>✓ Words used to precede or follow equations or expressions eg <math>t = n + 2</math> tiles or tiles = <math>t = n + 2</math> for <math>t = n + 2</math></p> <p>✓ Unambiguous letters used to indicate expressions eg <math>t = n + 2</math> for <math>n + 2</math></p>	<p>! Unconventional notation eg <math>n \times 2</math> or <math>2 \times n</math> or <math>n2</math> or <math>n + n</math> for <math>2n</math> <math>n \times n</math> for <math>n^2</math> <math>n \div 2</math> for <math>\frac{n}{2}</math> or <math>\frac{1}{2}n</math> <math>2 + 1n</math> for <math>2 + n</math> <math>2 + 0n</math> for <math>2</math></p> <p>Within a question that demands simplification, do not accept as part of a final answer involving algebra. Accept within a method when awarding partial credit, or within an explanation or general working.</p> <p>✗ Embedded values given when solving equations eg in solving <math>3x + 2 = 32</math>, <math>3 \times 10 + 2 = 32</math> for <math>x = 10</math></p> <p>To avoid penalising the two types of error below more than once within each question, do not award the mark for the <i>first</i> occurrence of each type within each question. Where a question part carries more than one mark, only the final mark should be withheld.</p> <p>! Words or units used within equations or expressions eg <math>n</math> tiles + 2 <math>n</math> cm + 2</p> <p>Do not accept on their own. Ignore if accompanying an acceptable response.</p> <p>✗ Ambiguous letters used to indicate expressions eg <math>n = n + 2</math> for <math>n + 2</math></p>

<b>Responses involving time</b> <i>A time interval For example: 2 hours 30 minutes</i>	
<b>Accept ✓</b>	<b>Take care ! Do not accept ✗</b>
<ul style="list-style-type: none"> <li>✓ Any unambiguous indication eg 2.5 (hours), 2h 30</li> <li>✓ Digital electronic time ie 2:30</li> </ul>	<ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous time interval eg 2.3(h), 2.30, 2-30, 2h 3, 2.30min</li> <li>! The unit, hours and/or minutes, is usually printed in the answer space. Where the pupil writes an answer outside the answer space, or crosses out the given unit, accept answers with correct units, unless the question has specifically asked for other units to be used.</li> </ul>
<b>A specific time For example: 8:40am 17:20</b>	
<b>Accept ✓</b>	<b>Do not accept ✗</b>
<ul style="list-style-type: none"> <li>✓ Any unambiguous, correct indication eg 08.40, 8.40, 8:40, 0840, 8 40, 8-40, twenty to nine, 8,40</li> <li>✓ Unambiguous change to 12 or 24 hour clock eg 17:20 as 5:20pm, 17:20pm</li> </ul>	<ul style="list-style-type: none"> <li>✗ Incorrect time eg 8.4am, 8.40pm</li> <li>✗ Incorrect placement of separators, spaces, etc or incorrect use or omission of 0 eg 840, 8:4:0, 084, 84</li> </ul>

<b>Responses involving coordinates</b> <i>For example: (5, 7)</i>	
<b>Accept ✓</b>	<b>Do not accept ✗</b>
<ul style="list-style-type: none"> <li>✓ Unconventional notation eg (05, 07) (five, seven) <math>\begin{matrix} x &amp; y \\ (5, &amp; 7) \end{matrix}</math> (<math>x = 5, y = 7</math>)</li> </ul>	<ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous notation eg (7, 5) <math>\begin{matrix} y &amp; x \\ (7, &amp; 5) \end{matrix}</math> (5x, 7y) (5<sup>x</sup>, 7<sup>y</sup>) (<math>x - 5, y - 7</math>)</li> </ul>

and 1m lost, with no explicit order, then this will be recorded by the 1

The total marks awarded for a double page will be written in the box bottom of the right-hand page, and the total number of marks obtained on each page will be recorded on the front of the test paper.

A total of 100 marks is available (40 from Paper 1, 40 from Paper 2 and 20 from the mental mathematics test).

### **Awarding levels**

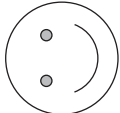
The sum of the marks gained on Paper 1, Paper 2 and the mental mathematics test paper determines the level awarded. Level threshold tables, which show the mark ranges for the award of different levels, will be available on the website [www.naa.org.uk/tests](http://www.naa.org.uk/tests) from Monday 19 June 2006. NAA will send a copy to each school on 30 June 2006.

Schools will be notified of pupils' results by means of a marksheet, which will be returned to schools by the external marking agency with the pupils' test scripts. The marksheet will include pupils' scores on the test papers and the levels awarded.

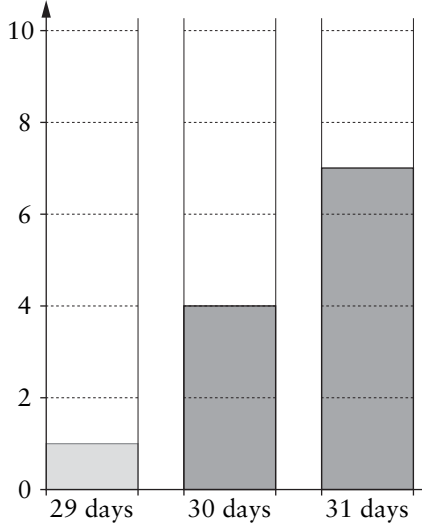
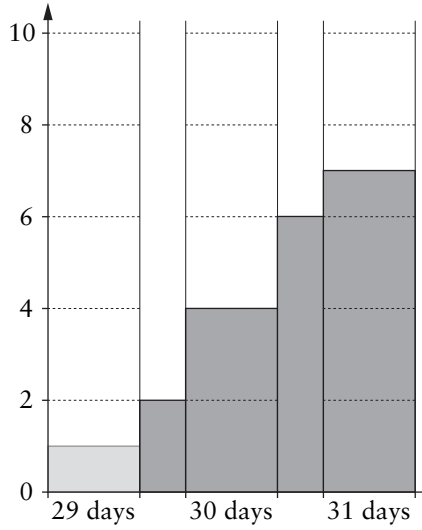
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# Mark scheme for Paper 1

Question		Euro totals	
1		Correct response	Additional guidance
	1m	705	
	1m	1010	

Question		Rotating face	
2		Correct response	Additional guidance
	1m	<p>Indicates the correct orientation of the features on the last face, ie</p> 	<p>! <i>Inaccurate indication</i> Accept provided the pupil's intention is clear</p> <p>! <i>Additional features added</i> Ignore</p>

Question	<b>Even add</b>	
3	Correct response	Additional guidance
<p>1m</p> <p style="text-align: center;">(U1)</p>	<p>Gives a correct explanation</p> <p>The most common correct explanations:</p> <p>Show or imply the correct answer to the sum eg</p> <ul style="list-style-type: none"> <li>■ <math>538 + 46 = 584</math></li> <li>■ It should be <math>585 - 1</math></li> </ul> <p>Show or imply that Nisha has calculated either <math>538 + 47</math> or <math>539 + 46</math> eg</p> <ul style="list-style-type: none"> <li>■ <math>538 + 47 = 585</math></li> <li>■ <math>585 - 538 = 47</math></li> <li>■ <math>539 + 46 = 585</math></li> <li>■ <math>585 - 46 = 539</math></li> </ul> <p>Refer to the two numbers added being even, where the answer is odd eg</p> <ul style="list-style-type: none"> <li>■ If you add two even numbers the answer is even, but 585 is odd</li> </ul> <p>Show or imply why the last digit in one of the values is incorrect eg</p> <ul style="list-style-type: none"> <li>■ <math>8 + 6 = 14</math> so it should end in 4</li> <li>■ <math>38 + 46 = 84</math></li> <li>■ <math>85 - 46 = 39</math></li> <li>■ <math>85 - 8</math> ends in 7, not 6</li> </ul>	<p><b>!</b> <i>Explanation contains an incorrect statement</i> Ignore alongside a correct response</p> <p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ 584</li> <li>◆ It's wrong by 1</li> </ul> <p>✗ <i>Incomplete explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ <math>538 + 46</math> is not 585</li> </ul> <p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ She added 47</li> <li>◆ She used 539</li> </ul> <p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ Even + even = even</li> <li>◆ The first two numbers are even, but the answer is odd</li> <li>◆ The answer should be even</li> <li>◆ An odd result is impossible</li> </ul> <p>✗ <i>Incomplete explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ Even + even</li> <li>◆ It's an odd answer</li> </ul> <p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ <math>8 + 6 = 14</math> but it ends in a 5</li> <li>◆ It should end in 4</li> <li>◆ It ends in 84</li> </ul> <p>✗ <i>Incomplete or incorrect explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ <math>8 + 6 = 14</math></li> <li>◆ <math>8 + 6</math> does not equal 15</li> <li>◆ It shouldn't end in a 5</li> <li>◆ It should end in 6, not 5</li> </ul>

Question	<b>Leap year</b>	
4	Correct response	Additional guidance
<p><b>2m</b></p> <p><i>or</i></p> <p><b>1m</b></p>	<p>Completes both bars correctly by showing a frequency of 4 for 30 days and 7 for 31, ie</p>  <p><i>or</i></p> <p>Completes one bar correctly</p> <p><i>or</i></p> <p>Indicates the correct values 4 and 7 using the vertical scale of the chart, even if the bars are incorrectly shaded or aligned</p>	<p>✓ <i>For 2m, bars not shaded, or bars indicated solely by shading with no horizontal lines</i></p> <p>! <i>Bar not of correct width, or not ruled/accurate</i> Accept provided the pupil's intention is clear and the height of the bar is within 2mm of the correct height</p> <p>! <i>Additional bars indicated</i> For 2m or 1m, accept only if unambiguous eg, do not accept</p> 

Question		<b>From 98</b>	
<b>5</b>		<b>Correct response</b>	<b>Additional guidance</b>
a	2m	Gives all three correct values, ie <div style="text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 2px auto; display: flex; align-items: center; justify-content: center;">108</div> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 2px auto; display: flex; align-items: center; justify-content: center;">198</div> <div style="border: 1px solid black; width: 40px; height: 20px; margin: 2px auto; display: flex; align-items: center; justify-content: center;">1098</div> </div>	
	<i>or</i> 1m	Gives any two correct values	
b	1m	980	

Question		<b>Buses and trains</b>	
<b>6</b>		<b>Correct response</b>	<b>Additional guidance</b>
a	1m	10 10	! <i>Indication of am or pm</i> Accept provided the time is correct eg, for part (a) accept • 10 10am eg, for part (a) do not accept • 10 10pm
b	1m	12 55	



Question		<b>Newspapers</b>	
<b>7</b>		<b>Correct response</b>	<b>Additional guidance</b>
	1m ⓈU1	£ 4.70	

Question		<b>Two numbers</b>	
<b>8</b>		<b>Correct response</b>	<b>Additional guidance</b>
a	1m	Indicates $7\frac{1}{2}$ and $12\frac{1}{2}$ , in either order	✓ <i>Equivalent fractions or decimals</i>
b	1m	Indicates $12\frac{1}{2}$ and $22\frac{1}{2}$ , in either order	

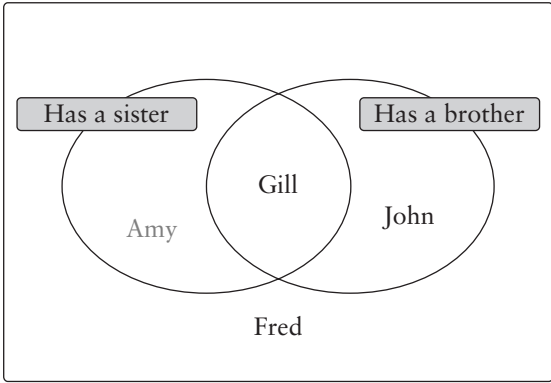
Question	<b>Multiplication grids</b>																																			
9	Correct response	Additional guidance																																		
	<p>1m</p> <p>20</p>																																			
	<p>2m</p> <p>Gives four correct whole number values in the correct positions, ie</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>×</td><td>8</td><td>5</td></tr> <tr><td>3</td><td>24</td><td>15</td></tr> <tr><td>2</td><td>16</td><td>10</td></tr> </table> <p>or</p> <p>1m</p> <p>Gives at least one correct value in the correct position in the top row and one correct value in the correct position in the left-hand column eg</p> <ul style="list-style-type: none"> <li>▪             <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>×</td><td></td><td>5</td></tr> <tr><td>3</td><td></td><td>15</td></tr> <tr><td></td><td></td><td></td></tr> </table> </li> <li>or</li> <li>Gives values that work for two of the given products, provided none of these values is 1 eg</li> <li>▪             <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>×</td><td>4</td><td>2</td></tr> <tr><td>6</td><td>24</td><td></td></tr> <tr><td>5</td><td></td><td>10</td></tr> </table> </li> <li>▪             <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>×</td><td>12</td><td>7.5</td></tr> <tr><td>2</td><td>24</td><td>15</td></tr> <tr><td></td><td></td><td></td></tr> </table> </li> </ul> <p style="text-align: left; margin-left: 20px;">(U2)</p>		×	8	5	3	24	15	2	16	10	×		5	3		15				×	4	2	6	24		5		10	×	12	7.5	2	24	15	
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6	24																																			
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2	24	15																																		

Question		Sequence of numbers	
10		Correct response	Additional guidance
a	1m	Gives the first value as 765	
	1m	Gives the last value as 925	
b	1m	Gives the second to last value as 0	<p>! <i>Follow through as their 0 – 15</i> Accept provided this results in a negative number</p> <p>× <i>Incomplete processing</i> eg, for the second mark in part (b) ♦ 0 – 15</p>
	1m	Gives the last value as –15	

Question		Plants	
11		Correct response	Additional guidance
a	1m	60	
b	1m	2	<p>✓ <i>Correct plants indicated</i> eg ♦ C and G</p>
c	1m	20	

Question		Relationships	
12		Correct response	Additional guidance
	1m	18	
	1m	20	
	1m	30	

Question		<b>Making a shape</b>	
<b>13</b>		<b>Correct response</b>	<b>Additional guidance</b>
	1m	10	


Question		<b>Brothers and sisters</b>	
<b>14</b>		<b>Correct response</b>	<b>Additional guidance</b>
	2m	<p>Places the names John, Gill and Fred in the correct regions, ie</p> 	<p>✓ <i>Unambiguous indication</i> eg ♦ J, G and F for John, Gill and Fred</p> <p>! <i>Name repeated in more than one region</i> Do not accept as a correctly placed name</p> <p>! <i>Names on the diagram other than those given</i> Ignore</p> <p>! <i>'Amy' repeated elsewhere on the diagram</i> Ignore</p>
	<i>or</i> 1m	Places any two names in the correct regions	

Question		Properties of a shape											
15		Correct response	Additional guidance										
	2m	Makes all four correct decisions, ie  <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">True</td> <td>False</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	True	False	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	! <i>Unambiguous indication</i> Accept any unambiguous indication but do not accept blanks for false
True	False												
<input checked="" type="checkbox"/>	<input type="checkbox"/>												
<input type="checkbox"/>	<input checked="" type="checkbox"/>												
<input type="checkbox"/>	<input checked="" type="checkbox"/>												
<input checked="" type="checkbox"/>	<input type="checkbox"/>												
	or 1m	Makes three correct decisions											

Question		Finding fractions	
16		Correct response	Additional guidance
	1m	4	
	1m	15	

Question	Cost	
17	Correct response	Additional guidance
1m ⓈU1	90 p	

Question	Coordinates	
18	Correct response	Additional guidance
1m	Marks any point on the line $x = 4$ with a $y$ coordinate greater than 4 eg <ul style="list-style-type: none"> <li>■ (4, 5)</li> <li>■ (4, 6)</li> <li>■ (4, 4.5)</li> </ul>	! <i>Inaccurate indication</i> Accept provided the pupil's intention is clear

Question		<b>Triangle pattern</b>	
19		Correct response	Additional guidance
a	1m	Indicates trapezium, ie 	✓ <i>Unambiguous indication</i>
b	1m	17	

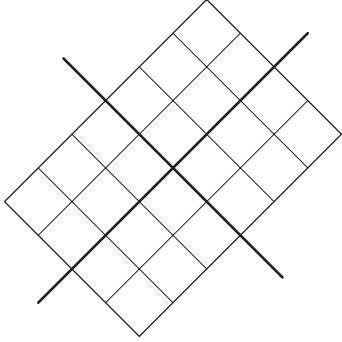
Question		<b>Parcels</b>	
20		Correct response	Additional guidance
	2m  or 1m  (U1)	150  Shows the value 750 or 0.75  or  Shows an incorrect reading of the scale but then divides their reading correctly by 5 eg ■ 675 seen, then answer of 135  or  Indicates the position of 150 on the scale with incorrect or no further interpretation	! <i>Their reading is not a multiple of 5</i> Ignore any remainder given, even if incorrect

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# Mark scheme for Paper 2


Question		Data	
1		Correct response	Additional guidance
a	1m	Frank	✓ <i>Unambiguous indication of name</i> eg ♦ F  ✗ 54
b	1m	168	✗ <i>Gina</i>

Question		Rectangle symmetry	
2		Correct response	Additional guidance
	1m	<p>Draws the two lines of symmetry in the correct positions on the rectangle eg</p> 	<p>! <i>Lines not ruled, accurate or full length</i> Accept provided the pupil's intention is clear and each line spans at least two squares</p> <p>* <i>Additional lines indicated</i></p>

Question		Which one?					
3		Correct response	Additional guidance				
a	1m	<p>Indicates only 4 metres, ie</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/> 4 metres</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 4 metres	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>						
<input checked="" type="checkbox"/> 4 metres	<input type="checkbox"/>						
b	1m	<p>Indicates only <math>-18^{\circ}\text{C}</math>, ie</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/> <math>-18^{\circ}\text{C}</math></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<input checked="" type="checkbox"/> $-18^{\circ}\text{C}$	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/> $-18^{\circ}\text{C}$						
<input type="checkbox"/>	<input type="checkbox"/>						
c	1m	<p>Indicates only 3 kilograms, ie</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/> 3 kilograms</td> </tr> </table>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 3 kilograms	
<input type="checkbox"/>	<input type="checkbox"/>						
<input type="checkbox"/>	<input checked="" type="checkbox"/> 3 kilograms						

Question		Ages	
<b>4</b>		<b>Correct response</b>	<b>Additional guidance</b>
a	1m	58	
b	1m U1	35	

Question		Digital time	
<b>5</b>		<b>Correct response</b>	<b>Additional guidance</b>
	1m	<p>Indicates the correct time, ie</p> <p> <input type="text" value="4:05"/>      <input type="text" value="3:55"/>  <input type="text" value="4:15"/>      <input type="text" value="4:25"/>  <input checked="" type="text" value="4:15"/>      <input type="text" value="4:25"/>  <input type="text" value="3:45"/> </p>	

Question		Hours of sleep	
6		Correct response	Additional guidance
a	1m	Horse	! <i>Unambiguous indication</i> eg, accept • Ho eg, do not accept • H
b	1m	5	
c	1m 	4	! <i>Four circles drawn</i> Condone

Question		Odds	
7		Correct response	Additional guidance
a	1m	11	! <i>For part (a), other odd numbers listed</i> Ignore, provided there is no ambiguity as to which is their answer
b	1m	36	✓ <i>Follow through as 25 + their (a)</i>

Question		Number lines	
8		Correct response	Additional guidance
	1m	150	✓ <i>Equivalent fractions or decimals</i>  ✗ <i>For the second and third marks, follow through</i>  ✗ <i>For the second and third marks, incorrect notation</i> eg, for the third mark • $0.1\frac{1}{2}$
	1m	1.5	
	1m	0.15	

Question	<b>Shaded numbers</b>																									
9	<b>Correct response</b>	<b>Additional guidance</b>																								
<p style="text-align: center;"><b>1m</b></p> <p style="text-align: center;">(U1)</p>	<p>Indicates No and gives a correct explanation</p> <p>The most common correct explanations:</p> <p>Reason generally about odd/even numbers eg</p> <ul style="list-style-type: none"> <li>■ Only even numbers are shaded and 35 is odd</li> <li>■ 35 isn't divisible by 2, but all the shaded numbers are</li> </ul> <p>Use counting on eg</p> <ul style="list-style-type: none"> <li>■ (3, 7, 11,) 15, 19, 23, 27, 31, 35</li> <li>■</li> </ul> <table border="1" style="margin-left: 20px;"> <tbody> <tr><td></td><td style="background-color: #cccccc;">14</td><td></td><td style="background-color: #cccccc;">16</td></tr> <tr><td></td><td style="background-color: #cccccc;">18</td><td></td><td style="background-color: #cccccc;">20</td></tr> <tr><td></td><td style="background-color: #cccccc;">22</td><td></td><td style="background-color: #cccccc;">24</td></tr> <tr><td></td><td style="background-color: #cccccc;">26</td><td></td><td style="background-color: #cccccc;">28</td></tr> <tr><td></td><td style="background-color: #cccccc;">30</td><td></td><td style="background-color: #cccccc;">32</td></tr> <tr><td></td><td style="background-color: #cccccc;">34</td><td></td><td style="background-color: #cccccc;">36</td></tr> </tbody> </table>		14		16		18		20		22		24		26		28		30		32		34		36	<p><b>!</b> <i>Explanation contains an incorrect statement</i> Ignore alongside a correct response</p> <p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ They are even</li> <li>◆ It is odd</li> <li>◆ It's not in the 2 times table</li> </ul> <p>✗ <i>Incomplete explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ 35 won't be in a shaded column</li> <li>◆ It goes up in 4s (or 2s)</li> <li>◆ It's not in the 4 times table</li> </ul> <p>✓ <i>Minimally acceptable explanation that at least shows or implies that 34 or 36 will be shaded</i> eg</p> <ul style="list-style-type: none"> <li>◆ 35 will be in the third column</li> <li>◆ Numbers ending in 5 have white squares</li> <li>◆ Keep adding 4 to 11 and you get 35</li> <li>◆ 34 will be shaded, so 35 can't be</li> <li>◆ 36 is, so 35 can't be</li> </ul> <p>✗ <i>Incomplete explanation</i> eg</p> <ul style="list-style-type: none"> <li>◆ Just count on</li> </ul>
	14		16																							
	18		20																							
	22		24																							
	26		28																							
	30		32																							
	34		36																							

Question		<b>Different shapes</b>	
10		Correct response	Additional guidance
a	1m	D	✓ <i>Unambiguous indication</i> eg, for part (b) <ul style="list-style-type: none"> <li>♦ Triangle</li> </ul>
b	1m	C	
c	1m	<p>Indicates No and gives a correct explanation</p> <p>The most common correct explanations:</p> <p>Refer to at least one of the other shapes having the same area as shape C</p> <p>eg</p> <ul style="list-style-type: none"> <li>■ All of the shapes have the same area because they are made from 4 of the same sized tiles</li> <li>■ Each shape is made from 4 equal triangles</li> <li>■ Two tiles make a square and all the shapes are made of 2 squares</li> </ul> <p>Refer to at least one of the other shapes having an area of 8 squares</p> <p>eg</p> <ul style="list-style-type: none"> <li>■ All the shapes have an area of 8 squares</li> </ul>	✓ <i>Minimally acceptable explanation</i> eg <ul style="list-style-type: none"> <li>♦ Same</li> <li>♦ E is the same</li> <li>♦ All 4</li> <li>♦ All 2</li> </ul> ✗ <i>Incomplete or incorrect explanation</i> eg <ul style="list-style-type: none"> <li>♦ 4 tiles</li> <li>♦ B has a bigger area</li> </ul> ✓ <i>Minimally acceptable explanation</i> eg <ul style="list-style-type: none"> <li>♦ All 8</li> <li>♦ B is 8 as well</li> </ul> ! <i>Squares taken to be square centimetres</i> eg <ul style="list-style-type: none"> <li>♦ All 8cm<sup>2</sup></li> </ul> Condone  ✗ <i>Incorrect explanation</i> eg <ul style="list-style-type: none"> <li>♦ They all have the same area of 16 squares</li> </ul>

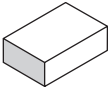
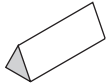
(U1)

Question		Place value	
11		Correct response	Additional guidance
a	1m	<p>Gives both correct values in the correct order, ie</p> <p>3 hundred(s) 4 thousand(s)</p>	<p>✓ <i>Unambiguous indication</i> eg</p> <ul style="list-style-type: none"> <li>♦ 300</li> <li>4000</li> </ul> <p>! <i>Response fails to quantify the number of hundreds and thousands</i> Condone eg, accept</p> <ul style="list-style-type: none"> <li>♦ Hundred(s)</li> <li>Thousand(s)</li> <li>♦ 100(s)</li> <li>1000(s)</li> </ul> <p>× <i>Ambiguous spelling</i> eg, for hundred</p> <ul style="list-style-type: none"> <li>♦ hundredth</li> <li>♦ hundreth</li> </ul>
b	1m	20 020	× <i>Response given in words</i>

Question		<b>Running race</b>																						
12		Correct response	Additional guidance																					
	2m	<p>Gives all five correct orders with none incorrect or duplicated</p> <p>eg</p> <ul style="list-style-type: none"> <li>■ <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Finish 1st</th> <th>Finish 2nd</th> <th>Finish 3rd</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>B</td> <td>C</td> </tr> <tr> <td>A</td> <td>C</td> <td>B</td> </tr> <tr> <td>B</td> <td>A</td> <td>C</td> </tr> <tr> <td>B</td> <td>C</td> <td>A</td> </tr> <tr> <td>C</td> <td>A</td> <td>B</td> </tr> <tr> <td>C</td> <td>B</td> <td>A</td> </tr> </tbody> </table> </li> </ul>	Finish 1st	Finish 2nd	Finish 3rd	A	B	C	A	C	B	B	A	C	B	C	A	C	A	B	C	B	A	
Finish 1st	Finish 2nd	Finish 3rd																						
A	B	C																						
A	C	B																						
B	A	C																						
B	C	A																						
C	A	B																						
C	B	A																						
	or 1m	Gives at least three correct orders with not more than two incorrect or duplicated																						


Question		<b>Shading percentages</b>	
13		Correct response	Additional guidance
a	1m	50	× <i>Equivalent fractions or decimals</i>
b	1m	25	× <i>Follow through</i>

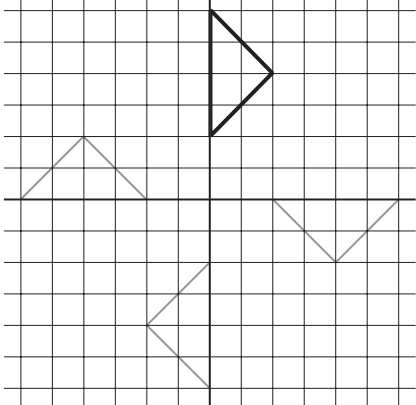
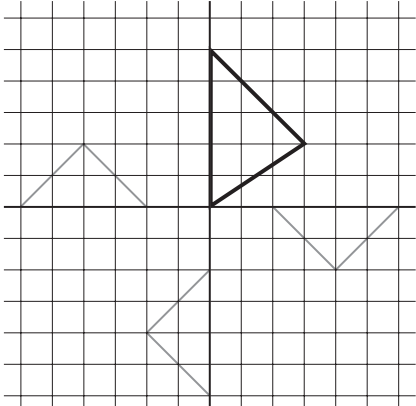


Question		Faces of shapes			
14		Correct response	Additional guidance		
a	1m	Completes the row for the cuboid correctly, ie <div style="display: flex; align-items: center; border: 1px solid black; padding: 5px;"> <div style="text-align: center; margin-right: 10px;">                         cuboid   </div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 40px; height: 40px;">6</td> <td style="width: 40px; height: 40px;">0</td> </tr> </table> </div>	6	0	✓ For the first mark, zero cell left blank or marked with a dash or cross or similar
	6	0			
1m	Completes the row for the triangular prism correctly, ie <div style="display: flex; align-items: center; border: 1px solid black; padding: 5px;"> <div style="text-align: center; margin-right: 10px;">                         triangular prism   </div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 40px; height: 40px;">3</td> <td style="width: 40px; height: 40px;">2</td> </tr> </table> </div>	3	2		
3	2				
b	1m <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">U1</span>	Square-based pyramid	! Answer of 'pyramid' or 'square pyramid' Condone		

Question		Hiring a car	
15		Correct response	Additional guidance
a	1m	£ 200	
b	1m	14	

Question	<b>Matching probability</b>	
16	Correct response	Additional guidance
	<p>2m</p> <p>Matches all four sentences correctly, ie</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">... 20</div> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">Certain</div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">... odd</div> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">Likely</div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">... greater than 3</div> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">Even chance</div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">... less than 12</div> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">Unlikely</div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">... multiple of 5</div> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">Impossible</div> </div>	

Question		<b>Sea</b>	
<b>17</b>		<b>Correct response</b>	<b>Additional guidance</b>
a	1m	Fish	✓ <i>Unambiguous indication of fish</i> eg ♦ F ♦  ✗ -20
b	1m	30	✗ -30

Question	<b>Turning pattern</b>	
18	Correct response	Additional guidance
<p>2m</p> <p><i>or</i></p> <p>1m</p>	<p>Completes both missing sides of the correct triangle, ie</p>  <p><i>or</i></p> <p>Completes a triangle with a base on the thick vertical line in the correct quadrant, even if the vertices are incorrectly positioned</p> <p>eg</p> <ul style="list-style-type: none"> <li>■ </li> </ul>	<p>! <i>Lines not ruled or accurate</i> Accept provided the pupil's intention is clear</p> <p>✗ <i>Additional lines added</i></p>

Question		<b>Days in a month</b>	
19		Correct response	Additional guidance
a	1m	<p>Indicates True and gives a correct explanation eg</p> <ul style="list-style-type: none"> <li>■ There are 7 months with 31 days but only 4 months with 30 and 1 month with 28</li> <li>■ There are more months with 31 days than 30 days or 28 days so 31 is the mode</li> </ul>	<p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> <li>♦ Most months have 31</li> <li>♦ 7 of them have 31</li> <li>♦ More 31s</li> <li>♦ When you count the months, there are more than any of the others</li> <li>♦ Most common</li> <li>♦ There are more with 31 than 30</li> </ul> <p>✗ <i>Incomplete, ambiguous or incorrect explanation</i> eg</p> <ul style="list-style-type: none"> <li>♦ Mode is the most</li> <li>♦ 7</li> <li>♦ There are more than any of the others</li> <li>♦ 31 is the most days you can have in a month</li> </ul>
b	1m	3	

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# Transcript and mark scheme for the mental mathematics test

## General guidance for markers

Please note that pupils should not be penalised if they record any information given in the question or show their working. Ignore any annotation, even if in the answer space, and mark only the answer. Accept an unambiguous answer written in the stimulus box, or elsewhere on the page but clearly attributable to the relevant question.

General guidance for marking the written tests (pages 5–11) also applies to marking the mental mathematics test. In addition, please apply the following principles unless specific instructions to the contrary are given in the mark scheme:

- accept responses in words and/or figures,  
eg 7 point 3, 4 hundred
- accept any unambiguous indication of the correct response from a given list,  
eg circling, ticking, underlining
- accept unambiguous misspellings
- accept units that have been correctly converted to a different unit provided the new unit is indicated. Where units have been given on the answer sheet, do not penalise pupils for writing the units again
- accept responses with commas as spacers,  
eg 50,000  
but do not accept a point used as a spacer,  
eg 50.000

**Pupil answer sheet**

Year 7 mathematics 2006  
Mental mathematics test

First name \_\_\_\_\_  
Last name \_\_\_\_\_  
School \_\_\_\_\_

Total marks

Time: 10 seconds

7	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">French</td> <td style="width: 10%; text-align: center;">German</td> </tr> <tr> <td style="text-align: center;">Boys</td> <td style="text-align: center;">22</td> <td style="text-align: center;">36</td> </tr> <tr> <td style="text-align: center;">Girls</td> <td style="text-align: center;">39</td> <td style="text-align: center;">31</td> </tr> </table>		French	German	Boys	22	36	Girls	39	31	boys	
	French	German										
Boys	22	36										
Girls	39	31										

Practice question

	15
--	----

Time: 5 seconds

1				
2	73	2	3	4
5	hours	180 minutes	5	6
6	5.9	6	7	8

Time: 10 seconds

8		NE		
---	--	----	--	--

Time: 10 seconds

9				
---	--	--	--	--

Time: 10 seconds

10		2763		
----	--	------	--	--

Time: 10 seconds

11				
----	--	--	--	--

Time: 10 seconds

12		32	5	
----	--	----	---	--

Time: 10 seconds

13	0.3	0.4	0.308	
	0.03	0.2	0.2	13

**Test questions**

*'Now we are ready to start the test.'*

*For the first group of questions you will have 5 seconds to work out each answer and write it down.'*

1	How many right angles does a square have?
2	What number must I add to seventy-three to make one hundred?
3	Multiply six by three.
4	What number is one hundred less than four thousand?
5	How many hours is one hundred and eighty minutes?
6	What number is nought point one more than five point nine?

*'For the next group of questions you will have 10 seconds to work out each answer and write it down.'*

7	Look at the table on your answer sheet. It shows how many boys and girls in a year group study French or German. How many boys study German?
8	I start by facing north-east. I turn through half a turn. Which direction am I facing now?
9	Look at the rectangle on your answer sheet. What fraction of the rectangle is shaded?
10	What is two thousand seven hundred and sixty-three rounded to the nearest hundred?
11	Look at the shape on your answer sheet. Write down the coordinates of the point marked A.
12	What is the remainder when thirty-two is divided by five?
13	Look at the numbers on your answer sheet. Put a ring round the smallest number.

*'Now turn over your answer sheet.'*



more money does Mary need to make one pound?

asked his class if they had used a bus to get to school. The chart shows the results. How many more pupils said yes than said no?

There are 10 pencils in boxes of ten. How many boxes of ten pencils are there in a class of twenty-eight pupils?

What number is a multiple of ten and that is also a multiple of twelve?

Sam shows how many pupils had a school dinner or packed lunch on one day. How many pupils had a school dinner? How many pupils had a packed lunch?

Sam bought half a kilogram of cherries. How many hundred grams of cherries did he buy? How many grams of cherries did they buy?

A shaded shape is drawn on a centimetre square grid. What is its perimeter?

**15**

Yes	###
No	###

**15**

**16**

boxes	28
-------	----

**16**

**17**

**17**

**18**

School dinner	● ● ● ● ●
Packed lunch	● ◐

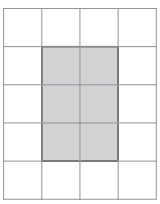
pupils **18**

**19**

g	$\frac{1}{2}$ kg 200g
---	-----------------------

**19**

**20**

	cm
--	----

**20**

**Down. The test is finished.**

Year 7 progress test in mathematics 2006  
Mental mathematics

# Mark scheme

Time: 10 seconds

7	36 boys	Accept value indicated in table
---	---------	---------------------------------

8	South-west	Accept unambiguous abbreviations Do not accept West-south or WS
---	------------	--

9	$\frac{1}{4}$	Accept equivalent fractions Do not accept equivalent decimals or percentages
---	---------------	---

10	2800	
----	------	--

11	( 2 , 1 )	
----	-----------	--

12	2	Accept embedded values, eg 6 rem 2
----	---	------------------------------------

13	0.3      0.4      0.308 <b>0.03</b> 0.2	
----	--	--

Time: 5 seconds

1	4	
---	---	--

2	27	Accept embedded values, eg 73 + 27
---	----	------------------------------------

3	18	
---	----	--

4	3900	
---	------	--

5	3 hours	
---	---------	--

6	6(.0)	
---	-------	--

**Time: 15 seconds**

<b>14</b>	<b>40 p</b>	
-----------	-------------	--

<b>15</b>	<b>4</b>	
-----------	----------	--

<b>16</b>	<b>3 boxes</b>	Accept reference to a correct remainder, eg 3 boxes 2 left over
-----------	----------------	---

<b>17</b>	<b>Any multiple of 60, eg 60, 120</b>	
-----------	---	--

<b>18</b>	<b>9 pupils</b>	
-----------	-----------------	--

<b>19</b>	<b>700 g</b>	
-----------	--------------	--

<b>20</b>	<b>10 cm</b>	
-----------	--------------	--

EARLY YEARS

NATIONAL  
CURRICULUM  
5–16

GCSE

GNVQ

GCE A LEVEL

NVQ

OTHER  
VOCATIONAL  
QUALIFICATIONS

First published in 2006

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