Ma

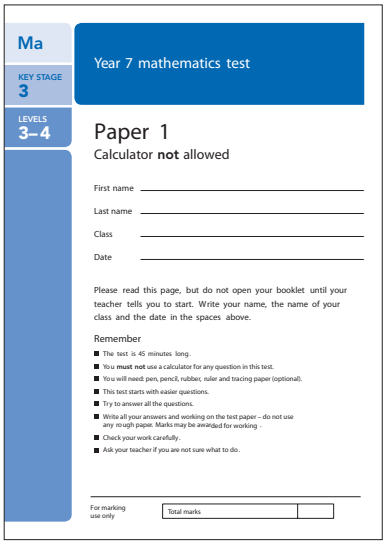
KEY STAGE 3

LEVELS 3–4

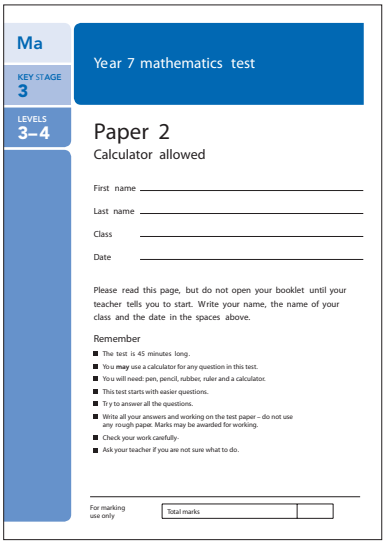
OPTIONAL

Year 7 optional tests

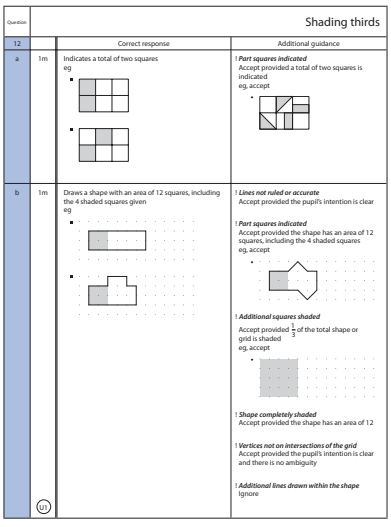
Teacher's guide


Ma
KEY STAGE 3
LEVELS 3–4
Year 7 mathematics test
Paper 1
Calculator **not** allowed
First name
Last name
Class
Date
Please read this page, but do not open your booklet until your teacher tells you to start. Write your name, the name of your class and the date in the spaces above.
Remember
- The test is 45 minutes long.
- You **must not** use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler and tracing paper (optional).
- This test starts with easier questions.
- Try to answer all the questions.
- Write all your answers and working on the test paper – do not use any rough paper. Marks may be awarded for working.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.
For marking use only
Total marks

Paper 1


Ma
KEY STAGE 3
LEVELS 3–4
Year 7 mathematics test
Paper 2
Calculator allowed
First name
Last name
Class
Date
Please read this page, but do not open your booklet until your teacher tells you to start. Write your name, the name of your class and the date in the spaces above.
Remember
- The test is 45 minutes long.
- You **may** use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler and a calculator.
- This test starts with easier questions.
- Try to answer all the questions.
- Write all your answers and working on the test paper – do not use any rough paper. Marks may be awarded for working.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.
For marking use only
Total marks

Paper 2


Question: 12 — Shading thirds

		Correct response	Additional guidance
a	1m	Indicates a total of two squares eg	! *Part squares indicated* Accept provided a total of two squares is indicated eg, accept
b	1m	Draws a shape with an area of 12 squares, including the 4 shaded squares given eg	! *Lines not ruled or accurate* Accept provided the pupil's intention is clear ! *Part squares indicated* Accept provided the shape has an area of 12 squares, including the 4 shaded squares eg, accept ! *Additional squares shaded* Accept provided $\frac{1}{3}$ of the total shape or grid is shaded eg, accept ! *Shape completely shaded* Accept provided the shape has an area of 12 ! *Vertices not on intersections of the grid* Accept provided the pupil's intention is clear and there is no ambiguity ! *Additional lines drawn within the shape* Ignore

U1

Sample page

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Contents

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Introduction

The year 7 optional mathematics tests provide schools with a tool to help monitor pupils' progress against national standards in key stage 3 and an instrument for gathering assessment evidence in support of teacher judgements.

The test materials may be used in whole or in part at any point during key stage 3 to provide valuable qualitative information about pupils' strengths and weaknesses. Teachers may choose to use the materials alongside written work, class discussions and group activities in a variety of contexts. When used in this way the materials can yield evidence in support of teacher assessment, including national curriculum level judgements.

The tests follow a similar structure to the previously statutory end of key stage 3 mathematics tests taken by pupils in year 9. They can be administered and marked formally and the results may be used to determine a national curriculum level. Even when used in this way, there is still optional additional information that can be discerned from pupils' responses. This guide explains these options in more detail.

The mathematics tests are available in two tiers, covering levels 3 – 6. This guide is for the 3 – 4 tier. A separate guide is available for the 4 – 6 tier.

Supporting teacher assessment

The optional key stage 3 mathematics tests aim to be supportive of school assessment arrangements and can be used as part of an integrated approach to teacher assessment. Assessing Pupils' Progress (APP) material may be used alongside these tests. APP is a structured approach to periodic assessment, enabling teachers to:

- use information about pupils' strengths and weaknesses to improve teaching, learning and rates of pupils' progress
- track pupils' progress over a key stage or longer.

The optional test materials may be used in a variety of contexts in order to give pupils the broadest opportunities to show what they can do. Individual questions and pupil responses can be used to stimulate class discussions and group activities, contributing to a rich evidence base for teacher assessment.

The structure and timing of the tests

Who are the tests suitable for?

This suite of year 7 optional tests is aimed at pupils working within levels 3 and 4. There are separate optional tests available for pupils working within levels 4 – 6.

Written papers – Paper 1 and Paper 2

There are two written papers, each of 40 marks. Paper 1 is a non-calculator test and Paper 2 is a calculator-allowed test. Both tests are 45 minutes long.

Each test consists of about 20 questions. Where a question part is worth more than one mark, pupils are able to obtain partial credit for their working even if the final answer is incorrect. Pupils write their working and answers in spaces provided within the answer booklets. Questions are of a variety of types. Some are context-free, but others are placed within everyday, classroom or mathematical contexts. Some questions are routine tests of skill while others assess application or understanding. Pupils may be required to organise a multi-step calculation for themselves. Some questions ask pupils to explain their reasoning.

Summary of the year 7 optional tests

- Written Paper 1 at levels 3 and 4, 45 minutes, 40 marks
- Written Paper 2 at levels 3 and 4, 45 minutes, 40 marks
- **Total marks available** 80

Access arrangements

These tests have been designed to be accessible to the great majority of pupils working at levels 3 and 4 in mathematics. Schools are free to make adaptations to the tests that will improve their accessibility for pupils with special educational needs and pupils for whom English is an additional language. In making any changes to the way the tests are administered, the focus should be on the assessment needs of the individual pupil. Any adaptations should be similar to those made to the materials with which pupils work in the classroom.

Examples of appropriate adaptations

School-based adaptations to the tests may include:

- allowance of up to 25 per cent additional time, as set out in the *Assessment and reporting arrangements* booklet for key stage 3
- use of readers, signers, amanuenses
- provision of tactile shapes and number cards
- separating the tests into sections, taping, photocopying onto coloured paper, use of coloured overlays, use of apparatus
- enhancing the shading on diagrams, including charts and graphs, to increase visual clarity
- enlarging diagrams, cutting them out, embossing or mounting them on card or other material according to normal classroom practice
- translation of words or phrases in the test papers that are likely to prove difficult for pupils for whom English is an additional language, and also if required for pupils who use British sign language (BSL) or other sign-supported communication
- use of bilingual dictionaries.

Access arrangements should not provide an unfair advantage. It is important to ensure that any assistance given does not alter the nature of the test questions, and that any answer given is the pupil's own.

Braille, modified large print and enlarged test papers for visually impaired pupils, are available from the QCDA modified test agency. Additional guidance notes for teachers administering Braille and modified versions of the tests are supplied with the test papers.

If you have any questions about ordering modified tests, contact the QCDA modified test agency on 0844 500 6727.

For further guidance on access arrangements please refer to *Access arrangements*, available on the QCDA website at www.qcda.gov.uk/accessarrangements.

Administering the written papers

This information is provided for anyone who is involved in administering the tests, including teachers, other members of the school staff, and other adults who may be assisting in the test administration. Further guidance can be found on pages 45–47.

The tests should be carried out under test conditions; they may be held in a school hall, classroom or any other suitable accommodation.

Equipment needed for the written papers

In addition to pens, pencils, rubbers and rulers, the following equipment will need to be available to pupils when they take the written papers:

Paper 1 Tracing paper (optional)
Paper 2 Calculator

Pupils must not have access to a calculator during Paper 1.

Timing

Pupils should be given 45 minutes to complete each written test. You may indicate to the pupils when they are halfway through the time allowed for the test, and again a few minutes before they have to stop.

Introducing the written tests

Teachers are advised to draw pupils' attention to the 'Remember' section on the front cover of the test booklet, and to the instructions on page 2.

It is important to brief pupils fully before they begin each paper. Some of the points that you might want to cover are:

- The test is 45 minutes long.
- Check the list of equipment on the front cover of your paper, to make sure you have what you may need.

- If you want to change your answer, put a neat line through the response you don't want. For changes to diagrams use a rubber.
- The test starts with easier questions. Try to answer all the questions in the booklet.
- Write all your answers and working in the test booklet – do not use rough paper. Marks may be awarded for your working even if your answer is wrong.
- Remember to check your work carefully.
- I will tell you when we are halfway through the test and also tell you when we are into the last five minutes. I will tell you when the test is over and you must stop writing.
- If you have any urgent questions during the test you should put up your hand and wait for someone to come to you. You must not talk to each other.

For Paper 2:

- You may use a calculator in this test. Make sure you have your calculator and that it is working properly.

Helping pupils during the tests

Teachers should ensure that pupils are clear about what they have to do but should not provide help with the mathematics being tested. Teachers should not help by explaining specific mathematical terms, nor by interpreting graphs or mathematical tables or diagrams. If a pupil asks for clarification of a mathematical symbol or notation then the teacher may read it to the pupil but should not indicate the operation or process to be used.

Introduction to the mark scheme

The structure of the mark scheme

Pages 15–20 of this booklet contain guidelines on how to mark the tests. This general guidance should be observed unless specific instructions to the contrary are given, and should be read before marking begins. It could form the basis of departmental INSET to ensure standardisation of marking within, and between, schools.

The marking information for questions within the written tests is set out in the form of tables which start on page 21 (Paper 1) and page 31 (Paper 2). The 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. There is also an indication of where it may be necessary to refer to the general guidance.

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.

The **Additional guidance** column indicates alternative acceptable responses, and provides details of specific types of response that are minimally acceptable or 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.

For some graphical and diagrammatical responses, including those in which judgements on accuracy are required, marking overlays have been provided as the **centre pages of this booklet**.

Recording marks on the test paper

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

The total marks awarded for a double page can be written in the box at the bottom of the right-hand page, enabling the correct total to be more easily transferred to the front of the test paper.

Finding levels

A total of 80 marks is available (40 from Paper 1, 40 from Paper 2). The sum of the marks allocated from these components indicates the level at which the pupil is working.

The level thresholds can be found on page 44.

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General guidance for marking

Answers that are numerically or algebraically equivalent are acceptable unless the mark scheme states 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 …	*Marking procedure*
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 is changed or the difficulty level is reduced then 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.

<table>
<tr><th>What if …</th><th>Marking procedure</th></tr>
<tr><td>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 scheme 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 a question 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.</td></tr>
<tr><td>The pupil's answer is correct but the wrong working is seen.</td><td>A correct response should always be marked as correct unless the mark scheme states otherwise.</td></tr>
<tr><td>The correct response has been crossed or rubbed out and not replaced.</td><td>Mark, according to the mark scheme, any legible crossed or rubbed out work that has not been replaced.</td></tr>
<tr><td>More than one answer is given.</td><td>If all answers given are correct, or if a correct range is given, the mark should be awarded unless prohibited by the mark scheme. 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>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.</td></tr>
</table>

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	✗ Incorrect or ambiguous indication of the amount eg £320, £320p or £700p
✓ The unit, £ or p, is usually printed in the answer space. Where the pupil writes an answer outside the answer space with **no** 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	✗ Ambiguous use of units outside the answer space eg with £ given in the answer space, do not accept 3.20p outside the answer space
✓ Given units amended eg with £ crossed out in the answer space, accept 320p, 700p	✗ 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 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–

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 $n + 2$

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, 2.30 min ! 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.

A specific time *For example: 8:40 am 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 5:20 pm, 17:20 pm	✗ Incorrect time eg 8.4 am, 8.40 pm ✗ Incorrect placement of separators, spaces, etc or incorrect use or omission of 0 eg 840, 8:4:0, 084, 84

Responses involving coordinates

For example: (5, 7)

Accept ✓	Do not accept ✗
✓ Unconventional notation eg (05, 07) (five, seven) $\overset{x}{(}5, 7\overset{y}{)}$ (x = 5, y = 7)	✗ Incorrect or ambiguous notation eg (7, 5) $\overset{y}{(}7, 5\overset{x}{)}$ (5x, 7y) (5^x, 7^y) (x – 5, y – 7)

Mark scheme for Paper 1

Question		One hundred	
1		Correct response	Additional guidance
	2m	Gives all three correct values, ie 50 25 20	
	or		
	1m	Gives two correct values	

Question		Nines	
2		Correct response	Additional guidance
	1m	Gives both correct numbers in the correct positions, ie 60 then 33	

Question		Triangular prism	
3		Correct response	Additional guidance
a	1m	2	
b	1m	Indicates Rectangles, ie (Rectangles) Pentagons Hexagons None of these	

Question		Triangle	
4		Correct response	Additional guidance
	1m	Gives 42 in the right hand square	
	1m	Gives 54 in the bottom square	

Question		Measures	
5		**Correct response**	**Additional guidance**
a	**1m**	Indicates 150 grams, ie ☐ ☐ ☑ 150 grams ☐	
b	**1m**	Indicates 330 millilitres, ie ☑ 330 millilitres ☐ ☐ ☐	

Question		Fruit juice	
6		**Correct response**	**Additional guidance**
a	**1m**	21	× *Incomplete processing* eg, for part (a) • 14 + 7 eg, for part (b) • 17 – 10
b	**1m**	7	

Question		Empty boxes	
7		Correct response	Additional guidance
	1m	27	
	1m	18	

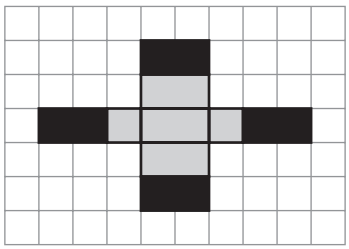
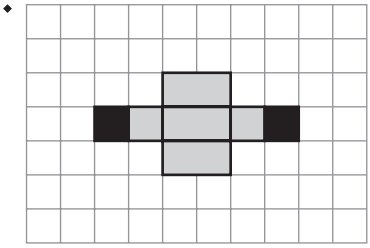
Question		Number line	
8		Correct response	Additional guidance
	1m	16	
	1m	0.4 or equivalent	

Question		Arranging rectangles	
9		Correct response	Additional guidance
a	1m	4	
b	1m	30	× *Incomplete processing* eg • 12 + 12 + 6
	U1		

Question		Bowling	
10		**Correct response**	**Additional guidance**
a	**1m**	£ 6.60	
b	**1m**	32	

Question		Trains	
11		**Correct response**	**Additional guidance**
a	**1m**	54 to 56 inclusive	✓ *Value qualified* eg, for part (a) • About 55
b	**1m** U1	15 to 19 inclusive	! *Follow through from part (a)* Accept follow through as 72 ± 1 – their (a) eg, for their (a) equal to $50\frac{1}{2}$, accept • $73 - 50\frac{1}{2} = 22\frac{1}{2}$

Question		Cubes	
12		**Correct response**	**Additional guidance**
a	**1m**	10	
b	**2m** *or* **1m**	4 groups and 2 cubes left over 48 groups and 2 cubes left over or Shows or implies that he can make 4 groups, even if cubes left over is omitted or incorrect eg ▪ 12 + 12 + 12 + 12 = 48 ▪ 12 × 5 = 60, 60 – 12 ▪ 4 × 12 = 48 ▪ 12, 24, 36, 48	✓ *For 2 marks, accept 4 r 2* ! *4 groups given but an incorrect number of cubes left over* eg ◆ 4 groups and 3 cubes left over For one mark, only accept if the pupil's answer is supported by working to show that 4 groups can be made

Question		Nets	
13		**Correct response**	**Additional guidance**
	1m	Draws the missing part of the net, ie indicates one of the black rectangles shown below 	! *Rectangle not shaded* Accept provided the pupil's intention is clear ! *Tabs drawn on the net* Ignore, even if incorrect × *Missing part of net not drawn as one piece but as two separate squares* eg  (ie the edges of the net must be edges of the cuboid)

Question		Using calculations	
14		Correct response	Additional guidance
	1m	12	
	1m	900	
	1m	15	

Question		*Marking overlay available* Rainfall	
15		Correct response	Additional guidance
a	1m	Draws a horizontal line within the tolerance as shown on the overlay	! *Line not ruled* Accept provided there is no ambiguity
b	1m	6	× *Incomplete processing* eg • 53 – 47

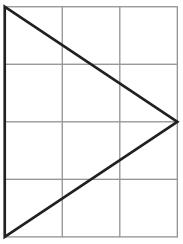
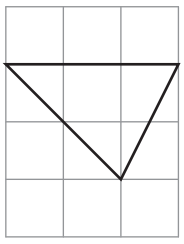
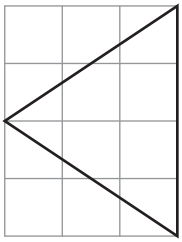
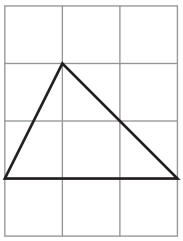
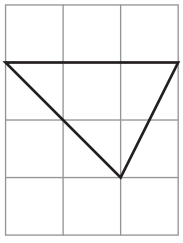
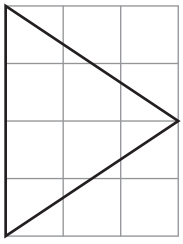
Question			1001
16		Correct response	Additional guidance
	2m	Completes all three values correctly, ie 1010 *1091* 992 911	
	or 1m	Completes two values correctly	

Question			Hair colour
17		Correct response	Additional guidance
a	1m	16	
b	1m (U1)	4	

Question		Using decimals	
18		**Correct response**	**Additional guidance**
	1m	Gives the value 3.6 or equivalent in the box above the arrow	! *Follow through* For the first mark, accept follow through as 'their 14.4' – 10.8 provided 'their 14.4' is not a decimal number ending in point 8, eg 14.8, 13.8 etc.
	1m	Gives the value 14.4 or equivalent in the box below the arrow	

Question		Calculations	
19		**Correct response**	**Additional guidance**
a	**1m**	Completes the calculation correctly by giving two numbers that have a product of 40 eg ▪ 3 × 8 × 5 = 120 ▪ 3 × 40 × 1 = 120 ▪ 3 × 4 × 10 = 120 ▪ 3 × 2 × 20 = 120	✓ *Numbers used are fractions, decimals or negatives* eg • $80 \times \frac{1}{2}$ • 80×0.5 • -4×-10
b	**1m** U1	Completes the calculation correctly by giving two numbers that have a product of 40, other than any credited in part (a)	× *Same numbers as credited in part (a) but in a different order*

Mark scheme for Paper 1

Question		Turning	
20		**Correct response**	**Additional guidance**
	2m	Shows both triangles in their correct positions after the turn, ie  Tom's triangle  Erin's triangle	! *Lines not ruled or accurate* Accept providing the pupil's intention is clear and the corners of their triangles are within 2mm of the correct grid intersections ! *For Tom's triangle, uses the edge of the grid as one edge of the triangle* Condone
	or		
	1m	Shows one triangle in its correct position or Shows both triangles in the correct position for a rotation of 90° anticlockwise, ie  Tom's triangle  Erin's triangle or Shows both triangles in the correct position for a rotation of 90° clockwise but draws them on the wrong grids, ie  Tom's triangle  Erin's triangle	

Mark scheme for Paper 1

Mark scheme for Paper 2

Question		Ice cream	
1		Correct response	Additional guidance
a	1m	Friday	✓ *Unambiguous indication* eg • F × *15 by itself*
b	1m	17	
c	1m	8	× *Incomplete processing* eg • 33 – 25

Question		Three coins	
2		**Correct response**	**Additional guidance**
	2m	Completes all three rows correctly, ie Gives the values of three coins that total 80p, in any order, ie 50p, 20p, 10p and Gives the values of three coins that total £1.20, in any order, ie £1(.00), 10p, 10p or 50p, 50p, 20p and Gives the values of three coins that total £1.60, in any order, ie £1(.00), 50p, 10p	✓ *Throughout the question, 100p for £1* ! *Units omitted* Condone eg, for the second mark accept • 1(.00), 10, 10 • 100, 10, 10 × *Unit(s) incorrect*
	or **1m**	Completes any two rows correctly as above	

Question		Shapes on a grid	
3		**Correct response**	**Additional guidance**
	1m	Indicates shape C	✓ *Unambiguous indication*
	1m	Indicates shape B	
	1m	Indicates shape A	

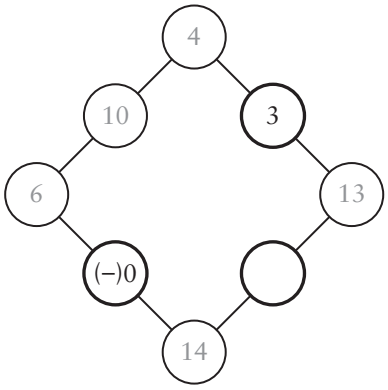
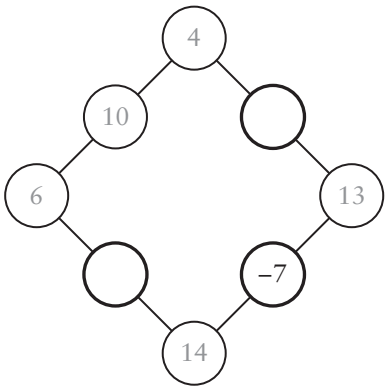
Question		Measuring jug	
4		Correct response	Additional guidance
	1m	65	

Question		Exercise classes	
5		Correct response	Additional guidance
a	1m	Monday and Wednesday, in either order	✓ *Unambiguous indication* eg • M and W
b	1m	13:00	! *Response uses the 12 hour clock* Accept provided there is correct indication of pm, even if informal eg, for part (b) accept • 1:00pm • 1:00 afternoon eg, for part (b) do not accept • 1:00 ! *Alternative answers given using both 12 and 24 hour clocks* Alongside a correct response, ignore responses giving the correct time using the 12 hour clock with no indication of pm eg, for part (b) accept • 13:00 and 1:00 ! *Indication of pm omitted* Penalise only the first occurrence eg, for parts (b) and (c) • 1:00 3:30 Mark as 0, 1
c	1m	15:30	

Question		Shopping	
6		Correct response	Additional guidance
	2m *or* **1m**	£ 7.76 Shows the digits 776 or Shows the digits 1224 or Shows or implies a complete correct method with not more than one computational error eg ▪ 20 – 1.79 – 2.8(0) – 7.65 ▪ 20 – 1.79 – 2.80 – 7.65 ▪ 20 – (1.79 + 2.8(0) + 7.65) ▪ £1.79 + £2.80 + £7.65 = *£11.24 (error)* £20 – £11.24 = £8.76	

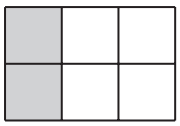
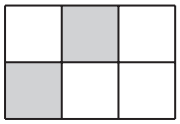
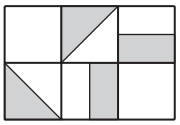
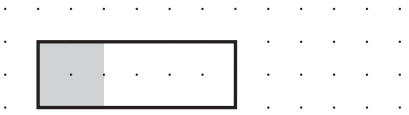
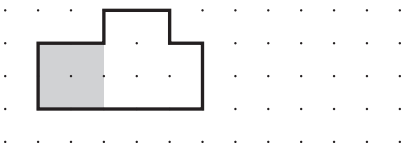
Question		Missing numbers	
7		**Correct response**	**Additional guidance**
	1m	Gives the first number as 400	
	1m	Gives the second number as 1150	

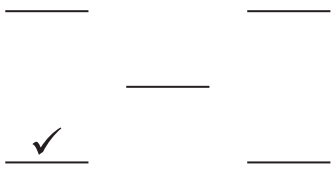
Question		Rounding	
8		**Correct response**	**Additional guidance**
	2m	Rounds all three amounts correctly to the nearest pound, ie £ 3.20 — £ 3.00 £ 6.49 — £ 6(.00) £ 9.81 — £ 10(.00) £ 50.75 — £ 51(.00)	
	or **1m**	Rounds two amounts correctly	

Question		Number square	
9		**Correct response**	**Additional guidance**
	1m	Gives both the value 3 in the top right hand circle and the value 0 in the bottom left hand circle, ie  	× *Blank circle for 0*
	1m	Gives the value –7 in the bottom right hand circle, ie  	! *Words used in place of minus sign* Condone eg, accept • take away 7 • subtract 7 × *Incorrect notation* eg • 7–

Question		Coordinate island	
10		**Correct response**	**Additional guidance**
a	**1m**	(8, 3)	
b	**1m**	Indicates the point (3, 0) on the grid correctly	! *Point inaccurate* Condone any unambiguous indication within 2mm of the correct intersection of the grid

Question		Tickets	
11		**Correct response**	**Additional guidance**
	1m	Indicates red	✓ *Unambiguous indication* eg, for the first mark • r ! *For the first mark, colour given other than those in the table* eg, accept • green
	1m	Indicates blue	
	1m	Indicates white	

Question		Shading thirds	
12		Correct response	Additional guidance
a	1m	Indicates a total of two squares eg ▪  ▪ 	! *Part squares indicated* Accept provided a total of two squares is indicated eg, accept ◆ 
b	1m U1	Draws a shape with an area of 12 squares, including the 4 shaded squares given eg ▪  ▪ 	! *Lines not ruled or accurate* Accept provided the pupil's intention is clear ! *Part squares indicated* Accept provided the shape has an area of 12 squares, including the 4 shaded squares eg, accept ◆  ! *Additional squares shaded* Accept provided $\frac{1}{3}$ of the total shape or grid is shaded eg, accept ◆  ! *Shape completely shaded* Accept provided the shape has an area of 12 ! *Vertices not on intersections of the grid* Accept provided the pupil's intention is clear and there is no ambiguity ! *Additional lines drawn within the shape* Ignore

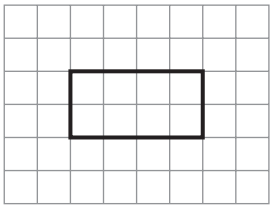
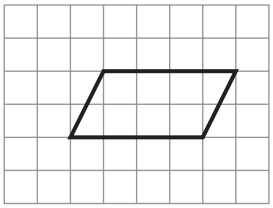
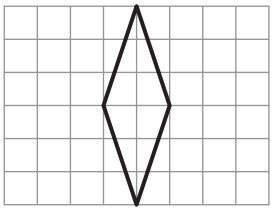
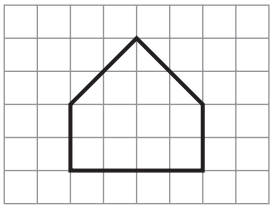
Question		Shapes	
13		**Correct response**	**Additional guidance**
	1m	Indicates the correct shape, ie 	

Question		Number cards	
14		**Correct response**	**Additional guidance**
a	**1m**	Gives an odd number greater than 3000 using the four digits, ie 4263 or 4623 or 6243 or 6423	
b	**1m** U1	Indicates No and gives a correct explanation eg ▪ 3 is the only odd digit so to make an odd number it needs to go on the end, but it is also the only digit that can go at the start to make a number that is between 3000 and 4000 ▪ The number could only start with 3 but the 3 has to go at the end because there is no other odd number ▪ The 3 has to go at the end as it is the only odd number so you can only make 2463, 2643, 4263, 4623, 6243 and 6423 and none of these are greater than 3000 but smaller than 4000	✓ *Minimally acceptable explanation* eg ◆ 3 would have to go at the start and at the end ◆ 3 has to go in the thousands and in the units ◆ 3 is the only odd number and she needs to use that as the first number ◆ 3 is the only odd number so it has to be at the end ◆ The number is between 3000 and 4000 so 3 has to go at the start ◆ The 3 has to be at the start ◆ There's only one 3 ◆ You can only make 2463, 2643, 4263, 4623, 6243 and 6423 × *Incomplete explanation* eg ◆ You can only have 4, 2 and 6 at the start ◆ There is only one odd number and the rest are even

Question		Diagonal	
15		Correct response	Additional guidance
	1m	Gives a value between 8.5 and 8.9 inclusive	✓ *Equivalent fractions or decimals*

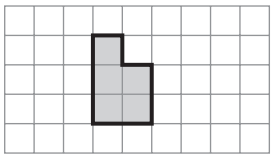
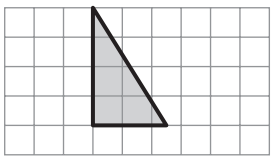
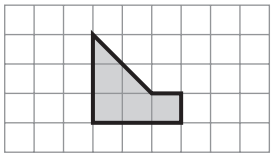
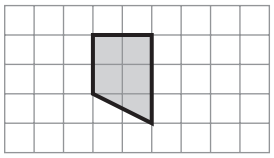
Question		Back to the start	
16		Correct response	Additional guidance
	1m	26	! *Value 26 is shown embedded* Accept provided there is no ambiguity eg, accept • 26 + 15 × 4 = 164 with the answer line left blank eg, do not accept • 26 + 15 × 4 = 164 with 164 on the answer line

Question		Average heights	
17		Correct response	Additional guidance
a	1m	162	
b	1m U1	Indicates the point with coordinates (176, 164) on the diagram	✓ *Unambiguous indication*

Question		Parallel lines	
18		**Correct response**	**Additional guidance**
a	**1m**	Draws any four-sided shape with two pairs of parallel sides eg ▪  ▪  ▪ 	! *Lines not ruled or accurate* Accept provided the pupil's intention is clear ! *Parallel sides marked* Ignore, even if incorrect ! *Lines drawn inside the shape* Ignore ! *Uses the edge of the grid as one side of their shape* Condone
b	**1m** U1	Draws any five-sided shape with only one pair of parallel sides eg ▪ 	

Question		Paint	
19		**Correct response**	**Additional guidance**
	1m	8	

Question		x and y	
20		Correct response	Additional guidance
a	1m	26	
b	1m	8	

Question		Different perimeters	
21		Correct response	Additional guidance
	1m U1	Draws a shape that has an area of 5cm^2 and a perimeter of less than 12cm eg ▪  ▪  ▪  ▪ 	! *Shape not shaded or internal lines shown* Accept provided the pupil's intention is clear

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Using the outcomes of the tests

Level thresholds

In order to make use of the information in this section, you should administer the tests according to the guidance given in this Teacher's guide. It is particularly important that you observe the time limits given, follow the test instructions, and mark the questions according to the mark scheme. If you have used the tests in a different context to provide qualitative information about pupils' strengths and weaknesses then the information derived from this section will not be applicable.

In a formal administration pupils need to take test booklets in order for the total marks to be translated reliably into a national curriculum level for mathematics.

The following table gives an indication of the national curriculum levels for pupils attaining each of the mark ranges in the tests.

Level	Mark range
Below 3	0 – 27
3	28 – 47
4	48 – 80

Variability of results

Any scores derived from a test are subject to some variation according to the precise circumstances under which the test has been sat and marked. This does not mean that pupils get 'incorrect' test results, but it does mean that some caution should be exercised in translating scores which are very close to the threshold mark into an overall mathematics level for each pupil. These tests have undergone an equally rigorous development process to the previous statutory end of key stage 3 mathematics tests. The level thresholds provided are accurate and reliable, but teachers should be aware that differences in the status, administration and marking procedures open the tests to a potentially broader range of variation than the former statutory national curriculum tests.

Guidance on the administration of the tests

This summary guidance is for teaching assistants or other adults assisting in the administration of the year 7 optional mathematics tests. If a teaching assistant is to administer any part of the tests independently to a group of pupils then they will need to familiarise themselves with the detailed administration instructions found in the main part of the ***Teacher's guide****.*

Please read this guidance carefully as it gives information about the different tests and specifies what help may or may not be given to pupils taking the tests. **If pupils are given too much help, the test results may be invalid.**

Each pupil will sit two written mathematics tests. It is not recommended that both tests are administered on the same day.

The written tests

There are two written papers, Paper 1 (calculator not allowed) and Paper 2 (calculator allowed). Calculators must be available for Paper 2. Each written paper lasts 45 minutes, and contains 40 marks.

Guidance for assisting pupils

You may:

- read through with them the 'Remember' section on the front cover of the booklet, and the instructions on page 2
- give help with reading words or sentences in the test questions
- give help with reading calculations, including numerals and symbols within them but you should **not** indicate the operation or process involved. For example:

  % per cent (**not** out of every hundred)

- point to information on the test paper such as charts, diagrams, statements and equations, but you should **not** explain the information or interpret it
- explain or rephrase general instruction words in the test, such as *put a ring round* in *Triangular Prism*, Paper 1, question 3
- explain or rephrase words used in everyday contexts, such as *bowling* in *Bowling*, Paper 1, question 10

- encourage pupils to try to answer all the questions
- indicate any omitted questions when pupils have finished, so they can go back and try to answer them.

You should not:

- give any help with the mathematics as this will invalidate the assessment
- suggest to the pupils the mathematical reasoning or technique they should use
- give clues to the meaning of mathematical terms, such as *parallel* in *Parallel lines*, Paper 2, question 18
- rephrase the wording of the questions (except as indicated on page 45)
- prompt the pupils to confirm or change answers by pointing, frowning, smiling, head shaking or nodding, offering rubbers, or asking leading questions.

Specific guidance for Paper 1 and Paper 2

Other words that can be clarified:

- Some other words and phrases may be explained to pupils because they are not part of the mathematical understanding being assessed for that question. The words and phrases that may be explained are set out below and some paraphrases are suggested.

Paper 1	Question	Word or phrase	Suggested paraphrase
Measures	5	Estimate	Giving the approximate mass and the approximate volume

Paper 2	Question	Word or phrase	Suggested paraphrase
Tickets	11	At random	Without looking
Shading thirds	12	Shade	Colour in
Diagonal	15	Accurately	Exactly
x and y	20	Value	What number the letter stands for

Questions that must not be enlarged:

- If your school needs to enlarge questions or parts of questions to meet the specific requirements of individual pupils, and has not ordered the enlarged papers from the QCDA modified test agency, the following questions must **not** be enlarged. This is because enlargement may affect the pupils' responses.

Paper 1 - Questions that must not be enlarged	
13	Nets
15	Rainfall

Paper 2 - Questions that must not be enlarged	
15	Diagonal
21	Different perimeters

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