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Ma

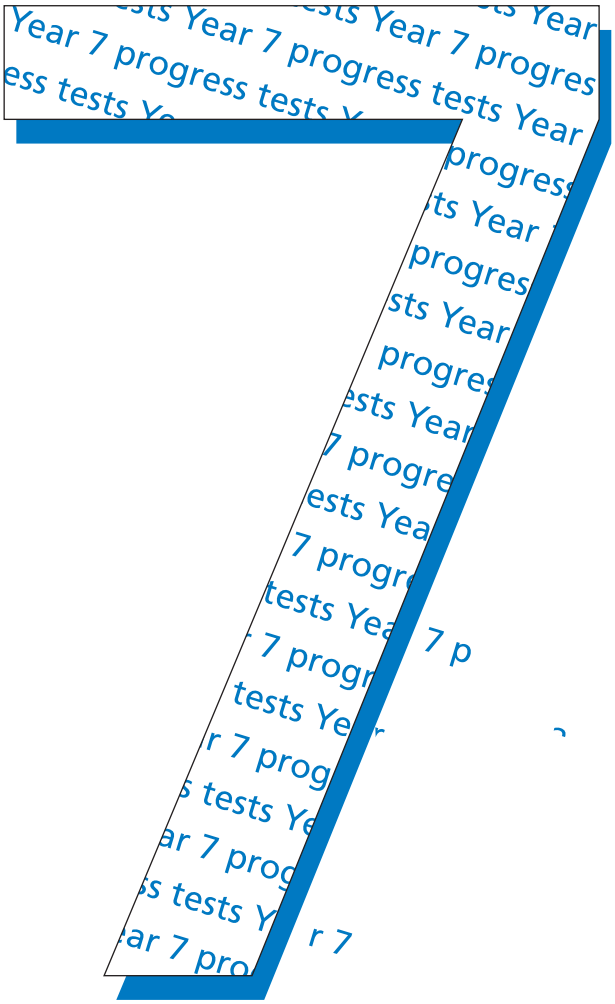
YEAR 7

LEVELS 3–4

2005

Year 7 progress test in mathematics

Mark scheme for Paper 1, Paper 2 and Mental mathematics



2005

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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 is 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

The marking information for questions in the written tests is set out in the form of tables, which start on page 11 (Paper 1) and page 21 (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.

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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 to marking of questions that involve money, time, algebra, coordinates or negative numbers. Unless otherwise specified in the mark schemes, markers should apply the following guidelines in all cases.

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What if ...

The pupil's response does not match closely any of the examples given.	Markers should use their judgement in deciding whether the response corresponds with the statement of requirements given in the **Correct response** column. Refer also to the **Additional guidance** column.
The pupil has responded in a non-standard way.	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.
The pupil has made a conceptual error.	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 35×27; subtracting the smaller digit from the larger in calculations such as $45 - 26$ to give the answer 21; incorrect signs when working with negative numbers.
The pupil's accuracy is marginal according to the overlay provided.	Overlays can never be 100% accurate. However, provided the answer is within, or touches, the boundaries given, the mark(s) should be awarded.
The pupil's answer correctly follows through from earlier incorrect work.	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.
There appears to be a misreading affecting the working.	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.
The correct answer is in the wrong place.	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.

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<table>
<tr><td rowspan="5">The final answer is wrong but the correct answer is shown in the working.</td><td>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:</td><td></td></tr>
<tr><td>the incorrect answer is due to a transcription error</td><td>If so, award the mark.</td></tr>
<tr><td>in questions not testing accuracy, the correct answer has been given but then rounded or truncated</td><td>If so, award the mark.</td></tr>
<tr><td>the pupil has continued to give redundant extra working which does not contradict work already done</td><td>If so, award the mark.</td></tr>
<tr><td>the pupil has continued, in the same part of the question, to give redundant extra working which does contradict work already done.</td><td>If so, do not award the mark. Where a question part carries more than one mark, only the final mark should be withheld.</td></tr>
<tr><td>The pupil's answer is correct but the wrong working is seen.</td><td colspan="2">A correct response should always be marked as correct, unless the mark schemes state otherwise.</td></tr>
<tr><td>The correct response has been crossed (or rubbed) out and not replaced.</td><td colspan="2">Mark, according to the mark schemes, any legible crossed (or rubbed) out work that has not been replaced.</td></tr>
<tr><td>More than one answer is given.</td><td colspan="2">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.</td></tr>
<tr><td>The answer is correct but, in a later part of the question, the pupil has contradicted this response.</td><td colspan="2">A mark given for one part should not be disallowed for working or answers given in a different part, unless the mark schemes specifically state otherwise.</td></tr>
</table>

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Marking specific types of question

Responses involving money

For example: £3.20 £7

Accept ✓	Do not accept ×
✓ 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 ✓ The £ sign is usually already printed in the answer space. Where the pupil writes an answer other than in the answer space, or crosses out the £ sign, accept an answer with correct units in pounds and/or pence eg 320p 700p	× Incorrect or ambiguous use of pounds or pence eg £320, £320p or £700p, or 3.20 or 3.20p not in the answer space × 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

Responses involving time

A time interval *For example: 2 hours 30 mins*

Accept ✓	Take care ! Do not accept ×
✓ Any unambiguous indication eg 2.5 (hours), 2h 30 ✓ Digital electronic time ie 2:30	× Incorrect or ambiguous time interval eg 2.3(h), 2.30, 2-30, 2h 3, 2.30min ! The time unit, hours or minutes, is usually printed in the answer space. Where the pupil writes an answer other than in the answer space, or crosses out the given unit, accept an answer with correct units in hours or minutes, unless the question has asked for a specific unit to be used

A specific time *For example: 8.40am 17:20*

Accept ✓	Do not accept ×
✓ Any unambiguous, correct indication eg 08.40, 8.40, 8:40, 0840, 8 40, 8-40, twenty to nine, 8,40 ✓ Unambiguous change to 12 or 24 hour clock eg 17:20 as 5:20pm, 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, 084, 84

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Responses involving the use of algebra

For example: $2 + n$ $n + 2$ $2n$ $\frac{n}{2}$ n^2

Accept ✓	Take care ! Do not accept ×
✓ Unambiguous use of a different case or variable eg N used for n x used for n	! Unconventional notation eg $n \times 2$ or $2 \times n$ or $n2$ or $n + n$ for $2n$ $n \times n$ for n^2 $n \div 2$ for $\frac{n}{2}$ or $\frac{1}{2}n$ $2 + 1n$ for $2 + n$ $2 + 0n$ for 2 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
	× Embedded values given when solving equations eg in solving $3x + 2 = 32$, $3 \times 10 + 2 = 32$ for $x = 10$
	To avoid penalising the two types of error below more than once within each question, do not award the mark for the *first* occurrence of each type within each question. Where a question part carries more than one mark, only the final mark should be withheld
✓ Words used to precede or follow equations or expressions eg $t = n + 2$ tiles or tiles = $t = n + 2$ for $t = n + 2$	! Words or units used within equations or expressions eg n tiles + 2 n cm + 2 Do not accept on their own Ignore if accompanying an acceptable response
✓ Unambiguous letters used to indicate expressions eg $t = n + 2$ for $n + 2$	× Ambiguous letters used to indicate expressions eg $n = n + 2$ for $n + 2$

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Responses involving coordinates *For example: (5, 7)*	
Accept ✓	**Do not accept ×**
✓ Unconventional notation eg (05, 07) (five, seven) ($\overset{x}{5}$, $\overset{y}{7}$) ($x = 5$, $y = 7$)	× Incorrect or ambiguous notation eg (7, 5) ($\overset{y}{7}$, $\overset{x}{5}$) ($5x$, $7y$) (5^x, 7^y) ($x - 5$, $y - 7$)

Responses involving negative numbers *For example: –2*	
Accept ✓	**Do not accept ×**
	To avoid penalising the error below more than once within each question, do not award the mark for the *first* occurrence of the error within each question. Where a question part carries more than one mark, only the final mark should be withheld × Incorrect notation eg 2–

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Recording marks awarded on the test paper

All questions, even those not attempted by the pupil, will be marked with a 1 or a 0 entered in each marking space. Where 2m can be split into 1m gained and 1m lost, with no explicit order, then this will be recorded by the marker as 1 0

The total marks awarded for a double page will be written in the box at the bottom of the right-hand page, and the total number of marks obtained on the paper 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 paper determines the level awarded. Level threshold tables, which show the mark ranges for the award of different levels, will be available on the QCA website *www.qca.org.uk* from 20 June 2005. QCA will also send a copy to each school by 1 July 2005.

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' marked 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		Making models	
1		Correct response	Additional guidance
	1m	12	

Question		Working out	
2		Correct response	Additional guidance
	1m	27	
	1m	26	

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Question		Same values?	
3		**Correct response**	**Additional guidance**
a	**1m**	Indicates Yes and gives a correct explanation The most common correct explanations: Complete the calculations eg ■ 17 + 15 = 32 and 2 × 16 = 32 ■ They are both 32 ■ 10 + 10 = 20, 7 + 5 = 12 and 2 × 10 = 20, 2 × 6 = 12 Use knowledge of near doubles eg ■ Subtract 1 from 17 and add it to the 15 and you have 16 + 16 which is the same as 16 × 2 ■ Double 15 = 30 then add 2 and it's the same as double 16	✓ *Minimally acceptable explanation* eg ◆ 32 seen, with no evidence of incorrect working ◆ 20 + 12 and 20 + 12 ✗ *Incomplete explanation* eg ◆ 17 + 15 = 2 × 16 ◆ Same answer ◆ I did the calculations ✓ *Minimally acceptable explanation* eg ◆ 16 + 1 + 16 – 1 = 2 × 16 ◆ 17 + 15 = 16 + 16 ✗ *Incomplete explanation* eg ◆ 17 + 15 = 2 × 16
b	**1m**	17	
c	**1m**	3	! *Answer of 3 × 1* Condone

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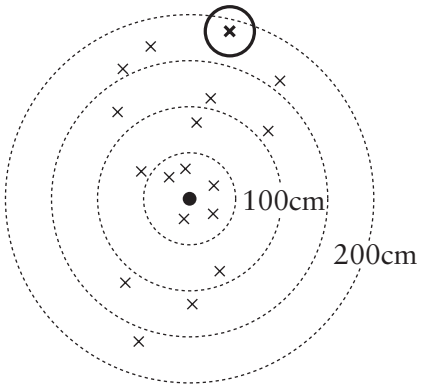
Question		Coins	
4		**Correct response**	**Additional guidance**
	2m *or* **1m**	57 p Shows the digits 57 or Shows the digits 105 and 48 or Shows the digits 1(00) and 43 with no evidence of an incorrect method or incorrect units or Shows a complete correct method with not more than one error eg ▪ 100 – 48 + 5 ▪ £1.05 – *38p (error)* = 67	! *For 1m, units incorrect or inconsistent* Condone provided no ambiguity between pounds and pence is caused eg, for 1m accept ◆ 1 – 48 = *42 (error)* [attempt is 100 – 48] 42 + 5 = 47 eg, for 1m do not accept ◆ 1 – 48 = *47 (error)* [attempt is 48 – 1] 47 + 5 = 52

Question		Beanbag	
5		**Correct response**	**Additional guidance**
a	**1m**	Indicates only the correct beanbag, ie  	! *Other beanbags indicated* Ignore marks made on any beanbags inside the 100cm circle as these may have been used for part (b) Do not accept any other beanbags indicated
b	**1m**	8	
c	**1m** U1	6	

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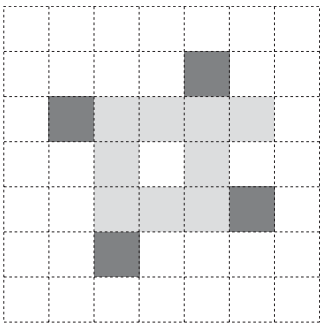
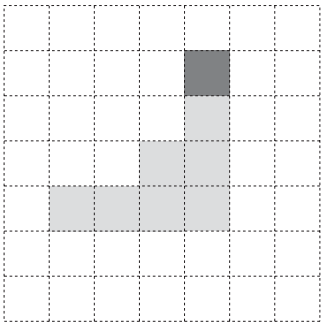
Question		Decimals	
6		**Correct response**	**Additional guidance**
a	**1m**	Gives any pair of decimal numbers that add to 1 other than those given eg ■ 0.1 0.9 ■ 0.5 0.5 ■ 0.75 0.25 ■ 1.2 –0.2	× *Whole numbers or fractions* eg ◆ 1.0 0.0 ◆ $\frac{1}{4}$ $\frac{3}{4}$ × *Given pair in reverse order* eg ◆ 0.7 0.3
b	**1m**	0.15 or equivalent decimal	× *Equivalent fractions*

Question		One line	
7		**Correct response**	**Additional guidance**
	1m	Indicates one more square so the first shape has one line of symmetry, ie indicates one of the four black squares shown below 	! *Square not shaded* Accept provided the indication is unambiguous ! *Line(s) of symmetry drawn* Ignore, even if incorrect
	1m	Indicates one more square so the second shape has one line of symmetry, ie 	

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Question		Cost of pens	
8		**Correct response**	**Additional guidance**
	2m	£ 1.30, with no evidence of incorrect working	✗ *Incorrect working* eg ◆ 5 − 1.10 = 4.90 4.90 ÷ 3 = 1.30
	or **1m**	Shows the value 1.3 or 130, with no evidence of incorrect working or Shows the digits 39(0) or	
		Shows a complete correct method with not more than one computational error, provided their value is rounded or truncated to the nearest penny eg ■ 5 − 1.10 = 4.90 4.90 ÷ 3 = 1.63	✗ *Conceptual error* eg ◆ 5 − 1.10 = 4.10 4.10 ÷ 3 = 1.37
	U1		

Question		Completing calculations	
9		**Correct response**	**Additional guidance**
	1m	Gives any three numbers that combine as shown to give 60 eg ■ 100 + 20 − 60 ■ 60 + 1 − 1 ■ 60 + 60 − 60	✓ *Fractions, decimals or negatives* ✓ *Zero(s) used*
	1m	Gives any three numbers that combine as shown to give 0.6 eg ■ 0.5 + 0.5 − 0.4 ■ 2 + 1 − 2.4 ■ 0.6 + 1 − 1	
	U1		

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Question		Using rules	
10		**Correct response**	**Additional guidance**
a	**1m**	Gives both correct numbers in the correct positions, ie 3 and 35	
b	**2m** *or* **1m**	Gives both correct numbers in the correct positions, ie 5 and 95 Gives one correct number in the correct position	

Question		How many?	
11		**Correct response**	**Additional guidance**
a	**1m**	10	✓ ***Throughout the question, responses embedded*** eg, for part (a) • 10 × 4
b	**1m**	5	! ***Follow through*** For part (b), accept follow through as their (a) ÷ 2
c	**1m**	80	! ***Follow through*** For part (c), accept follow through as either their (a) × 8 or their (b) × 16

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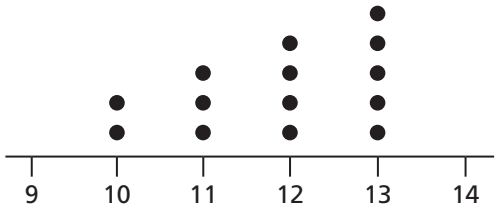
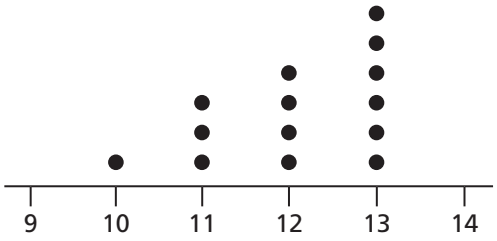
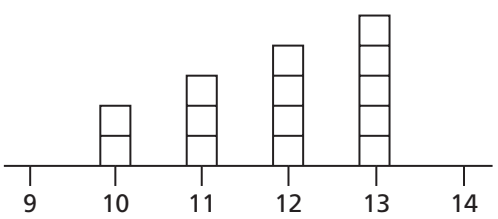
Question		Youth club	
12		**Correct response**	**Additional guidance**
a	**1m**	10	
b	**1m**	6	
c	**2m**	Completes the dot plot correctly, ie  or  	! ***Symbols not shaded, accurate or grouped in a straight line*** For 2m or 1m, condone provided the number of symbols is unambiguous for each age
	or **1m**	Completes a dot plot that satisfies at least four of the following six conditions, even if there are other errors 1. There is a total of 14 dots 2. Age 11 has 3 dots 3. Only age 9 and age 14 have no dots 4. Age 13 has the greatest number of dots 5. Age 12 has more dots than age 11 6. Age 10 has at least one dot or Shows or implies either set of correct values for the ages, even if the dot plot is incorrect or omitted eg ▪ (0), 2, 3, 4, 5, (0) ▪ (0), 1, 3, 4, 6, (0) ▪  	
	U2		

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Question		Keys	
13		**Correct response**	**Additional guidance**
a	**1m**	5.3	✓ *Equivalent fractions or decimals*
b	**1m** U1	8.1	! *Follow through* Accept follow through as their (a) + 2.8, provided this requires 'bridging the units' eg, from their (a) as 6.4 accept • 9.2

Question		Angles in a square	
14		**Correct response**	**Additional guidance**
a	**1m**	90	! *Throughout the question, incorrect units inserted* Ignore
b	**1m**	45	! *Follow through* Accept follow through as their (a) ÷ 2 provided 0 < their (a) < 90 × *Incomplete processing* eg • $\frac{1}{2}$ of 90

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Question		Multiplication	
15		**Correct response**	**Additional guidance**
	1m	150	
	2m	400	! *For 2m or 1m, follow through* For 2m, accept a correct evaluation of (250 + their answer to 6 × 25) For 1m, accept a correct method eg, for 1m accept • 10 × 25 + their answer to 6 × 25 • 250 + their answer to 6 × 25
	or **1m**	Shows a complete correct method with not more than one computational error eg ■ 6 × 25 = 150 10 × 25 = 250 16 × 25 = 150 + 250 ■ 16 × 20 = 320 16 × 5 = 80, 320 + 80 ■ 16 × 100 = 1600 1600 ÷ 2 = 800 800 ÷ 2 ■ 10 6 20 | 200 120 5 | 50 *25 (error)* 200 + 120 + 50 + 25 = 395 ■ 16 25 320 80 *300 (error)*	× *For 1m, conceptual error* eg • 16 25 32 80 112 ! *Method is repeated addition* For 1m, at least some multiplication must be shown or implied eg, for 1m do not accept • 16 + 16 + …… + 16 [shown 25 times]

Question		Areas	
16		**Correct response**	**Additional guidance**
a	**1m**	4	
b	**1m**	2	✓ *Follow through as their (a) ÷ 2*

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Question		Pairs of values	
17		**Correct response**	**Additional guidance**
a	**1m** U1	Gives two correct pairs of values for x and y that add to 30 eg ■ $x = 10$, $y = 20$ $x = 15$, $y = 15$ ■ $x = 1$, $y = 29$ $x = 30$, $y = 0$	✓ ***Fractions, decimals or negatives*** ! ***Same values repeated, but order reversed*** As this still gives different values for x and y, condone eg • $x = 10$, $y = 20$ $x = 20$, $y = 10$
b	**1m**	10	× ***Incomplete processing*** eg • $40 - 30$ × ***Answer of -10***

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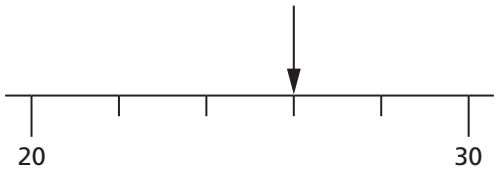
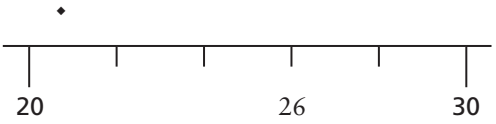
Mark scheme for Paper 2

Question		Number lines	
1		**Correct response**	**Additional guidance**
a	**1m**	Indicates the value 26, ie 	! *Inaccurate indication* Accept provided the pupil's intention is clear ✓ *Unambiguous indication* eg 
b	**1m**	105	

Question		Shopping	
2		**Correct response**	**Additional guidance**
	1m	£ 5.36	

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Question		Times	
3		**Correct response**	**Additional guidance**
a	**1m**	Completes the missing time correctly eg ■ 06:45 ■ 6:45 am	! ***For the first mark, indication of am unconventional or omitted*** Condone, but do not accept incorrect times eg, accept • 6:45 morning • 6:45 eg, do not accept • 6:45 pm • 18:45
	1m	Completes the missing time correctly eg ■ 19:15 ■ 7:15 pm	! ***For the second mark, indication of pm unconventional or omitted*** Do not accept any indications other than the 24 hour clock and/or pm eg, accept • 19:15pm eg, do not accept • 7:15 • 7:15 in the evening
b	**1m**	Completes the missing time correctly eg ■ 9pm ■ Nine o'clock at night	! ***Indication of pm unconventional or omitted*** Condone any unconventional indication eg, accept • 9 o'clock afternoon Accept indication of pm omitted only if this error has already been penalised for the second mark in part (a) × ***Time not interpreted*** eg • 21pm • Twenty-one hundred hours

Question		Titles	
4		**Correct response**	**Additional guidance**
a	**1m**	10	
b	**1m**	14	
c	**1m**	3	

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Question		Units	
5		**Correct response**	**Additional guidance**
a	**1m**	Indicates No and gives a correct explanation eg ■ 100cm is 1 metre ■ 1000mm is 1m, not 1000cm ■ 1000cm = 10 metres not 1 metre	✓ *Minimally acceptable explanation* eg ◆ 100 ◆ 1000mm ◆ 10m ! *Explanation uses known measurement(s)* Accept provided there is a comparison eg, accept ◆ I would be less than 1 metre tall but I am 1.27 metres tall ◆ The door is 2m high, not 0.2m eg, do not accept ◆ I would be less than a metre tall ◆ The door is not 0.2m high ! *Response contains an incorrect statement* Ignore alongside a correct response eg, accept ◆ 100cm = 1m, so 1000cm = 1km eg, do not accept ◆ 1000cm = 1km × *Incomplete explanation* eg ◆ 1000 ◆ 10
b	**1m**	10	

Question		Rounding	
6		**Correct response**	**Additional guidance**
	1m	Indicates that the amount was rounded to the nearest hundred pounds eg ■ Hundred ■ 100	! *Units repeated* eg ◆ £100 Condone × *Ambiguous spelling* eg ◆ Hundredth ◆ Hundreth

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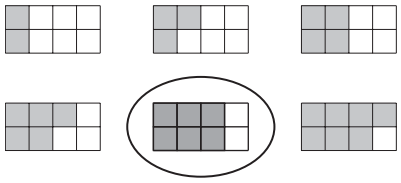
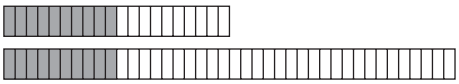
Question		Shading fractions	
7		**Correct response**	**Additional guidance**
a	**1m**	Indicates only the correct shape, ie 	
b	**1m**	Indicates No and gives a correct explanation The most common correct explanations: Show or imply the correct evaluation of both calculations eg ▪ $\frac{1}{2}$ of 20 = 10 and $\frac{1}{4}$ of 40 = 10 ▪ They both equal 10 ▪ ▪ $\frac{1}{2}$ of 20 = $\frac{1}{4}$ of 40 Use ratio eg ▪ 20 doubled is 40 and half of $\frac{1}{2}$ is $\frac{1}{4}$	✓ *Minimally acceptable explanation* eg • 10, 10 seen • Equal • Same •  ✗ *Incomplete explanation* eg • 10 seen • $\frac{1}{2}$ of 20 is 10 • $\frac{1}{4}$ of 40 is 10 ✓ *Minimally acceptable explanation* eg • 20 × 2 = 40, $\frac{1}{2} \div 2 = \frac{1}{4}$ • 20 is half of 40 and 2 is half of 4 • You have doubled the number and halved the fraction ✗ *Incomplete explanation* eg • $\frac{1}{2}$ is double $\frac{1}{4}$ • It's just doubled
	U1		

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Question		Number line again	
8		**Correct response**	**Additional guidance**
	1m	–2	
	1m	12	

Question		Place value	
9		**Correct response**	**Additional guidance**
a	**1m**	Indicates the correct number, ie 47 407 (4007) 40007 400007	
b	**1m**	3 000 000	! *Unconventional grouping of digits* Accept any groupings provided the digits are correct × *Value given in words*

Question		Turning direction	
10		**Correct response**	**Additional guidance**
a	**1m**	West	✓ *Unambiguous indication* eg, for part (a) • W
b	**1m**	South	
c	**1m**	45	✓ *–45* ! *Angle greater than 360* Accept any multiple of 360 + 45 eg • 405

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Question		Moving on a grid	
11		**Correct response**	**Additional guidance**
a	**1m**	(5, 5)	
b	**1m**	Gives a correct pair of coordinates for a point on the line shown [$y = x + 2$] eg ■ (0, 2) ■ (2, 4) ■ (3.5, 5.5)	✓ ***Response assumes the line continues as a straight line*** eg ◆ (8, 10) ◆ (−2, 0) ◆ (x, $x + 2$)

Question		Multiplying chain	
12		**Correct response**	**Additional guidance**
	1m	1008	
	1m	24	

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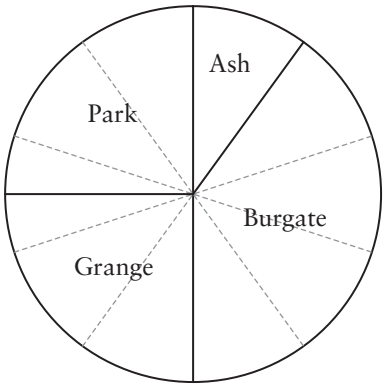
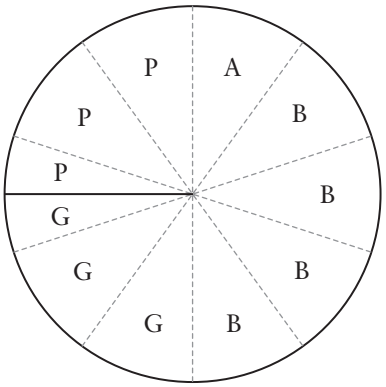
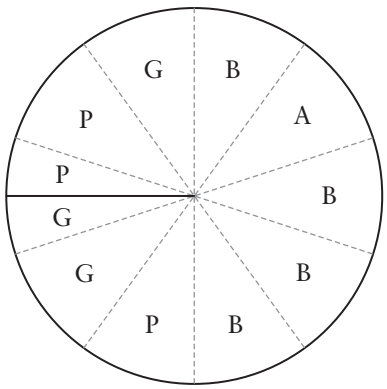
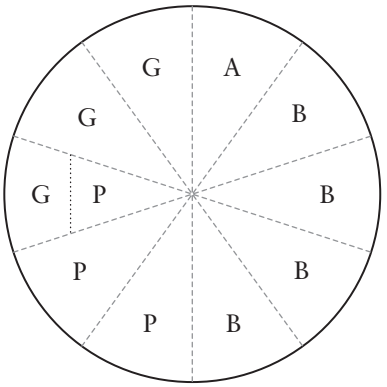
Question		Primary schools	
13		**Correct response**	**Additional guidance**
	2m	Completes the pie chart correctly eg ▪ 	✓ *Unambiguous labelling* eg ◆ 
			! *Lines not ruled or accurate* Accept provided the pupil's intention is clear
	or **1m**	Indicates all four sectors correctly but fails to label or labels incorrectly or Indicates and labels at least two of the sectors correctly or Indicates the size of all four sectors and labels them correctly, but the sectors are not continuous eg ▪ 	✗ *For sectors representing Grange and Park, line indicating 5% incorrect or omitted* eg ◆ 

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Question		Thinking fractions	
14		**Correct response**	**Additional guidance**
a	**1m**	Indicates No and gives a correct explanation The most common correct explanations:	
		Show or imply the correct sum eg ■ $\frac{1}{4} + \frac{1}{4} = \frac{2}{8} + \frac{2}{8}$ $= \frac{4}{8}$ ■ $\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$, but $\frac{2}{8} = \frac{1}{4}$ ■ $0.25 + 0.25 = 0.5$ and $0.5 = \frac{4}{8}$ ■	✓ *Minimally acceptable explanation* eg ◆ $\frac{4}{8}$ ◆ $\frac{2}{4}$ ◆ $\frac{1}{2}$ ◆ Half
		Give a correct and comparable calculation that gives $\frac{2}{8}$ eg ■ $\frac{1}{4} + 0 = \frac{2}{8}$ ■ $\frac{1}{4} = \frac{2}{8}$ so you can't add another $\frac{1}{4}$ ■ $\frac{1}{8} + \frac{1}{8} = \frac{2}{8}$	✓ *Minimally acceptable explanation* eg ◆ $\frac{1}{4} = \frac{2}{8}$
		Address the misconception eg ■ Sam has just added the top numbers together and the bottom numbers together and you can't add fractions like that ■ You don't need to change the bottom number, just add the top ones together	✓ *Minimally acceptable explanation* eg ◆ He added the top and bottom numbers together ◆ You only add the top numbers [denominator unchanged implied] ◆ You don't add the bottom numbers [numerators added implied] ✗ *Incomplete explanation* eg ◆ You add the numerators ◆ You keep the denominator the same
	U1		

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Question		Thinking fractions (cont)	
14		**Correct response**	**Additional guidance**
b	**1m**	Indicates *5*	! *Answer repeats fifths* Condone eg, accept • $\frac{5}{5}$ • $\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}$! *The stated* $\frac{1}{5}$ *not included* Accept provided it is clear that it is not included eg, accept • 4 more • An extra $\frac{4}{5}$ eg, do not accept • 4

Question		Net	
15		**Correct response**	**Additional guidance**
	1m	Indicates the correct name, ie Cube Prism Square-based pyramid ✓ Triangular-based pyramid Cuboid	

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Question		Three odds	
16		**Correct response**	**Additional guidance**
	1m	Indicates No and gives a correct explanation The most common correct explanations:	
		Give a counter example eg ■ 1 + 3 + 5 = 9, which is odd not even	✓ *Minimally acceptable explanation* eg ◆ 1 + 3 + 5 = 9 ◆ 1 + 3 + 5 = odd ! *Odd numbers taken to be the same* Accept, even if the odd number repeated is 3 eg, accept ◆ 3 + 3 + 3 = 9 ◆ 3 × 3 = 9 ! *Calculations or statements given that do not relate to the given statement or are incorrect* Ignore alongside a correct counter example ! *Incomplete explanation* eg ◆ 1 + 3 + 5
		Make a general statement eg ■ An odd + another odd = an even Then even + the third odd = odd So the answer will always be odd ■ Odd numbers are just even numbers plus 1, and even + even + even = even and even + 3 = odd	✓ *Minimally acceptable explanation* eg ◆ Odd + odd = even, even + odd = odd ◆ Even + even + even + 3 = odd ! *Odd numbers taken to be the same* Condone eg, accept ◆ 3 × odd is odd × odd which always gives odd × *Incomplete or incorrect explanation* eg ◆ Adding three odd numbers does not make an even number ◆ Odd × odd = odd ◆ When you add all odd numbers it will always come to an odd number
	U1		

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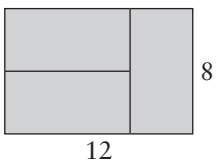
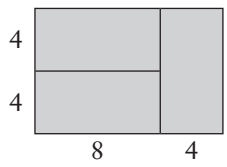
Question		Calculators	
17		**Correct response**	**Additional guidance**
a	**1m**	28	
b	**1m**	24	! *Parts (a) and (b) transposed but otherwise correct* Mark as 0, 1

Question		158	
18		**Correct response**	**Additional guidance**
	1m (U1)	632	

Question		Block of three	
19		**Correct response**	**Additional guidance**
	2m *or* **1m** (U1)	40 Shows or implies correct dimensions for the large rectangle, even if there is further incorrect working eg ■ 12cm by 8cm ■  ■ 4 + 4 + 8 + 4 + 8 + 4 + 8 ■ 20 × 2 ■ 12 × 8 (= 96)	✓ *For 1m, minimally acceptable implication* eg ◆  ◆ Four 4s and three 8s seen, with the intention to add also shown

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Question		Boxes of counters	
20		**Correct response**	**Additional guidance**
a	**1m**	Indicates box A and gives a correct explanation The most common correct explanations:	
		State or imply that there are the same number of white counters in each, but different numbers of black counters or different totals eg ▪ There are the same number of white in each box, but in box B there are more black, so you are less likely to get white from box B ▪ Both boxes have three white but B has one extra black so there is more chance of picking a black from B ▪ There's the same number of whites in both, but in A it's out of a smaller total	✓ *Minimally acceptable explanation* eg • Same white, fewer black • 3 white, but only one black • 3 white, but more black in B • Same number of white but fewer counters • 3 is out of fewer counters × *Response details the number of white and black counters with no comparison shown or implied* eg • A has 3 white and 1 black B has 3 white and 2 black × *Incomplete explanation* eg • There is the same number of white counters in each box • It's only got one black counter • Fewer black counters in A • There are more black in B • It is out of more counters in B
		Show the probabilities of getting a white counter or a black counter eg ▪ The probability of getting a white counter is $\frac{3}{4}$ for box A but $\frac{3}{5}$ for box B ▪ For black it's 25% for A and 40% for B	! *Numerical probability unconventionally or incorrectly expressed* As this is a level 4 mark, condone even if the comparison is not explicit, provided the correct box is ticked eg, accept • A is 3 in 4, B is 3 in 5 • 3 W to 1 B, 3 W to 2 B • For black it's 1 out of 4 and 2 out of 5 × *Incomplete explanation* eg • There's a greater probability of choosing a white counter from box A • B is the best box for getting a black counter
	U1		

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Question		Boxes of counters (cont)	
20		**Correct response**	**Additional guidance**
b	**1m**	Indicates equal numbers of black and white counters	✓ *Unambiguous indication* eg • Filled circle for black, unfilled circle for white ! *Number of black and white counters is zero* Accept only if at least one counter clearly labelled with another colour is given Do not accept no counters given ! *Counters clearly labelled with other colours alongside black and white counters* Ignore

Question		Flats	
21		**Correct response**	**Additional guidance**
a	**1m**	Gives the values 37, 38, 39, 40 in any order	
b	**1m** (U1)	15	

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'Now we are ready to start the test.

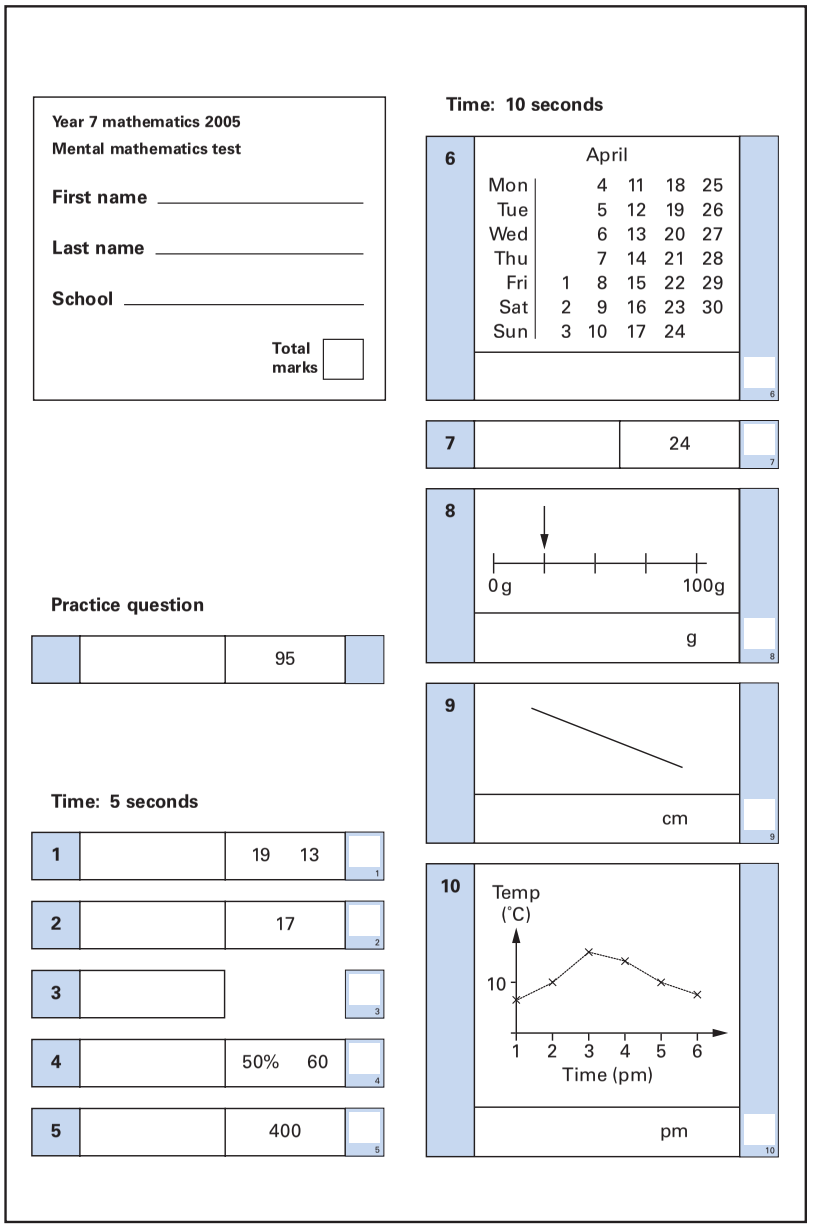
For the first group of questions you will have 5 seconds to work out each answer and write it down.'

1	Look at the numbers on your answer sheet. Add them.
2	Double seventeen.
3	How many sides does a hexagon have?
4	What is fifty per cent of sixty?
5	What is four hundred divided by one hundred?

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

6	Look at the calendar for the month of April. Alice was born on the twenty-second of the month. On what day was Alice born?
7	What is a quarter of twenty-four?
8	Look at the scale on your answer sheet. What value is the arrow pointing to?
9	Estimate the length of the line on your answer sheet in centimetres.
10	The line graph shows the temperature during one afternoon. At what time was the highest temperature?

'Now turn over your answer sheet.'



11	Work out the answer to the calculation on your answer sheet.
12	There is one litre of water in a jug. Tom pours out two hundred and fifty millilitres of the water. How much water is left in the jug?
13	Look at your answer sheet. It shows the temperature on Monday. On Tuesday, it was ten degrees higher. What was the temperature on Tuesday?
14	What is the next square number after thirty-six?
15	Four y equals forty-four. What is the value of y?

'For the next group of questions you will have 15 seconds to work out each answer and write it down.'

16	The bar chart shows pupils' favourite colours. Altogether, how many pupils are there?
17	The table shows the cost of a pen and a pencil. I buy two pens and two pencils. How much does that cost altogether?
18	Look at the sequence of numbers going down in steps of four. Write down the next two numbers in the sequence.
19	The pie chart shows how some pupils travel to school. About what percentage of the pupils cycle to school?
20	Look at the shaded shape drawn on a centimetre square grid. What is its area?

'Put your pens down. The test is finished.'

Time: 10 seconds continued

11 | | $6 \times 5 - 7$ | 11

12 | 1 litre | 250 ml | ml | 12

13 | °C | −8 °C | 13

14 | | 36 | 14

15 | | $4y = 44$ | 15

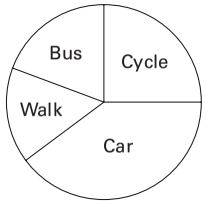
Time: 15 seconds continued

17

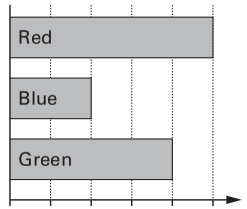
Pen	30p
Pencil	25p

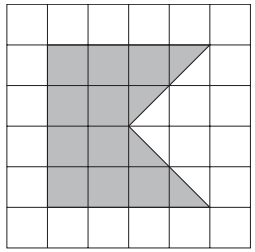
£ | 17

18 | 33, 29, 25, 21, ..., ... | 18

19 |  Bus, Cycle, Walk, Car | % | 19

Time: 15 seconds

16 |  Red, Blue, Green; 0 2 4 6 8 10 | pupils | 16

20 |  | cm^2 | 20

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Year 7 progress test in mathematics 2005

Mental mathematics

Mark scheme

Time: 5 seconds

1	32	
2	34	
3	6	
4	30	Do not accept incorrect % signs
5	4	

Time: 10 seconds

6	Friday	Accept any unambiguous indication, eg Fri or F
7	6	
8	25 g	
9	3.5 cm ≤ answer ≤ 4.5 cm	
10	3 pm	

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Time: 10 seconds continued

11	**23**	
12	**750** ml	
13	**2** °C	
14	**49**	
15	**11**	Accept embedded responses, eg 4 × 11 = 44

Time: 15 seconds

16	**22** pupils	

Time: 15 seconds continued

17	£ **1.10**	
18	**17** and **13**	Accept pair in either order
19	**23** % ≤ **answer** ≤ **27** %	
20	**12** cm^2	

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First published in 2005

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