Year 4 optional tests in mathematics
Teacher's guide

4

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Introduction

Since the introduction of the optional tests for years 3, 4 and 5 in 1997, there has been much development in the teaching of mathematics. In order to reflect the changes, including the use of the National Numeracy Strategy Framework for teaching mathematics, new optional tests were introduced in 2003. Most primary schools use these tests and teachers are accustomed to their administration and marking. These new optional tests are administered and marked in the same way, providing fresh material for pupil assessment while maintaining consistency for teachers.

The years 3, 4 and 5 optional tests in mathematics offer schools a way of monitoring and measuring pupils' progress in the years between the statutory tests in years 2 and 6. They form part of the government's drive to raise standards at key stage 2. The results will help schools plan for teaching and learning, in order to meet targets for achievement by the end of key stage 2.

This series can be used to track progression reliably not only between years 3, 4 and 5, but also to link it confidently to the tests at the end of key stages 1 and 2. During development of the tests, large numbers of pupils completed various components of the new tests, as well as the most recent statutory tests, to establish a statistical link between the optional tests and the statutory tests.

The balance of marks within the tests reflects the structure of the national curriculum.

Unlike the statutory tests, these optional materials are not due to be replaced annually and schools will need to store or reorder materials from year to year, as has been the case previously.

This guide will provide the user with information needed to administer and mark the tests. It also presents the necessary information to convert total marks to national curriculum levels and age standardised scores.

The structure and timing of the tests

There are two parts to each test: a written mathematics test and a mental mathematics test.

Written tests

A choice of two written tests is available: Test 4a is a levels 2–3 test awarding levels 2A to 3A, and Test 4b is a levels 3–4 test awarding levels 3B to 4A. Each written test contains 35 marks and has a recommended time limit of 45 minutes. They contain the same practice question. This means that it should be possible for you to administer both tests at the same time. **Pupils should sit only one written test**, since some questions are common to both. You should decide which test is the most appropriate for each pupil.

In Test 4a, the main emphasis is on level 3 but approximately one-quarter of the questions assess level 2. This test is for pupils who are working securely within level 2, or at the threshold of level 3.

In Test 4b, the main emphasis is on level 4 but approximately one-third of the questions assess level 3. This test is for pupils who are working securely within level 3 or who are working within level 4.

The following table may help you make your decision for each pupil.

Which written test should a pupil take?

Teacher assessment level	Written test
below level 2 level 2C level 2B	neither; use teacher assessment only
level 2A level 3C level 3B	Test 4a
level 3A level 4C level 4B level 4A	Test 4b
level 5C or above	consider using the year 5 tests, which include some questions at level 5

Mental mathematics test

All pupils take the same mental mathematics test. It is a recorded test consisting of 20 timed questions with an administration time of approximately 20 minutes. The questions are designed to assess mental recall and mental agility. Each question is worth one mark. The test should be administered using the CD, although a transcript is provided on pages 17–19 in case of an equipment malfunction on the day of the test. Each question is repeated twice and pupils are given either 5 or 10 seconds to write their response. The test is similar in style to the mental mathematics test at the end of key stage 2. Schools requiring the test on audiotape are able to order one from the QCA Orderline on 08700 606015.

Mark schemes and analysing the results

Separate mark schemes for each written test are provided on pages 24–33. The mark scheme for the mental mathematics test is included on pages 40–41.

Age standardised scores

Age standardised score tables are provided on pages 48–51. These scores take into account the pupil's age in years and completed months, giving an indication of how each pupil is performing relative to other pupils of the same age.

Grids for test analysis

QCA has produced national curriculum references for each question, which will allow teachers, if they wish, to analyse the performance of pupils in their class. These sheets are included in the Teacher pack. Further copies can be ordered from the QCA Orderline on 08700 606015. Teachers may also analyse performance using the DfES Pupil Achievement Tracker (PAT). The PAT software can be downloaded from www.standards.dfes.gov.uk/performance.

The structure and timing of the tests

Organisation

Grouping pupils for the test

Both the mental and written tests can be administered to all pupils at the appropriate levels together, in small groups or individually. For the written tests, you may give help with reading. Your decision about grouping, therefore, should reflect the needs of pupils in your class and their ability to work independently.

Assistance

The test does not require the use of staff beyond those normally available in the classroom. However, any informed person, such as a language support teacher, a teaching assistant or special educational needs support staff member may administer it under the direction of the teacher. These staff should be aware of the guidance provided in the sections 'Assisting with the written tests' on page 14 and 'Guidance for teaching assistants' on pages 52–53. Details on how to administer the tests and their timing are also printed in the *Subject-specific guidance* on the reverse of the top sheet in the Pupil pack for ease of reference.

Special arrangements

The tests have been designed to be accessible to the majority of pupils working within the levels targeted by the tests. Schools are free to make adaptations to the tests which will improve accessibility for pupils for whom English is an additional language and for pupils with special educational needs, **provided any adaptations made do not invalidate the assessments**. These adaptations should be similar to those the pupils normally use in the classroom and should be based on the special arrangements for the end of key stage 2 statutory mathematics tests.

Examples of reasonable adaptations include:

- using readers, signers, amanuenses

- using tactile shapes and number cards

- photocopying onto coloured paper

- enhancing the shading on diagrams and/or emboldening lines on diagrams, 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

- translating words or phrases in the tests that are likely to prove difficult for pupils for whom English is an additional language and also for some pupils who use British Sign Language or other sign-supported communication

- using mechanical and technological aids, including computers but not calculators

- allowing up to 25 per cent additional time as set out in the *Assessment and reporting arrangements* for key stage 2

- rest breaks, provided pupils remain supervised and do not discuss the tests.

Special 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. Please refer to the *Assessment and reporting arrangements* booklet for further guidance.

Pupils with special educational needs

Support may be given to poor readers in the written mathematics tests by reading words, phrases or sentences that pupils find difficult. Instructions may also be clarified for them, **provided this does not give additional information or invalidate the assessment**; mathematical vocabulary cannot be changed or explained.

The most appropriate conditions for testing pupils with special educational needs are likely to be those in which they normally work well. The tests can be administered to small groups of pupils or, for some pupils, on an individual basis. Some pupils may need encouragement to continue working through the tests. As well as offering reassurance to the whole group, you may also need to be active in watching for pupils who have problems with reading the questions or with writing their responses.

Pupils learning English as an additional language

Pupils who are learning English as an additional language may be given access to the test in any way that is usual for them. If language support is available, the questions may be translated and pupils may respond in a language other than English. It is not intended that pupils are provided with a comprehensive written translation of the test. As with all pupils, you may read the questions aloud in English. You may also give a fuller explanation of the context of the questions, **but it is important to ensure that you do not give any additional interpretation of the mathematics or mathematical vocabulary in doing this**. It is particularly important when assessing pupils for whom English is an additional language that sufficient support is given for them to show their best attainment.

Modified versions of the tests

The optional mathematics tests are also available in braille and modified large print. These can be ordered from QCA's agency for the distribution of optional modified tests. Full details can be found on the NAA's test orders website. All orders must be placed as soon as possible, to ensure delivery of the tests by the end of April. Ideally, orders will be placed before the end of January in the year the pupil will be taking the test.

Administering the written tests

This information is for anyone involved in administering the tests including teachers, other members of school staff and other adults who may assist with test administration. The term 'test administrator' is used to cover anyone who is responsible for, or involved with, test administration.

The tests should be carried out under test conditions; they may be held in a classroom, school hall or any other suitable accommodation. The room(s) where the tests are to be administered will need to be prepared appropriately.

Wall displays such as calendars, tables, charts, number lines or number squares should be covered or removed. However, it is not necessary to remove wall clocks.

Pupils should be seated in such a way as to prevent copying.

Equipment

Each pupil will need:

- a mathematics test booklet (**either** Test 4a for levels 2–3 **or** Test 4b for levels 3–4), available in multiple copies from the QCA Orderline

- a pen or pencil

- a sharp pencil for mathematical drawing

- a ruler marked in centimetres and millimetres

- access to mirrors

- a rubber (optional).

Calculators are **not** allowed.

Encourage the pupils to cross out, rather than rub out, incorrect answers and to write their new answer by the side. Rubbing out not only takes time but also loses important information for marking and analysis. If rubbers are not provided, have a rubber available for pupils who wish to change answers where the changes may be clearer by rubbing out than by crossing out, for example for shapes they have drawn or shaded.

Please note:
Do not supply the pupils with any other support materials, for example clocks or clock faces, number lines or squares, addition squares, multiplication squares, calculators or any representation of money (toy or real).

Timing

The pupils should be given **45 minutes** to complete the 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.

The levels and age standardised scores are calculated on the basis of the test being administered to this time limit. **If you wish to derive levels or age standardised scores from the tests, you must adhere to these timings**.

Introducing the written tests

Each pupil will need a copy of the appropriate test booklet and access to the equipment listed on page 11.

Tell the pupils that:

- they cannot talk and must not copy since this is a test to find out what they can do by themselves

- they will do a practice question together with you (which is the same in Test 4a and Test 4b), and then carry on by themselves

- there are different sorts of questions and they should try to answer as many as they can

- they should read each question carefully

- they should put their hand up if they need help with reading, but must not call out or ask any other pupil

- some questions are harder than others. If they cannot answer a question, they should go on to the next one, which might be easier, and go back to the difficult ones later if they have time

- they are not to worry if they cannot complete all the questions

- if they make a mistake, they should change their answer by crossing it out and writing the correct answer beside it. (If rubbers are not provided, have a rubber available for pupils to change answers where the changes may be clearer by rubbing than by crossing out, for example for shapes they have drawn or shaded.)

- they may only use the equipment provided for them

- they have **45 minutes** to do all they can in the test

- if they finish the test early, they should go back and check their answers.

Working through the written tests

Tell the pupils to write their name, class and school on the front cover of the booklet.

Ask the pupils to turn to page 2 of the booklet and look at the pictures of the three children Lauren, Zak and Jade. Read the names of the three children and explain that they will feature in some of the questions in the booklet. Explain that some other children may also be mentioned in the test.

Tell the pupils to look at page 3. Read through with them the section 'Getting started' and then tell them to look at the practice question. Give them time to complete the practice question.

Ensure that the pupils have correctly placed their answer to the practice question in the answer box. The practice question is not part of the test and you can spend as much time as you like helping the pupils to understand the format, what they should do and how and where they should record their answers.

Explain that:

- each question always has its number in the black shape at the left-hand side

- there are other questions in the test booklet that are similar to the practice question but that none will be exactly like the practice question

- some of the questions have boxes in which to write answers but for others there may be a dotted line or pupils may be asked to complete a graph, chart or diagram

- a pencil icon always indicates the space where the pupils should record their answers. They can use any of the space on the page for working out but they should write their answer in the space indicated by the pencil icon

- they should read each instruction very carefully and ask for help with reading if necessary.

To ensure that the testing is carried out in a standard way in all schools, it is important that your introduction does not exceed this information.

Assisting with the written tests

You should:

- give help with reading words or sentences where necessary. You may need to be aware of pupils who do not ask for the help they need to read unfamiliar words.

In a minority of cases, a pupil may need to have the entire test read out to him or her. Where readers are used, they will need to be familiar with the following information.

You should **not**:

- give any help with the mathematics as this will invalidate the assessment

- suggest to the pupils the mathematical operation to use

- give clues which help the pupils to interpret what any question requires them to do, for example you may read out the word *coordinates* in question 16 in Test 4b, but you must not give any clues about its meaning

- prompt the pupils to confirm or change answers by pointing, frowning, smiling, head shaking or nodding, offering rubbers, or asking leading questions

- suggest different representations from the one provided. For example, do **not** re-present questions on addition or subtraction vertically when they are presented horizontally in the test booklet.

Questions must **not** be rephrased. However, general instruction words used in the test may be explained or rephrased if they are not familiar to the pupils. For example, the word *complete* in question 12 in Test 4a may be explained since it is not a mathematical term and not part of what is being assessed. Similarly, words which are used in everyday contexts only may be explained or rephrased if they are not familiar, for example *oven* in question 21 in Test 4a and question 4 in Test 4b.

Teachers of pupils with special educational needs or of pupils learning English as an additional language should refer to 'Special arrangements' on pages 9–10.

Administering the mental mathematics test

If the mental mathematics test is administered on the same day as the written test, allow a break of at least 15 minutes between them.

There is one mental mathematics test. It is a recorded test consisting of a practice question and 20 timed questions. The test has an administration time of approximately 20 minutes. It starts with instructions to the pupils followed by the questions. There will be two opportunities for you to pause the recording. These will be indicated by a bleep. The first pause comes near the beginning of the recording, once the instructions have been given. This will allow clarification of any of the instructions not understood by the pupils. The second pause is after the practice question. After this second pause, the recording should be allowed to play without interruption.

The mental mathematics test is organised in two sections. In the first section, pupils are given 5 seconds in which to answer each of the questions. In the second section, the time is increased to 10 seconds per question. Each section includes easy and more difficult questions, arranged so that the easier questions are at the beginning of the section. This means that there are a number of relatively difficult questions early in the test with some relatively easy questions later. Pupils should be made aware that questions will vary in difficulty.

Equipment

You will need:

- a CD player

- a CD of the mental mathematics test.

Each pupil will need:

- a copy of the year 4 mental mathematics pupil answer sheet (photocopiable from pages 54–55 of the *Teacher's guide* or available in multiple copies from the QCA Orderline)

- a pen or pencil.

Please note:
Pupils should have only pens or pencils. They should **not** have rubbers, rulers, calculators or any other mathematical equipment for the mental mathematics test. Access to paper for working out answers is **not** allowed **but the pupils may jot things down outside the answer box on their answer sheets if this helps them.**

They should be made aware that they must answer in the allocated time for each question and that recording extensive written working may slow down their responses.

Introducing the mental mathematics test

Ensure that each pupil has a copy of the mental mathematics pupil answer sheet. Tell the pupils to write their name, class and school in the box at the top of it.

Ensure the pupils understand that:

- they must complete the test on their own without copying or discussing questions with other pupils

- they will be told how long they have to answer each group of questions and that the time given will increase from 5 to 10 seconds as the test progresses through the two sections

- for some of the questions, the information they will need is included in or beside the answer box on the pupil answer sheet

- they are not allowed to use a calculator or any other mathematical equipment

- they should work out the answer to each question in their head but they may jot things down outside the answer box if it will help them

- if they want to change their answer they should put a cross through their first answer. They are not allowed to rub out any answers

- they should answer as many questions as they can. If they find a question too difficult, they should put a cross in the answer box and wait for the next question

- they should not interrupt the test by asking any questions once the test has started.

Working through the mental mathematics test

When you are ready, start the recording. Instructions will be given to the pupils. The recording will indicate, with a bleep, where you should pause the recording and answer any questions.

When the bleep is heard, pause the recording and answer any questions that the pupils have, ensuring that the instructions are clearly understood. It is important that the 'pause' function is used rather than the 'stop' function. This will ensure that the correct place is maintained within the recording.

Restart the recording. The pupils will be asked a practice question. After a 5-second pause for the pupils to write their answer a bleep will sound, indicating that you should pause the recording again to answer any questions.

After pausing the recording, ensure that the pupils have correctly placed their answer to the practice question on the answer sheet and that they are aware of the information provided to the right of the answer box for some questions.

When they are ready to begin the test, tell the pupils that you will not be able to stop the recording again, or answer any questions, once the recording has restarted.

Restart the recording and the test will begin. At the end of the test, pupils will be told to put down their pens and pencils, and you should stop the recording and collect in the answer sheets.

In the case of an equipment malfunction, the test will need to be read to the pupils. Instructions and a copy of the transcript for introducing the mental mathematics test in such an event are included in the following section.

Emergency use of the transcript

This section contains a transcript for the teacher-read version of the year 4 mental mathematics test. It should be used **only** in the event of equipment failure. In such an event, you should follow the instructions below.

1. You must have access to a clock or watch that measures accurately in seconds.

2. Give out the appropriate equipment as stated on page 15 and read through with the pupils 'Introducing the mental mathematics test' on page 16.

3. Read out the following script, **using exactly these words:**

Listen carefully to the instructions I am going to give you. When I have finished reading them, I will answer any questions. However, you will not be able to ask any questions once the test has begun.

I will start by reading a practice question. Then I am going to ask you 20 questions for the test. On your sheet there is an answer box for each question, where you should write the answer to the question and nothing else. You should work out the answer to each question in your head, but you may jot things down outside the answer box if this helps you. Do not try to write down your calculations because this will waste time and you may miss the next question. For some of the questions, important information is already written down for you on the sheet.

I will read out each question twice. Listen carefully both times. You will then have time to work out your answer. If you cannot work out an answer, put a cross in the answer box. If you make a mistake, cross out the wrong answer and write the correct answer next to it.

There are some easy and some harder questions, so don't be put off if you cannot answer a question.

4. Pause and answer any questions that the pupils have.

5. Read out the following:

*Here is the **practice** question to show you what to do.*

I will read the question twice, and you will have 5 seconds to work out the answer and write it in the answer box.

What is six add four?

6. Repeat the question.

What is six add four?

Wait 5 seconds (measured accurately using a clock or watch), then read out the following:

Now put down your pen or pencil.

7. Ensure that the pupils have correctly placed their answers to the practice question on their answer sheet. Remind the pupils that, for some questions, information is provided in or beside the answer box. When they are ready to begin the test, tell the pupils that you will not be able to answer any further questions, or interrupt the test, once you have started reading the questions.

8. The questions follow. They must be read out exactly as written. Start by stating the question number, then read out each question twice in quick succession before leaving the 5- or 10-second response time. **These timings must be strictly adhered to.**

9. At the end of the test, tell the pupils to put down their pens or pencils, then collect their answer sheets.

Mental mathematics 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	Look at your answer sheet. How much do the coins total?
2	Multiply seven by two.
3	What is seven less than one hundred?
4	Half of a number is forty-five. What is the number?
5	Write two hundred and sixty-one to the nearest hundred.
6	How many minutes are there in three-quarters of an hour?
7	Divide sixty by five.
8	Double eight point four.
9	How many metres are there in three kilometres?
10	What is half of thirteen?

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

11	Add nine and six and five.
12	Look at your answer sheet. Put a ring around the name of the shape that has six sides.
13	What is the remainder when eighteen is divided by five?
14	I spend seventy-five pence. How much change do I get from a two-pound coin?
15	What number is halfway between three hundred and six hundred?
16	What number multiplied by ten makes one hundred and eighty?
17	Multiply four by six then add nine.
18	What is one-third of thirty-three?
19	Look at your answer sheet. Put a ring around the number that is a multiple of eight.
20	Look at your answer sheet. Complete the fraction so that it is equivalent to one-quarter.

'Now put down your pen or pencil. The test is finished.'

Marking the tests

You should mark the test in accordance with the guidance given. The *General guidance for marking* on pages 22–23 should be used in conjunction with the mark schemes, and you should read this before you begin marking.

The mark schemes help to identify the appropriate answers and tell you how many marks to allocate to each answer. Marking spaces have been provided in the right-hand margin of the test booklet beside each question. It is recommended that you fill in the marking spaces as follows:

1	Mark awarded
0	Question attempted but no mark awarded
–	Question omitted

These codes correspond with those used for filling in the *Grids for test analysis*.

If a pupil has altered an answer or the answer is not clear, try to establish what the original intention was. You may, on occasion, need to talk with the pupil individually to check this. Be sure to ask questions that do not suggest the required answer, for example *What is your answer here?*

For the written tests, we recommend that you mark the same double-page spread for the whole class before turning to the next double-page spread. This will make it easier for you to concentrate on a small section of the mark scheme at a time and on the *Supplementary marking guidance* (where appropriate). It also means that you are more likely to gain diagnostic information about particular questions to inform your teaching. The mark schemes have been designed to facilitate marking double-page spreads.

The structure of the mark schemes

The marking information for each question is set out in the form of tables, which start on page 24.

The 'Question' column on the left-hand side of each table provides a quick reference to the question number and the question part.

The 'Mark' column indicates the total number of marks available for each question part.

For some questions the code U1 is shown in the mark column. The 'U' indicates that there is a Using and applying mathematics element in the question. The number, 1, shows that one mark can be attributed to using and applying mathematics in this question.

The 'Requirement' column may include two types of information:

- a statement of the requirements for the award of each mark, with an indication of whether credit can be given for correct working

- examples of some different types of correct response.

The 'Additional guidance' column indicates alternative acceptable responses, and provides details of the range of acceptable answers. This column may also indicate unacceptable responses which should not be awarded a mark.

In order to ensure consistency of marking, the most common marking errors and difficulties are addressed in the *General guidance for marking* with the action the marker should take. Unless otherwise specified in the mark scheme, markers should apply these general guidelines in all cases.

The *Supplementary marking guidance* on pages 34–38 provides further instructions for the marking of questions containing a working mark and questions requiring a written explanation. The section includes examples of acceptable and unacceptable responses to the questions.

It is important that marking is carried out accurately according to the appropriate mark scheme to ensure consistency of results.

Marking the tests

General guidance for marking

What if …	Marking procedure
… the pupil reverses digits when recording?	Reversed digits are acceptable if they are clearly recognisable as the digit intended; for example, a reversed 2 must clearly show the characteristics of a 2 rather than a 5.
… the pupil writes a transposed number as the answer?	Transposed numbers should not be awarded the mark; for example, an answer of '16' when the correct answer is '61' should not be marked as correct.
… the pupil's response is numerically equivalent to the answer in the mark scheme?	The mark scheme will generally specify which equivalent responses are allowed. If this is not the case, award the mark unless the mark scheme states otherwise.
… the pupil's answer is correct but the wrong working is shown?	Always award the mark for a correct response unless the mark scheme states otherwise.
… the pupil has responded in a non-standard way?	Calculations and written responses do not have to be set out in any particular format. Pupils may provide evidence in any form, provided that 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, should be accepted.
… the correct response has been crossed (or rubbed) out and not replaced?	Mark, according to the mark scheme, any legible crossed out work that has not been replaced. If the work has been replaced, then do not consider the crossed out work.
… the pupil has worked out the answer correctly and then written an incorrect answer in the answer box?	Give precedence to the answer given in the answer box over any other workings. However, there may be cases where the incorrect answer is due to a transcription error, in which case you may check the pupil's intention and decide whether to award the mark.
… more than one answer is given?	If all answers given are correct (or a range of answers is given, all of which are correct), award the mark unless the mark scheme states otherwise.
	If both correct and incorrect responses are given, do not award the mark unless the mark scheme states otherwise. This includes multiple-choice style questions, where, for example, pupils are required to indicate the correct answer(s) from a list of four or five options.

What if …	Marking procedure
… the pupil's response does not match closely any of the examples given in the mark scheme?	Judge whether the response corresponds with the requirements in the 'Requirement' column of the mark scheme. Refer also to the 'Additional guidance' column and to the *Supplementary marking guidance* (where appropriate).
… there appears to be a misread of numbers affecting the working?	This is when the pupil misreads the information given in the question and uses different information without altering the original intention of the question. In one-mark questions, no mark should be awarded. However, in two-mark questions that have a working mark, one mark should be awarded if the working is applied correctly using the misread numbers, provided that the misread numbers are comparable in difficulty to the original numbers. For example, if '243' is misread as '234', both numbers may be regarded as comparable in difficulty.
… no answer is given in the expected place, but the correct answer is given elsewhere?	Where a pupil has shown understanding of the question, award the mark. 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.
… the pupil's answer correctly follows through from earlier incorrect work?	'Follow-through' marks may be awarded only when specifically stated in the mark scheme. Either the correct response or an acceptable 'follow-through' response should be marked as correct.

Marking the tests

Mark scheme for Test 4a

Test 4a questions 1–7

Question	Requirement	Mark	Additional guidance
Practice	30	*None*	
1	45	*1m*	
2	12	*1m*	
3	20 29 38	*1m*	**Both** numbers must be correct for the award of the mark.
4	Diagram completed as shown: 66 75 85 94 95 96 97	*1m* (U1)	**Both** numbers must be correct for the award of the mark. *Disregard any additional numbers written elsewhere on the diagram.*
			Do not accept a child's age or month of birth written in place of their name, eg 9 or January. ***Do not*** accept a name written in more than one box. *Accept recognisable misspellings and abbreviations.*
5a	'Jade' written in correct place in the sorting diagram.	*1m*	
5b	'Lauren' written in correct place in the sorting diagram.	*1m*	
6	Boxes completed as shown: 104 ÷ 4 = 26 **OR** 104 = 4 × 26	*1m*	**Both signs** must be correct for the award of the mark.
7	Award **TWO** marks for the correct answer of 7 If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg 23 + 21 + 5 = 49 56 – 49 = wrong answer 'Supplementary marking guidance' on page 34 shows some responses which are acceptable and unacceptable for the mark.	*Up to 2m*	*If both marks are awarded, record by entering 1 in each marking space.* *The working must be carried through to reach an answer for the award of* ***ONE*** *mark.* *Award* ***ONE*** *mark by entering 1, 0 in the marking spaces.*

For question 5, the sorting diagram:

	January to June	July to December
less than 9 years old	**Lauren**	
9 years old		**Jade**
more than 9 years old		

Test 4a questions 8–10

Question	Requirement	Mark	Additional guidance
8a	Diagram completed as shown: **OR** **OR**	**1m**	*Accept slight inaccuracies in drawing, provided the intention is clear.* *Accept any other clear way of indicating the correct square, such as ticking or circling.*
8b	Diagram completed, to make one of the above shapes not used to answer 8a.	**1m** (U1)	*Accept slight inaccuracies in drawing, provided the intention is clear.* *Accept any other clear way of indicating the correct square, such as ticking or circling.*
9	375	**1m**	
10	15	**1m**	

Test 4a questions 11–17

Question	Requirement	Mark	Additional guidance
11	A **AND** E	**1m**	**Both** letters must be correct for the award of the mark. Accept letters in either order. Accept any other clear way of indicating the correct shapes, such as ticking or circling.
12	Table completed as shown: <table><tr><td></td><td>12</td><td>15</td><td>20</td></tr><tr><td>multiple of **10**</td><td></td><td></td><td>✓</td></tr><tr><td>multiple of **2**</td><td>✓</td><td></td><td>✓</td></tr><tr><td>multiple of **5**</td><td></td><td>✓</td><td>✓</td></tr></table> If the answer is incorrect, award **ONE** mark for at least three ticks correctly placed and no more than one tick incorrect.	**Up to 2m**	**All four** ticks must be placed correctly for the award of **TWO** marks. Accept alternative unambiguous indications, such as 'Y' and 'N'. If both marks are awarded, record by entering 1 in each marking space. Award **ONE** mark by entering 1, 0 in the marking spaces.
13	Boxes completed as shown: | **B** | **A** | E | **C** | **D** | smallest largest	**1m**	**All four** letters must be in the correct order for the award of the mark. Accept any other way of indicating the correct order, such as unambiguous indications on the diagram.
14	4	**1m**	
15	12 **OR** 15 **OR** 18	**1m** (U1)	Award the mark if more than one answer is given, provided all are correct.
16	One shape ticked as shown:	**1m**	Accept any other clear way of indicating the correct shape, such as circling.
17	One answer circled as shown: (2 litres) 5 litres 10 litres 20 litres 50 litres	**1m** (U1)	Accept any other clear way of indicating the correct answer, such as ticking or underlining.

Marking the tests

Test 4a questions 18–24

Question	Requirement	Mark	Additional guidance
18	62	**1m**	
19	Award **TWO** marks for the correct answer of 6p If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg 50 + 20 + 20 + 20 = 110 45 + 59 = 104 110 – 104 = wrong answer 'Supplementary marking guidance' on page 35 shows some responses which are acceptable and unacceptable for the mark.	**Up to 2m**	*Accept £0.06p* **OR** *£0.06 pence* **OR** *£0-06* **OR** *£0:06* **OR** *£0 06* *If both marks are awarded, record by entering 1 in each marking space.* *Accept for* **ONE** *mark 0.6p* **OR** *0.06p* **OR** *£6p as evidence of appropriate working.* *The working must be carried through to reach an answer for the award of* **ONE** *mark.* *Award* **ONE** *mark by entering 1, 0 in the marking spaces.*
20	0.6	**1m**	*Accept .6* **OR** $\frac{6}{10}$ **OR** *6 tenths* **OR** *equivalent.*
21	7:40	**1m**	*Accept 07:40* **OR** *19:40* **OR** *7:40am* **OR** *7:40pm* **OR** *the correct time written in words, eg twenty to eight.* **Do not** *accept 7:4* **OR** *19:4*
22	Table completed as shown: If the answer is incorrect, award **ONE** mark for two out of three 3-D shapes completed correctly.	**Up to 2m**	**All five** *boxes must be completed correctly for the award of* **TWO** *marks.* *If both marks are awarded, record by entering 1 in each marking space.* *Award* **ONE** *mark by entering 1, 0 in the marking spaces.*
23	£3.40	**1m**	*Accept £3.40p* **OR** *£3 40 pence* **OR** *£3-40* **OR** *£3:40* **OR** *£3 40* **Do not** *accept £340p* **OR** *£340*
24	Boxes completed as shown: 606 707 808 **909** **1010**	**1m**	*The numbers must be in the correct order for the award of the mark.*

Marking the tests

Test 4a questions 25–28

Question	Requirement	Mark	Additional guidance
25a	130	**1m**	*Accept 1m 30cm*
25b	60	**1m**	
26	45 **AND** 67	**1m**	*Accept numbers in either order.*
27	14	**1m**	
28	$5 \times 6 = 10 \times$ ☐ **3** $5 \times 6 < 10 \times$ **4 OR 5**	**1m**	***Both*** *boxes must be correct for the award of the mark.*
Maximum 35 marks			

Mark scheme for Test 4b
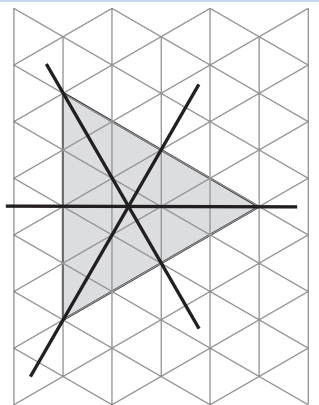
Test 4b questions 1–7

Question	Requirement	Mark	Additional guidance
Practice	30	*None*	
1	62	*1m*	
2	Award **TWO** marks for the correct answer of 6p If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg 50 + 20 + 20 + 20 = 110 45 + 59 = 104 110 – 104 = wrong answer ‘Supplementary marking guidance’ on page 35 shows some responses which are acceptable and unacceptable for the mark.	*Up to 2m*	*Accept £0.06p **OR** £0.06 pence **OR** £0-06 **OR** £0:06 **OR** £0 06* *If both marks are awarded, record by entering 1 in each marking space.* *Accept for **ONE** mark 0.6p **OR** 0.06p **OR** £6p as evidence of appropriate working.* *The working must be carried through to reach an answer for the award of **ONE** mark.* *Award **ONE** mark by entering 1, 0 in the marking spaces.*
3	0.6	*1m*	*Accept .6 **OR** $\frac{6}{10}$ **OR** 6 tenths **OR** equivalent.*
4	7:40	*1m*	*Accept 07:40 **OR** 19:40 **OR** 7:40am **OR** 7:40pm **OR** the correct time written in words, eg twenty to eight.* ***Do not** accept 7:4 **OR** 19:4*
5	Table completed as shown: 2 4 △2 3 6 △4 1 If the answer is incorrect, award **ONE** mark for two out of three 3-D shapes completed correctly.	*Up to 2m*	***All five** boxes must be completed correctly for the award of **TWO** marks.* *If both marks are awarded, record by entering 1 in each marking space.* *Award **ONE** mark by entering 1, 0 in the marking spaces.*
6	£3.40	*1m*	*Accept £3.40p **OR** £3 40 pence **OR** £3-40 **OR** £3:40 **OR** £3 40* ***Do not** accept £340p **OR** £340*
7	Boxes completed as shown: 606 707 808 **909** **1010**	*1m*	*The numbers must be in the correct order for the award of the mark.*
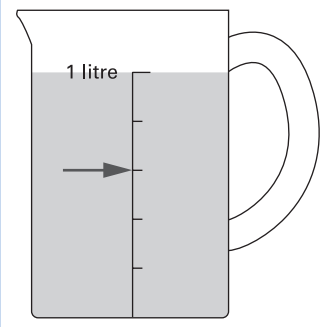
Test 4b questions 8–17

Question	Requirement	Mark	Additional guidance
8a	130	**1m**	*Accept 1m 30cm*
8b	60	**1m**	
9	45 **AND** 67	**1m**	*Accept numbers in either order.*
10	14	**1m**	
11	$5 \times 6 = 10 \times$ **3** $5 \times 6 < 10 \times$ **4 OR 5**	**1m**	***Both*** *boxes must be correct for the award of the mark.*
12	7 **OR** 7th	**1m**	
13	9	**1m**	
14	7	**1m**	*Accept 7° **OR** 7°C* *Allow −7*
15a	One number circled as shown: 445 **455** 465 475 485	**1m** (U1)	*Accept any other clear way of indicating the correct number, such as ticking or underlining.*
15b	One number circled as shown: 345 355 365 **375** 385	**1m** (U1)	*Accept any other clear way of indicating the correct number, such as ticking or underlining.*
16	(6, 3)	**1m**	*Coordinates must be in the correct order.* *Accept unambiguous answers written on the diagram.*
17	Award **TWO** marks for all six totals as shown: 41, 45, 50, 51, 55, 60 If the answer is incorrect, award **ONE** mark for: ■ At least five totals correct and no more than one incorrect **OR** ■ All six correct (and no additional incorrect) pairs of scores given but not totalled, ie 1 + 40, 5 + 40, 10 + 40, 1 + 50, 5 + 50, 10 + 50	**Up to 2m** (U1)	***All six*** *totals must be correct for the award of both marks.* *Totals may be given in any order.* *If both marks are awarded, record by entering 1 in each marking space.* *Award **ONE** mark by entering 1, 0 in the marking spaces.*

Test 4b questions 18–19

Question	Requirement	Mark	Additional guidance
18	Diagram completed as shown: 	**1m**	**All three** lines of symmetry must be drawn for the award of the mark. *Accept slight inaccuracies in drawing, provided the intention is clear.*
19	An explanation which recognises that a pack of 20 postcards costs 40p less than 20 single postcards, eg: ■ 'The pack costs £3.60 and 20 single postcards cost £4.00' ■ 'I know because £3.60 is less than £4.00' ■ '20 x 20 is more than £3.60' ■ '20 x 20p is £4.00'. **OR** An explanation which compares the value of one postcard within a pack of 20 with the cost of a single postcard, eg: ■ 'If one pack is £3.60 then each postcard will be 18p, and if you buy them on their own it is 20p'. ‘Supplementary marking guidance’ on pages 37–38 shows some responses which are acceptable and unacceptable for the mark.	**1m** U1	**Do not** award the mark for circling 'Yes' alone. *If 'No' is circled but a correct unambiguous explanation is given, then award the mark.* **Do not** accept an explanation which compares prices incorrectly, eg: ■ 'Because 20 single postcards cost £4.20'. **Do not** accept an explanation which simply restates given information, eg: ■ 'A pack of postcards costs 40p less than 20 single postcards' ■ 'The pack costs 40p less'.

Marking the tests

Test 4b questions 20–25

Question	Requirement	Mark	Additional guidance
20	Award **TWO** marks for the correct answer of 8 If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg 64 – 24 = 40 40 ÷ 5 = wrong answer 'Supplementary marking guidance' on page 36 shows some responses which are acceptable and unacceptable for the mark.	**Up to 2m**	*If both marks are awarded, record by entering 1 in each marking space.* *The working must be carried through to reach an answer for the award of* **ONE** *mark.* *Award* **ONE** *mark by entering 1, 0 in the marking spaces.*
21	Arrow drawn to 600ml mark as shown: 	**1m**	*The arrow need not touch the line, provided the intention is clear.* *Accept any other way of indicating the correct point, such as a cross.*
22	Boxes completed as shown: 0.24 0.4 2.04 4 24	**1m**	***All four*** *numbers must be in the correct order for the award of the mark.* *Transcription errors are acceptable only if they do not result in a wrongly ordered list.*
23	2960	**1m**	
24	20	**1m** Ⓤ1	*Accept answers between 19.6 and 20.4 exclusive.*
25	4	**1m**	*Accept a correct list of days, ie Monday, Thursday, Friday, Saturday.*

Marking the tests

Test 4b questions 26–29

Question	Requirement	Mark	Additional guidance
26	An example that shows two multiples of 10 totalling a number that is not a multiple of 20, eg 10 + 20 = 30 **OR** 60 + 30 = 90	**1m** (U1)	*Accept a correct example without a total, eg 10 + 20* **Do not** *accept a total without exemplification of how this total was reached, eg 30*
27	Two boxes completed as shown: 3 — × 100 → 300 $1\frac{1}{2}$ — × 100 → **150** $\frac{3}{4}$ — × 100 → **75**	**1m**	**Both** *numbers must be correct for the award of the mark.*
28	Two cards ticked as shown: 1.5 kilograms ✓ 150 grams 15 kilograms 1 kilogram 50 grams 1500 grams ✓	**1m**	**Both** *cards must be correct for the award of the mark.* *Accept any other clear way of indicating the correct cards, such as circling.*
29	103	**1m**	
Maximum 35 marks			

Marking the tests

Marking the tests

Supplementary marking guidance for Tests 4a and 4b

This section includes examples of responses to two types of questions – those containing a working mark (pages 34–36) and those that require an explanation (pages 37–38).

Questions containing a working mark

For the award of one mark, pupils are required to:

- show a complete and correct method which reaches an answer, **or**

- record an answer that is accepted as evidence of a complete and correct method.

Examples of responses from Test 4a question 7

1 mark	**0 marks**

Both Grant and Wendy recorded working to calculate the total number of people visiting the zoo who were not parents. Grant miscalculated the total as 50. Although he has not recorded the next stage of his working, he appears to have correctly subtracted 50 from 56. In spite of the arithmetic error in his written working, his method is complete and viable so can be awarded one mark. Wendy correctly worked out that 49 people visiting the zoo were not parents. She may then have attempted to work out the difference between 56 and her answer 49 mentally. However, since she made an error we cannot assume this. Wendy cannot be awarded one mark since we do not know if her method is correct. Had Wendy recorded 56 − 49 = 6 or 49 + 6 = 56 as a final step in her calculation, she could have been awarded the working mark regardless of the arithmetic error.

Grant

$$2\ 3 + 21 + 5 = 50$$

That means 6 parents are coming

6   ① ⓪

Wendy

$$23 + 21 = 44$$
$$+ 5 = 49$$

6   ⓪ ⓪

Alexandra's and Kofi's responses show minimal working. Alexandra has correctly calculated that 49 people on the trip were not parents and then attempted to subtract this number from 56. She made an arithmetic error in this calculation, but her method is correct so can be awarded one mark. Kofi recorded a similar subtraction. However, his working does not show why he chose to subtract 44 from 56. In the absence of additional working, it cannot be assumed that he added 23, 21 and 5 mentally to get a total of 44. His method does not provide enough evidence of appropriate working for him to be awarded one mark.

Alexandra

$$56 - 49$$

9   ① ⓪

Kofi

$$56 - 44$$

12   ⓪ ⓪

Examples of responses from Test 4a question 19 and Test 4b question 2

1 mark	**0 marks**

Mohammed's working shows that he correctly mentally calculated that Zak has £1.10. He subtracted 59p, the cost of the melon, from this amount, leaving 51p. He then subtracted 45p, the cost of the grapefruit, but miscalculated that 5p would be left over. In spite of the arithmetic error, his method is complete and correct, and can be awarded one mark. Victoria's working shows how she correctly calculated the total cost of the melon and grapefruit as £1.04. However, she does not record how she obtained the incorrect answer of 16p for the amount left over so her method is incomplete. Due to this missing step in her written working, she cannot be awarded one mark.

Mohammed

£1.10 −59 p 51p −45p 5

1

5 p   **0**

Victoria

40+ 50 = 90
9 + 5 = 14   + £1.04

0

16 p   **0**

Adelle has clearly recorded a series of steps that could lead to the correct answer. She miscalculated the answer as 2p but her method is complete and correct and can be awarded one mark. Jake may have used a similar method but calculated incorrectly, without evidence of working, that the four available coins totalled 130p rather than 110p. Since 130p is incorrect and he has failed to show how he calculated this amount, his method is incomplete and he cannot be awarded one mark. To be awarded the working mark, Jake would have had to show evidence of an appropriate calculation that led to the total of 130p to complement his existing working.

Adelle

50 + 60 = £1.10
£1.10 −45p −59p =

1

2 p   **0**

Jake

130 − 59 − 45
130 − 104

0

26 p   **0**

Marking the tests

Examples of responses from Test 4b question 20

1 mark	0 marks

Melissa has recognised the need to calculate the difference between 64 and 24 as the first step in the problem. She calculated the difference incorrectly as 30 rather than 40. However, she then correctly divided the 30 cards equally between five children, leading to her answer of 6 cards for each child. In spite of the arithmetic error in the first step, her method is complete and shows sufficient evidence of appropriate working. She can therefore be awarded one mark. Adam has correctly completed the first step by calculating that 40 cards altogether were taken by the five children. However, his method is incomplete since he has not attempted to solve the second step of the problem by calculating each child's share of the cards. He cannot be awarded one mark.

Melissa

the difference between
64 and 24 is 30
$30 \div 5 = 6$

6 cards

1

0

Adam

$64 - 24 = 40$

40

0

0

Bimal has identified two steps in his working. First, he correctly identified that 40 cards were taken. Second, he correctly identified that the 40 cards had to be divided equally between five children. His answer of 7 is the result of an arithmetic error, but his method shows evidence of appropriate working and is complete and viable. He can therefore be awarded one mark. Tanya has also identified two steps in her working. Like Bimal, she correctly identified that 40 cards were taken and that the 40 cards had to be divided between five children. However, she has omitted to give an answer so she cannot be awarded one mark.

Bimal

$24 + \boxed{40} = 64$
$40 \div 5 = 7$

7

1

0

Tanya

$64 - 24 = 40$
Share 40 between 5

0

0

Questions requiring an explanation

For the award of the mark, pupils may provide evidence in any form, including diagrams, symbols or words. If the incorrect option ('Yes' or 'No') is circled, the mark should still be awarded if a correct and unambiguous explanation is given.

Examples of responses from Test 4b question 19

The mark scheme separates the acceptable answers for this question into two categories. In the first category, pupils must show evidence that the total cost of 20 single postcards is greater than the cost of a pack of 20 postcards. Pupils can demonstrate this by calculating the cost of 20 single postcards (£4.00), or by pointing out that 20 × 20 is greater than £3.60, the cost of a pack. The second category of explanation is one in which the pupil calculates the value of one postcard within the pack of 20, which is 18p, in order to show that this is less than the cost of a single postcard (20p). In either category, the mark should not be awarded if the answer contains a calculation error.

1 mark	0 marks

Nicole has identified that 20 single postcards would cost 400p. Her answer of 400p is sufficient to demonstrate that Zak's statement is correct. Jamie has also attempted to work out the cost of 20 single postcards. However, the answer to his calculation is incorrect, so he cannot be awarded the mark.

Puvan has explained how he calculated that 20 single postcards would cost 400p. He has then shown that the statement made by Zak is correct, since he subtracted 40p from 400p to reach £3.60, the cost of one pack of postcards. Puvan can be awarded the mark for a complete and correct explanation. Stephanie has attempted to record a method to work out the cost of 20 single postcards. However, she did not record an answer. Therefore she has not given a sufficient explanation that the cost of a pack of postcards is 40p less than the cost of 20 single postcards. Stephanie's explanation cannot be awarded the mark.

Marking the tests

Examples of responses from Test 4b question 19 – continued

1 mark	0 marks

Jonathan has worked out the cost of 20 single postcards as £4.00. He has then shown that the statement made by Zak is correct, since he subtracted 40p from £4.00 to reach £3.60, the cost of one pack of postcards. Although Jonathan circled 'No' in response to the question 'Is he correct?', his explanation is complete and unambiguous so can be awarded the mark. Emma has attempted to work out the total cost of the single postcards by counting on in twenties. However, she has stopped after she worked out the cost of 10 postcards. Emma's explanation is not complete so cannot be awarded one mark. However, had she counted twenty lots of 20p to reach the answer 400p she could have been awarded the mark.

Jonathan

Yes/ No

$2 \times 20p \times 10 = £4.00$

$£4.00 - 40p = £3.60$

(1)

Emma

Yes/ No

20p 40p 60p 80p 100p
120p 140p 160p 180p
200p

(0)

Applying the mark scheme for the mental mathematics test

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 answer sheet.

Full mark scheme information is given on pages 40–41. In addition, a 'quick reference' mark scheme is provided on pages 42–43. This is presented in a similar format to the pupil answer sheet.

General guidance for marking the mental mathematics test

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

1. Unless otherwise stated in the mark scheme, accept answers written in words, or a combination of words and figures.

2. Where units are specified, they are given on the answer sheet. Do not penalise pupils for writing the units again.

3. Where answers need to be ringed and an incorrect response is indicated in addition to the correct response(s), the mark should not be awarded.

Marking the tests

Mark scheme for the mental mathematics test

Questions 1–10

Question	Requirement	Mark	Additional guidance
Practice	10	*None*	
1	65p	*1m*	*Accept £0.65p OR £0-65p OR £0:65p OR £0 65p* ***Do not*** *accept £65p OR 0.65p*
2	14	*1m*	
3	93	*1m*	
4	90	*1m*	
5	300	*1m*	
6	45 minutes	*1m*	
7	12	*1m*	
8	16.8	*1m*	
9	3000 m	*1m*	
10	6.5 **OR** $6\frac{1}{2}$	*1m*	*Accept 6 and a half.* ***Do not*** *accept 6 r 1*

Marking the tests

Mark scheme for the mental mathematics test – continued

Questions 11–20

Question	Requirement	Mark	Additional guidance
11	20	1m	
12	One answer circled as shown: pentagon square rectangle **hexagon** octagon	1m	*Accept any other clear way of indicating the correct answer, such as ticking or underlining.*
13	3	1m	*Accept 3 rem 3 **OR** rem 3 **OR** r3 **OR** 3r* ***Do not** accept 5 rem 3*
14	£1.25	1m	*Accept £1.25p **OR** £1.25 pence **OR** £1-25 **OR** £1:25 **OR** £1 25* ***Do not** accept £125p **OR** £125*
15	450	1m	
16	18	1m	*Accept 18 ×10*
17	33	1m	
18	11	1m	
19	One answer circled as shown: 22 **32** 42 52 62	1m	*Accept any other clear way of indicating the correct answer, such as ticking or underlining.*
20	$\dfrac{3}{12}$	1m	
Maximum 20 marks			

Year 4 mental mathematics quick reference mark scheme

Time: 5 seconds continued

4	**90**

Practice question

	10

5	**300**

Time: 5 seconds

1	

	65 p	Accept £0.65 or £0 65p

6	**45** minutes

7	**12**

8	**16.8**

2	**14**

9	**3000** m

3	**93**

10	**6.5** or **6½**	Accept 6 and a half

Time: 10 seconds

11	**20**

12	pentagon square rectangle (**hexagon**) octagon

13	**3**	Accept 3 rem 3 or rem 3 or r3

14	£ **1.25**	Accept £1.25p or £1 25p or £1 25

15	**450**

16	**18**

17	**33**

18	**11**

19	22 (**32**) 42 52 62

20	$\dfrac{3}{\boxed{12}}$

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Using the outcomes of the tests

Finding the level

Test 4a provides level outcomes ranging from level 2A to level 3A.
Test 4b provides level outcomes ranging from level 3B to level 4A.

The level is calculated by adding up the marks gained from the mental mathematics test and the relevant written test, and reading across to a level in the usual way.

Test 4a and mental mathematics test

Number of marks from Test 4a plus mental mathematics test	0–14	15–25	26–34	35–41	42–55
level	below level 2A	level 2A	level 3C	level 3B	level 3A

Test 4b and mental mathematics test

Number of marks from Test 4b plus mental mathematics test	0–25	26–31	32–37	38–42	43–46	47–55
level	below level 3B	level 3B	level 3A	level 4C	level 4B	level 4A

Grids for test analysis

The questions in the mathematics tests are aimed at a variety of aspects of the Programme of Study for key stage 2, including Using and applying mathematics, and complement the National Numeracy Strategy Framework for teaching mathematics.

An analysis of incorrect answers and the ways in which pupils attempted these different types of question could give useful diagnostic information about the pupils' understanding of and ability to cope with the required mathematics. This information can help you plan future learning for the class, for groups and for individuals. The *Grids for test analysis*, included in the Teacher pack, give national curriculum references for each question, which will facilitate the analysis.

Using the outcomes of the tests

Age standardised scores

This section explains how to work out age standardised scores for mathematics.

Age standardised scores take into account the pupil's age in years and months, so you have an indication of how each pupil is performing relative to other pupils of the same age. It also means that the tests can be administered at different points in the school year (including, in the case of year 4 tests, in the first half of the autumn term in year 5) and comparative information still be obtained.
The standardised scores in this booklet cover the age range 8 years 5 months to 10 years 4 months. If you have decided to give the tests to pupils outside this range, you will not be able to use the tables. You will still be able to calculate national curriculum levels.

Calculating age standardised scores

To convert a pupil's total mark into an age standardised score:

- find the pupil's age in years and completed months at the time of testing

- locate his or her age in years and months along the top of the table

- locate the pupil's total mark down the left side of the table

- read off the standardised score from where the row and column meet.

Statistically, the average standardised score is 100. A higher score is above average and a score below 100 is below average. About two-thirds of pupils will have standardised scores between 85 and 115. Almost all pupils will fall within the range 70 to 130, so scores outside this range can be regarded as exceptional. Very low and very high standardised scores are printed in the table as ***. This means that they would be below the lowest score in the table or above the highest, but cannot be calculated with the necessary degree of statistical reliability. If an exact score is needed, 69 or 121 should be used as appropriate for pupils taking Test 4a and 84 and 140 should be used for pupils taking Test 4b.

National comparisons – using the shaded bands

The tables of standardised scores are divided into five shaded bands. These bands indicate how the scores relate to the national population. The band nearest the top of the table contains the scores that correspond to the lowest fifth of the population; the next band, the next fifth; and so on. If a pupil has a score in the final band, you know that his or her score is in the top 20 per cent nationally, once age has been taken into account.

Making use of age standardised scores

If you choose to work out age standardised scores, you may use this additional information about the pupils' performance in various ways, for example:

- age standardised scores could be averaged across a group, for example a class or a year group. In the average school, year group or class, the mean score should be close to 100; if it is much above or below this, the performance of your class or school varies from the national average

- you may include it as part of the information to parents, for example an age standardised score of 112 shows that test performance was above average for his or her age

- you may be able to identify patterns or results which indicate teaching and learning issues to be addressed, eg the difference in older/younger pupils' performance

- similarly, age standardised scores can be used to consider differences in performance between boys and girls, or between pupils who have English as an additional language and those who do not. In order to provide useful information, these groups need to be reasonably large; small groups will not provide reliable information

- the progress made by an individual, a class or a school can be monitored from one year to the next. Age standardised scores can be calculated and reported for individual pupils. However, because of the nature of the scores and the fact that they are a statistical estimate (see 'Confidence bands' below) the scores are much more reliable when calculated for groups of pupils. In addition, if reported to parents, the fact that a pupil who is making typical progress from year to year will remain on a similar age standardised score will need to be explained.

Confidence bands

As the standardised scores in the tables are derived from only one short test, some margin of error is inevitable, as is the case for all standardised tests. A margin of error does not mean pupils have been assessed incorrectly. It is simply a statistical estimate, based on the fact that tests sample only the particular areas of learning which they assess. To indicate how wide this margin of error is likely to be, a '90 per cent confidence band' has been calculated. This means that you can have 90 per cent certainty that the pupil's true score lies within the confidence band. In this case, the 90 per cent confidence band is 7. So, for example, if a pupil has a standardised score of 105 in mathematics, you can be 90 per cent certain that the true score is between 98 and 112.

Age standardised scores

Age standardised scores for pupils taking Test 4a

Total mark	Age in years and (completed) months											
	8.05	8.06	8.07	8.08	8.09	8.10	8.11	9.00	9.01	9.02	9.03	9.04
0	***	***	***	***	***	***	***	***	***	***	***	***
1	***	***	***	***	***	***	***	***	***	***	***	***
2	70	70	70	70	70	70	70	70	70	70	70	70
3	71	71	71	71	71	71	71	71	70	70	70	70
4	73	72	72	72	72	72	71	71	71	71	71	71
5	74	74	74	73	73	73	72	72	72	72	72	71
6	76	75	75	75	74	74	74	73	73	73	73	72
7	78	77	77	76	76	75	75	75	74	74	74	73
8	79	79	78	78	77	77	76	76	75	75	75	74
9	81	80	80	79	79	78	78	77	77	76	76	75
10	82	82	81	81	80	79	79	78	78	77	77	76
11	84	83	83	82	81	81	80	80	79	79	78	78
12	85	84	84	83	83	82	82	81	80	80	79	79
13	86	86	85	84	84	83	83	82	82	81	80	80
14	87	87	86	86	85	84	84	83	83	82	82	81
15	88	88	87	87	86	86	85	84	84	83	83	82
16	89	89	88	88	87	87	86	85	85	84	84	83
17	90	89	89	89	88	87	87	86	86	85	85	84
18	91	90	90	89	89	88	88	87	87	86	86	85
19	92	91	91	90	90	89	89	88	88	87	87	86
20	92	92	91	91	90	90	90	89	89	88	88	87
21	93	93	92	92	91	91	90	90	89	89	88	88
22	94	93	93	92	92	91	91	91	90	90	89	89
23	94	94	94	93	93	92	92	91	91	90	90	89
24	95	95	94	94	93	93	92	92	92	91	91	90
25	96	96	95	95	94	94	93	93	92	92	91	91
26	97	96	96	95	95	94	94	93	93	92	92	92
27	98	97	97	96	96	95	95	94	94	93	93	92
28	99	98	97	97	96	96	95	95	94	94	93	93
29	99	99	98	98	97	97	96	96	95	95	94	94
30	100	100	99	99	98	97	97	96	96	95	95	94
31	101	101	100	99	99	98	98	97	97	96	96	95
32	102	102	101	100	100	99	99	98	97	97	96	96
33	103	103	102	101	101	100	100	99	98	98	97	97
34	104	104	103	102	102	101	101	100	99	99	98	98
35	106	105	104	104	103	102	102	101	100	100	99	98
36	107	106	105	105	104	103	103	102	101	101	100	99
37	108	107	106	106	105	104	104	103	102	102	101	100
38	109	108	108	107	106	106	105	104	104	103	102	102
39	110	109	109	108	107	107	106	105	105	104	103	103
40	111	111	110	109	109	108	107	107	106	105	105	104
41	112	112	111	110	110	109	109	108	107	107	106	105
42	113	113	112	112	111	110	110	109	109	108	107	107
43	114	114	113	113	112	112	111	111	110	109	109	108
44	115	115	114	114	113	113	112	112	111	111	110	110
45	116	116	115	115	115	114	114	113	113	112	112	111
46	117	117	116	116	116	115	115	114	114	114	113	112
47	118	118	117	117	117	116	116	116	115	115	114	114
48	119	119	118	118	118	117	117	117	117	116	116	115
49	119	119	119	119	119	118	118	118	118	117	117	117
50	120	120	120	120	119	119	119	119	119	118	118	118
51	***	120	120	120	120	120	120	120	120	119	119	119
52	***	***	***	***	***	***	***	***	120	120	120	120
53	***	***	***	***	***	***	***	***	***	***	***	***
54	***	***	***	***	***	***	***	***	***	***	***	***
55	***	***	***	***	***	***	***	***	***	***	***	***

Age standardised scores for pupils taking Test 4a – continued

Total mark	Age in years and (completed) months											
	9.05	9.06	9.07	9.08	9.09	9.10	9.11	10.00	10.01	10.02	10.03	10.04
0	***	***	***	***	***	***	***	***	***	***	***	***
1	***	***	***	***	***	***	***	***	***	***	***	***
2	70	70	***	***	***	***	***	***	***	***	***	***
3	70	70	70	70	70	70	70	70	***	***	***	***
4	71	71	70	70	70	70	70	70	70	***	***	***
5	71	71	71	71	71	71	71	71	70	70	70	70
6	72	72	72	71	71	71	71	71	71	71	71	71
7	73	73	72	72	72	72	72	71	71	71	71	71
8	74	74	73	73	73	72	72	72	72	72	71	71
9	75	75	74	74	74	73	73	73	72	72	72	72
10	76	76	75	75	74	74	74	73	73	73	73	72
11	77	77	76	76	75	75	75	74	74	74	73	73
12	78	78	77	77	76	76	75	75	75	74	74	74
13	79	79	78	78	77	77	76	76	76	75	75	74
14	81	80	79	79	78	78	77	77	76	76	76	75
15	82	81	80	80	79	79	78	78	77	77	76	76
16	83	82	82	81	80	80	79	79	78	78	77	77
17	84	83	83	82	81	81	80	80	79	79	78	78
18	85	84	84	83	82	82	81	81	80	80	79	79
19	86	85	84	84	83	83	82	82	81	81	80	79
20	86	86	85	85	84	84	83	83	82	81	81	80
21	87	87	86	86	85	85	84	83	83	82	82	81
22	88	88	87	87	86	85	85	84	84	83	83	82
23	89	88	88	87	87	86	86	85	85	84	84	83
24	90	89	89	88	88	87	87	86	86	85	84	84
25	90	90	89	89	88	88	87	87	86	86	85	85
26	91	91	90	90	89	89	88	88	87	87	86	86
27	92	91	91	90	90	89	89	88	88	87	87	86
28	92	92	92	91	91	90	90	89	89	88	88	87
29	93	93	92	92	91	91	90	90	89	89	88	88
30	94	93	93	92	92	92	91	91	90	90	89	89
31	95	94	94	93	93	92	92	91	91	90	90	89
32	95	95	94	94	93	93	92	92	92	91	91	90
33	96	96	95	95	94	94	93	93	92	92	91	91
34	97	96	96	95	95	94	94	93	93	93	92	92
35	98	97	97	96	96	95	95	94	94	93	93	92
36	99	98	98	97	97	96	96	95	95	94	94	93
37	100	99	99	98	97	97	96	96	95	95	94	94
38	101	100	100	99	98	98	97	97	96	96	95	95
39	102	101	101	100	100	99	98	98	97	97	96	96
40	103	103	102	101	101	100	99	99	98	98	97	97
41	105	104	103	103	102	101	101	100	99	99	98	98
42	106	105	105	104	103	103	102	101	101	100	99	99
43	107	107	106	105	105	104	103	103	102	101	101	100
44	109	108	108	107	106	106	105	104	104	103	102	102
45	110	110	109	109	108	107	107	106	105	105	104	103
46	112	111	111	110	110	109	108	108	107	106	106	105
47	113	113	112	112	111	111	110	110	109	108	108	107
48	115	115	114	114	113	113	112	111	111	110	110	109
49	116	116	116	115	115	114	114	113	113	112	112	111
50	118	117	117	117	116	116	116	115	115	114	114	113
51	119	119	119	118	118	118	117	117	117	116	116	116
52	120	120	120	120	119	119	119	119	119	118	118	118
53	***	***	***	***	120	120	120	120	120	120	120	120
54	***	***	***	***	***	***	***	***	***	***	***	***
55	***	***	***	***	***	***	***	***	***	***	***	***

Age standardised scores

Age standardised scores for pupils taking Test 4b

Total mark	Age in years and (completed) months											
	8.05	8.06	8.07	8.08	8.09	8.10	8.11	9.00	9.01	9.02	9.03	9.04
0	***	***	***	***	***	***	***	***	***	***	***	***
1	***	***	***	***	***	***	***	***	***	***	***	***
2	***	***	***	***	***	***	***	***	***	***	***	***
3	***	***	***	***	***	***	***	***	***	***	***	***
4	***	***	***	***	***	***	***	***	***	***	***	***
5	***	***	***	***	***	***	***	***	***	***	***	***
6	***	***	***	***	***	***	***	***	***	***	***	***
7	***	***	***	***	***	***	***	***	***	***	***	***
8	85	85	85	***	***	***	***	***	***	***	***	***
9	87	86	86	85	85	85	***	***	***	***	***	***
10	88	87	87	87	86	86	85	85	85	***	***	***
11	89	89	88	88	87	87	86	86	86	85	85	85
12	90	90	89	89	88	88	87	87	87	86	86	85
13	91	91	90	90	89	89	88	88	88	87	87	86
14	93	92	92	91	91	90	90	89	89	88	88	87
15	94	93	93	92	92	91	91	90	90	89	89	88
16	95	94	94	93	93	92	92	91	91	90	90	89
17	96	95	95	94	94	93	93	92	92	91	91	90
18	97	96	96	95	95	94	94	93	93	92	92	91
19	98	98	97	96	96	95	95	94	94	93	93	92
20	99	99	98	97	97	96	96	95	95	94	93	93
21	100	100	99	99	98	97	97	96	96	95	94	94
22	102	101	100	100	99	98	98	97	97	96	95	95
23	103	102	101	101	100	99	99	98	98	97	96	96
24	104	103	103	102	101	101	100	99	99	98	97	97
25	105	104	104	103	102	102	101	100	100	99	98	98
26	106	106	105	104	104	103	102	101	101	100	100	99
27	108	107	106	105	105	104	103	103	102	101	101	100
28	109	108	107	107	106	105	104	104	103	102	102	101
29	110	110	109	108	107	106	106	105	104	104	103	102
30	112	111	110	109	108	108	107	106	105	105	104	103
31	113	112	111	111	110	109	108	107	107	106	105	104
32	114	114	113	112	111	110	110	109	108	107	106	106
33	116	115	114	113	113	112	111	110	109	109	108	107
34	117	116	116	115	114	113	112	111	111	110	109	108
35	119	118	117	116	115	115	114	113	112	111	111	110
36	120	119	118	118	117	116	115	114	114	113	112	111
37	121	121	120	119	118	118	117	116	115	114	113	113
38	123	122	121	121	120	119	118	117	117	116	115	114
39	124	124	123	122	121	121	120	119	118	117	117	116
40	126	125	124	124	123	122	121	121	120	119	118	117
41	127	126	126	125	124	124	123	122	121	121	120	119
42	128	128	127	127	126	125	125	124	123	122	122	121
43	130	129	129	128	127	127	126	125	125	124	123	123
44	131	130	130	129	129	128	128	127	126	126	125	124
45	132	132	131	131	130	130	129	129	128	127	127	126
46	133	133	132	132	132	131	131	130	130	129	129	128
47	134	134	134	133	133	133	132	132	131	131	130	130
48	135	135	135	135	134	134	133	133	133	132	132	131
49	136	136	136	136	135	135	135	134	134	134	133	133
50	137	137	137	137	136	136	136	136	136	135	135	135
51	138	138	138	138	137	137	137	137	137	137	136	136
52	139	139	138	138	138	138	138	138	138	138	138	137
53	139	139	139	139	139	139	139	139	139	139	139	139
54	***	***	***	***	***	***	***	***	***	***	139	139
55	***	***	***	***	***	***	***	***	***	***	***	***

Age standardised scores

Age standardised scores for pupils taking Test 4b – continued

Total mark	Age in years and (completed) months											
	9.05	9.06	9.07	9.08	9.09	9.10	9.11	10.00	10.01	10.02	10.03	10.04
0	***	***	***	***	***	***	***	***	***	***	***	***
1	***	***	***	***	***	***	***	***	***	***	***	***
2	***	***	***	***	***	***	***	***	***	***	***	***
3	***	***	***	***	***	***	***	***	***	***	***	***
4	***	***	***	***	***	***	***	***	***	***	***	***
5	***	***	***	***	***	***	***	***	***	***	***	***
6	***	***	***	***	***	***	***	***	***	***	***	***
7	***	***	***	***	***	***	***	***	***	***	***	***
8	***	***	***	***	***	***	***	***	***	***	***	***
9	***	***	***	***	***	***	***	***	***	***	***	***
10	***	***	***	***	***	***	***	***	***	***	***	***
11	***	***	***	***	***	***	***	***	***	***	***	***
12	85	85	***	***	***	***	***	***	***	***	***	***
13	86	86	85	85	85	***	***	***	***	***	***	***
14	87	86	86	86	85	85	85	***	***	***	***	***
15	88	87	87	87	86	86	85	85	85	***	***	***
16	89	88	88	87	87	87	86	86	85	85	85	***
17	90	89	89	88	88	87	87	87	86	86	85	85
18	91	90	90	89	89	88	88	87	87	86	86	86
19	91	91	90	90	89	89	89	88	88	87	87	86
20	92	92	91	91	90	90	89	89	88	88	88	87
21	93	93	92	92	91	91	90	90	89	89	88	88
22	94	94	93	93	92	92	91	91	90	90	89	89
23	95	95	94	94	93	93	92	91	91	90	90	90
24	96	96	95	95	94	93	93	92	92	91	91	90
25	97	97	96	95	95	94	94	93	93	92	92	91
26	98	98	97	96	96	95	95	94	94	93	93	92
27	99	99	98	97	97	96	96	95	95	94	93	93
28	100	100	99	98	98	97	97	96	95	95	94	94
29	101	101	100	99	99	98	98	97	96	96	95	95
30	103	102	101	101	100	99	99	98	97	97	96	96
31	104	103	102	102	101	100	100	99	98	98	97	97
32	105	104	104	103	102	101	101	100	100	99	98	98
33	106	105	105	104	103	103	102	101	101	100	99	99
34	108	107	106	105	105	104	103	102	102	101	100	100
35	109	108	107	107	106	105	104	104	103	102	102	101
36	110	110	109	108	107	106	106	105	104	104	103	102
37	112	111	110	109	109	108	107	106	106	105	104	103
38	113	113	112	111	110	109	109	108	107	106	106	105
39	115	114	113	113	112	111	110	109	109	108	107	106
40	117	116	115	114	113	113	112	111	110	109	109	108
41	118	118	117	116	115	114	114	113	112	111	110	110
42	120	119	119	118	117	116	115	115	114	113	112	111
43	122	121	120	120	119	118	117	116	116	115	114	113
44	124	123	122	122	121	120	119	118	118	117	116	115
45	126	125	124	124	123	122	121	121	120	119	118	117
46	127	127	126	126	125	124	123	123	122	121	120	120
47	129	129	128	128	127	126	126	125	124	124	123	122
48	131	131	130	130	129	128	128	127	127	126	125	125
49	133	132	132	131	131	131	130	130	129	128	128	127
50	134	134	134	133	133	133	132	132	131	131	130	130
51	136	136	135	135	135	135	134	134	134	133	133	132
52	137	137	137	137	137	136	136	136	136	135	135	135
53	138	138	138	138	138	138	138	138	138	137	137	137
54	139	139	139	139	139	139	139	139	139	139	139	139
55	***	***	***	***	***	***	***	139	139	139	139	139

Age standardised scores

Guidance for teaching assistants

This guidance is for teaching assistants or other adults assisting in the administration of the year 4 optional mathematics tests. If a teaching assistant is to administer any part of the tests independently to a group of pupils, they will need to follow the 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 tests: a written mathematics test and a mental mathematics test.

The written tests

A choice of two written tests is available: Test 4a (a levels 2–3 test awarding levels 2A to 3A), and Test 4b (a levels 3–4 test awarding levels 3B to 4A). **Pupils should sit only one written test** since some questions are common to both. The class teacher should decide which paper is appropriate for each pupil.

Each written test contains 35 marks and has a recommended time limit of 45 minutes. They contain the same practice question. This means that it should be possible for you to administer both tests at the same time.

Guidance for assisting pupils

You may:

- read the names of the three children on page 2 of the test booklet and explain that they will feature in some of the questions

- read through with them the section 'Getting started' on page 3

- help them read and answer the practice question on page 3 of the booklet

- give help with reading words or sentences in the test questions

- give help with reading calculations, including numerals and symbols within them

- explain or rephrase general instruction words in the test, such as *complete* in question 12 in Test 4a

- explain or rephrase words used in everyday contexts, such as *oven* in question 21 in Test 4a and question 4 in Test 4b

- encourage pupils not to give up at the first difficult question because there may be easier questions further on

- indicate any omitted questions when pupils have finished that they should go back and try to answer.

You should not:

- give any help with the mathematics as this will invalidate the assessment

- suggest to the pupils the mathematical operation to use

- gives clues as to the meaning of mathematical terms, such as *coordinates* in question 16 in Test 4b

- rephrase the wording of the questions (except as indicated on page 52)

- prompt the pupils to confirm or change answers by pointing, frowning, smiling, head shaking or nodding, offering rubbers, or asking leading questions.

The mental mathematics test

The mental mathematics test is a recorded test consisting of a practice question and 20 timed questions. The test should be administered using the CD, although a transcript is provided on pages 17–19 in case of an equipment malfunction on the day of the test.

The test should be taken by all pupils. It has an administration time of approximately 20 minutes.

The test starts with instructions to the pupils followed by the questions. There will be two opportunities for you to pause the recording. These will be indicated by a bleep. The first pause comes near the beginning of the recording, once the instructions have been given. This will allow clarification of any of the instructions not understood by the pupils. The second pause is after the practice question. After this second pause, the recording should be allowed to play without interruption.

You may:

- answer any questions pupils have after the first and second pause of the recording.

You should not:

- stop the recording after it has been restarted following the practice question.

Guidance for teaching assistants

Photocopiable pupil answer sheet

Year 4 mental mathematics test

Name .... Class ....

School ....

Total marks

Practice question

Time: 5 seconds

1		

5p   20p

20p   20p

p   **1**

2		**2**

3		**3**

Time: 5 seconds continued

4		45	**4**

5		**5**

6	minutes	**6**

7		60 5	**7**

8		8.4	**8**

9	m	**9**

10		13	**10**

Photocopiable pupil answer sheet

Time: 10 seconds

11		9 6 5	11

12	pentagon square rectangle hexagon octagon	12

13		18 5	13

14	£	75p	14

15		15

16		180	16

17		9	17

18		33	18

19	22 32 42 52 62	19

20	$\dfrac{3}{\square}$	20

EARLY YEARS

NATIONAL
CURRICULUM
5–16

GCSE

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GCE A LEVEL

NVQ

OTHER
VOCATIONAL
QUALIFICATIONS

📑 Curriculum and Standards

Audience	Year 4 teachers
Circulation lists	
Type	Assessment materials
Description	
Cross ref	Key stage 1 ARA QCA/05/1636 Key stage 2 ARA QCA/05/1637
Action required	Teachers of year 4 should read before using optional tests to assess pupils
Timing	
Contact	
For school use	

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