

Passing the

**Numeracy
Skills Test**

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Passing the

Numeracy Skills Test

**7th
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Mark Patmore



Los Angeles | London | New Delhi
Singapore | Washington DC | Melbourne



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Introduction

Introduction to the test

The numeracy skills test is a computerised test, which is divided into two sections:

- **section 1 for the mental arithmetic questions;**
- **section 2 for the written questions known as ‘on-screen’ questions.**

The **mental arithmetic** section is an audio test heard through headphones. Calculators are not allowed, but noting numbers and jotting down working will be permitted. (You should be issued with either a wipe-clean board and pen, or with paper to help with this.) There are 12 questions in this section. Note: this section must be answered first; each question has a fixed time in which you must answer (18 seconds); you cannot return to a question if you later wish to change your answer. Questions will be asked to test your ability to carry out mental calculations using fractions, percentages, measurement, conversions and time (see the detailed content list on page 5).

The **‘on-screen’** questions: there are 16 written questions in this section. Seven questions are focused on *interpreting* and using written data and nine are focused on *solving* written arithmetic problems. Questions and answers will be in one of the following forms:

- **multiple-choice questions where you will choose the single correct response from a fixed number of alternative answers;**
- **multiple-response questions where you choose single or multiple correct statements from a fixed number of given statements;**
- **questions that require a single answer;**
- **questions where you will select the answer by pointing and clicking on the correct point in a table, chart or graph (to change an answer click on an alternative point);**
- **questions where you will select your answer from a number of alternative answers and place the answer into the answer box provided (to change an answer drag it back to its original position and choose another).**

In this part of the test you can use the ‘on-screen’ calculator. You answer questions using the mouse and the keyboard and you can move between questions by using the ‘next’ and ‘previous’ buttons. You can return to questions either by using the ‘flag’ button and then the ‘review’ button or by waiting until the end of the test when you will have the option of reviewing all the questions – provided there is time!

There are a total of $(12 + 16 =) 28$ questions. Each question is worth 1 mark. Think of the pass mark as being 18. You do not have to gain a certain number of marks in each section

so you could gain 4 marks in the mental arithmetic section and 14 in the on-screen section or 7 marks in the mental section and 11 marks in the on-screen section or...

Time for the test

The time limit for the whole test is approximately 48 minutes. At the end of which the test will shut down automatically. (Note: The mental test will take about 12 minutes and the on-screen test will take about 36 minutes.)

The contexts for the questions

One of the aims of the numeracy skills test is to ensure that teachers have the skills and understanding necessary to analyse the sort of data that is now used in schools. Consequently most questions will be set within contexts such as:

- national test data;
- target setting and school improvement data;
- pupil progress and attainment over time;
- special educational needs (SEN);
- GCSE subject choices and results.

Hints and advice

The mental arithmetic, audio section

Each mental arithmetic question is heard twice. After the first reading an answer box appears on the screen. You will have a short time – 18 seconds – to work out the answer and type it into the answer box, after which the next question will automatically appear. As mentioned earlier, you cannot move forwards or backwards between questions. At the start of the test you will hear a practice question which you do not have to answer but do use it to check that the sound and volume are appropriate. If not, notify the supervisor in the test room.

- Concentrate the first time the question is read, and note down the key numbers. For example, a question could be ‘In a class of 30 pupils, 24 are boys. What fraction are girls?’ You should jot down 30 and 24. The second time the question is heard, concentrate on what to do with those numbers (for example, $30 - 24 = 6$ (so there are 6 girls) then $6/30 = 1/5$).
- Start to work out the answer as soon as you have the information. You may be able to do this while you hear the second reading of the question.
- If you cannot answer a question don’t worry or panic – enter a likely answer, then forget it. Remember, you don’t need to get every single question right.
- Note that you don’t have to worry about units, i.e. £ or € or cm, for example. The units will appear in the answer box.
- Listen carefully to what the question requires in the answer. For example, a question could ask for a time ‘using the 24-hour clock’, or an answer ‘to the nearest whole number’, or ‘to two decimal places’. (There are notes on this in Chapter 3.)
- Fractions need to be entered in the lowest terms. For example, $6/8$ should be entered as $3/4$ and $7/28$ should be entered as $1/4$.

- Practise using mental strategies. For example, purchasing five books that cost £5.99 can be worked out by multiplying 5 x £6 (£30) and subtracting 5 x 1p (5p) to give the answer of £29.95.
- Remember the link between fractions and percentages – see Chapter 1.

The on-screen questions

- Try not to spend more than two minutes on any one question and keep an eye on the time remaining. If you think you are exceeding the time then move on – you can always return to any you still need to complete at the end of the test and insert an answer. Try not to leave any answers blank at the end of the test.
- Read each question carefully. For example, a question may ask for the percentage of pupils who achieved grade 4 and above. Don't just look at those who gained grade 4; the question included the words 'and above', so you need to include those who achieved 'above', i.e. achieved grade 5, grade 6, and so on.
- Check that you are giving the correct information in the answer. A table may give you details of the number of marks a pupil achieved but the question may be asking for a percentage score.

The on-screen calculator

When the mental arithmetic section of the test is finished, a basic four-function calculator will be available on the screen for you to use for the rest of the test. No other calculators can be used. You can move the calculator around the screen using the mouse. The on-screen calculator works through the mouse and through the number pad on the keyboard. If you wish to use the number pad you must ensure that the number lock key 'Num Lock' is activated.

Notes on using the on-screen calculator

- To cancel an operation, press **CE**.
- Always use the 'clear' button **C** on the calculator before beginning a new calculation.
- Always check the display of the calculator to make sure that the number shown is what you wanted.
- Check calculations and make sure that your final answer makes sense in the context of the question. For example, the number of pupils gaining 60% in a test will not be greater than the size of the cohort or group.

Other hints

1. Rounding up and down

- Make sure that any instructions to round an answer up or down are followed – or the answer will be marked as incorrect.
- Use the context to make sure whether a decimal answer should be rounded up or down. For example, an answer of 16.4 lessons for a particular activity is clearly not appropriate and the answer would need to be rounded up to 17 lessons.
- Questions may specify that the answer should be rounded to the nearest whole number or be rounded to two decimal places. See the notes at the start of Chapter 3.

- When carrying out calculations relating to money, the answer shown on the calculator display will need to be rounded to the nearest penny (unless otherwise indicated). Hence, if calculating in pounds, round to two decimal places to show the number of pence. If 10.173 is the answer in pounds on the calculator display, rounding to the nearest penny gives £10.17. NB: Answers to money calculations should have no decimal places or 2 decimal places. Thus an answer should be given as £4.10 and not as £4.1, and £10 must be written as £10 or £10.00 and not £10.0.

2. Answering multi-stage questions

The calculator provided is not a scientific calculator and therefore care needs to be taken with ‘mixed operations’ (i.e. calculations using several function keys). It is important that the function keys are pressed in the appropriate order for the calculation. It may also be useful to note down answers to particular stages of the calculation.

It is important to remember to carry out the calculation required by the question in the following order: any calculation within brackets followed by division/multiplication followed by addition and/or subtraction. Thus, the answer to the calculation $2 + 3 \times 4$ is 14 and not 20; the answer to $\frac{18}{3+6}$ is $\frac{18}{9} = 2$; and the answer to $\frac{18}{3} + 6 = 6 + 6 = 12$. See the notes at the start of Chapter 3.

3. Dealing with fractions

Although fractions will appear in the usual format within a question (for example, $\frac{3}{4}$), to enter a fraction in an answer, use the ‘forward slash’ key (for example, ‘one-half’ would be entered as 1/2). Therefore using the on-screen calculator to calculate with fractions, it is probably easier to deal with the fraction first, converting it into a decimal, and then multiply by this decimal. For example, to calculate $\frac{5}{8}$ of 320, first find $5 \div 8 = 0.625$. Multiply 0.625 by 320, obtaining 200 as the answer.

How to use this book

The book is divided into six chapters.

Chapter 1: this very short chapter has been included to remind you of the basic arithmetic processes. The majority of you will be able to miss this unit out, but some may welcome a chance to revise fractions, decimals, percentages, etc.

Chapter 2: this chapter provides guidance, examples and questions for the mental arithmetic section. Look at the revision checklist on the next page for a list of the content areas that could be tested.

Chapter 3: this chapter provides guidance, examples and questions on solving written arithmetic problems. Look at the revision checklist on the next page and over onto page 6 for a list of the content areas that could be tested.

Chapter 4: this chapter provides guidance, examples and questions on interpreting and using written data. Look at the revision checklist on page 6 for a list of the content areas that could be tested.

Chapter 5: this includes a practice mental arithmetic test, and a full practice onscreen test for you to work through.

Chapter 6: this contains answers and key points for all the questions in the main chapters and for the sample tests.

In each chapter, the additional required knowledge, language and vocabulary are explained, and worked examples of the type of questions to be faced are provided together with the practice questions. The answers for these questions are given in Chapter 6, together with further advice and guidance on solutions.

Revision checklists

The following charts show in detail the coverage of the three main chapters and the practice tests. You can use the checklists in your revision to make sure that you have covered all the key content areas.

Revision checklist for Chapter 2: Mental arithmetic

Content	Question
2a Time – varied contexts	1, 7, 18, 20, 25, 34
2b Amounts of money varied contexts	12, 38, 42, 43, 44
2c Proportion – answer as a fraction	37
2d Proportion – answer as a percentage	27
2e Proportion – answer as a decimal	22
2f Fractions	16, 29, 45
2g Decimals	21, 32, 39
2h Percentages – varied contexts	2, 11, 19, 20, 24, 26, 28, 30, 35, 42
2i Measurements – distance	36
2j Measurements – area	23
2k Measurements – other	40
2l Conversions – from one currency to another	44
2m Conversions – from fractions to decimals	15
2n Conversions – from decimals to fractions	
2o Conversions – from percentages to fractions	31
2p Conversions – from fractions to percentages	4, 9, 13, 33
2q Conversions – other	6
2r Combination of one or more of addition, subtraction, multiplication, division (may involve amounts of money or whole numbers)	3, 5, 8, 10, 14, 17, 41

Revision checklist for Chapter 3: Solving written arithmetic problems

(Note: Only the main references are used; many questions will cover more than one reference.)

Content	Question
3a Time – varied contexts	7, 17, 29, 31, 33
3b Amounts of money	2, 11, 57, 60
3c Proportion – answer as a fraction	14
3d Proportion – answer as a percentage	14
3e Proportion – answer as a decimal	13, 14, 62

(Continued)

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Content	Question
3f Ratios	3, 59, 60
3g Percentages – varied contexts	4, 5, 6, 8, 9, 12, 13, 18, 24, 27, 39, 41, 42, 47, 53, 56, 59, 62
3h Fractions	10, 19, 41, 54, 57
3i Decimals	
3j Measurements – distance	21, 26, 28, 30, 36
3k Measurements – area	22
3l Conversions – from one currency to another	2
3m Conversions – from fractions to decimals or vice versa	14
3n Conversions – other, including measures	15, 16, 20, 24, 38, 39, 48, 61
3o Averages – mean	11, 23, 45, 58
3p Averages – median	23
3q Averages – mode	
3r Range	11, 35, 56
3s Averages – combination	1, 34, 44
3t Using simple formulae	32, 40, 43, 46, 49, 50, 51, 52, 55

Revision checklist for Chapter 4: Interpreting and using written data

(Note: Only the main references are used; many questions will cover more than one reference.)

Content	Question
4a Identify trends over time	9, 13, 17, 19, 21
4b Make comparisons in order to draw conclusions	2, 5, 10, 11, 12, 14, 23, 24
4c Interpret and use information	1, 3, 4, 6, 7, 8, 15, 16, 18, 20
3o Averages	9

Revision checklist for the practice mental arithmetic test

Content	Question
1a Time – varied contexts	6, 11
1b Amounts of money – varied contexts	7
1c Proportion – answer as a fraction	
1d Proportion – answer as a percentage	
1e Proportion – answer as a decimal	
1f Fractions	1, 12
1g Decimals	
1h Percentages – varied contexts	2, 3, 5, 9, 10
1i Measurements – distance	
1j Measurements – area	
1k Measurements – other	

Content	Question
1l Conversions – from one currency to another 1m Conversions – from fractions to decimals 1n Conversions – from decimals to fractions 1o conversions – from percentages to fractions 1p Conversions – from fractions to percentages 1q Conversions – other	8 4
1r Combination of one or more of addition, subtraction, multiplication, division (may involve amounts of money or whole numbers)	1, 11

Revision checklist for the practice on-screen test

Content	Question
4a Identify trends over time	3, 9
4b Make comparisons in order to draw conclusions	1, 4, 8
4c Interpret and use information	2, 6, 7
3a Time – varied contexts	5
3b Amounts of money	10
3c Proportion – answer as a fraction 3d Proportion – answer as a percentage 3e Proportion – answer as a decimal 3f Ratios	14
3g Percentages – varied contexts	4, 15, 16
3h Fractions	13
3i Decimals	
3j Measurements – distance 3k Measurements – area 3l Conversions – from one currency to another 3m Conversions – from fractions to decimals or vice versa 3n Conversions – other	
3o Averages – mean 3p Averages – median 3q Averages – mode 3r Range 3s Averages – combination	
3t Given formulae	9, 11