

# GRAMMAR SCHOOL ENTRANCE TESTS

# FAMILIARISATION GUIDE

---

This guide tells you about the different types of questions you will be asked when you take the test for real. It will also help you to understand how to use an answer sheet correctly.

You may print copies of this book, for your own use, to practise answering questions and marking your answers on the answer sheet.

## MATHS

### What equipment are you allowed to use in the test?

You will be allowed to use these things in the test:

- an HB pencil
- a rubber
- a pencil sharpener

You will **NOT** be able to use any of the following things in the test:

- a ruler
- a calculator
- scrap paper
- a protractor
- a mobile phone
- a camera
- a watch
- any electronic devices
- recording equipment or study notes

**Please note:** practice materials available in book shops or for sale on the Internet are not genuine CEM resources. This guide is the only official CEM resource available for this assessment.

## The test booklets

In the real test, you will be asked to work through **two** question booklets.

You must read the questions in these booklets and then mark your answers on a separate answer sheet. Examples of these booklets and answer sheets are included towards the end of this guide.

**A question booklet will look like this.**

Booklet serial number: **1**

**CEM**  
Centre for Evaluation & Monitoring

# Selective School Assessment for 2020 Entry

## Booklet One

Write your full name here:

**You will be asked to write your name on the front cover of the question booklet.**

WARNING: THIS PAPER AND ITS CONTENTS ARE COPYRIGHT PROTECTED. ANY UNAUTHORISED REPRODUCTION, MODIFICATION, TRANSMISSION OR PUBLICATION OF THIS PAPER OR ANY CONTENT CONTAINED HEREIN IS ILLEGAL. THE COPYRIGHT HOLDER RESERVES THE RIGHT TO TAKE FORMAL LEGAL ACTION AGAINST ANYONE FOUND OCCUPIED, REPRODUCED OR PUBLISHED (INCLUDING VIA ANY THIRD PARTY WEBSITE BY ANY MEANS), OR IN WHOLE OR IN PART, IN ANY FORM OR BY ANY MEANS. ALL RIGHTS ARE RESERVED. FAILURE TO COMPLY ESTABLISH PERSONAL LIABILITY AGAINST THE OFFENDER AND THE COPYRIGHT HOLDER RESERVES THE RIGHT TO TAKE FORMAL LEGAL ACTION AGAINST ANY INDIVIDUAL FOUND TO BE IN BREACH OF THIS WARNING. SUCH ACTION MAY GIVE RISE TO CIVIL PENALTY OR CRIMINAL PROSECUTION.

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO**


**The name box on the question booklet will look like this. Practise writing your name in this box now.**

Copyright © 2019 CEM. All Rights Reserved.

# The answer sheets

The answer sheet will have your name and some information about you already printed on it. Check that the information shown is correct.

**Selective School Assessment for 2020 Entry**

	Exam No:	DfE Number:
	Name:	Gender:
	Date of Birth:	Date of Test:
	Current School:	
	Venue:	
	Session:	

Please write your name here: \_\_\_\_\_

Do not write outside the box.

**Instructions**

1. Check that you are marking the answer for the correct question number.
2. Mark ONE answer only for each question on this answer sheet.
3. Use an HB pencil and rub out any errors thoroughly.

Remember, you **must** mark the answers the **RIGHT** way like this:  For example,

Comprehension Examples	Word Choice Examples	Pictures 1 Examples
i <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	i <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	i <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
ii <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	ii <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	ii <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

**Questions**

Comprehension	Word Choice	Pictures 1
1 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	1 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	1 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
2 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	2 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	2 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
3 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	3 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	3 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
4 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	4 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	4 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
5 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	5 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	5 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
6 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	6 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	6 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
7 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	7 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	7 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
8 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	8 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	8 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
9 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	9 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	9 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
10 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	10 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	10 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
11 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	11 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	11 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
12 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	12 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	12 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
13 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	13 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	13 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
14 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	14 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	14 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
15 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	15 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	15 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
16 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	16 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	16 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
17 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	17 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	17 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
18 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	18 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	18 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
19 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	19 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	19 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
20 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	20 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	20 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
21 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	21 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	21 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
22 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	22 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	22 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
23 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	23 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	23 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
24 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	24 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	24 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
25 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	25 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	25 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
26 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	26 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	26 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
27 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	27 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	27 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
28 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	28 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	28 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Copyright © 2019 CEM. All Rights Reserved.


An answer sheet will look like this.

You should tell an adult if there are any mistakes on your sheet, or the information is missing.

If you have to write the information on the sheet, do this neatly and carefully. Ask an adult if you need help.

If you have to write your date of birth on the sheet, take care to write your actual date of birth and **NOT** the date you are taking the test.

You will be asked to write your name here, in the small box.

	Exam No:	DfE Number:
	Name:	Gender:
	Date of Birth:	Date of Test:
	Current School:	
	Venue:	
	Session:	

Please write your name here: \_\_\_\_\_

Do not write outside the box.

**Instructions**

1. Check that you are marking the answer for the correct question number.
2. Mark ONE answer only for each question on this answer sheet.
3. Use an HB pencil and rub out any errors thoroughly.

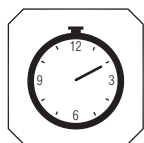
## Information about using the question booklets

Each page of the question booklet will have information to help you shown on it.

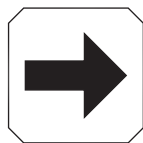
- The page number is in the top corner of each page.
- The title of each section is shown on the top line of each page.

Page <span style="font-size: 2em; font-weight: bold;">5</span>	<span style="font-size: 2em; font-weight: bold;">Maths</span>
---	---

Instructions at the bottom of the pages include the following symbols and words to explain what you need to do:



**Time  
allowed for  
the section**



**Go to the next  
page**



**Do not turn  
the page until  
you are told to  
do so**



**Stop working  
and await  
instructions**

You will also be given instructions about what to do before the test starts by a voice recording, which may be played through a CD player or a computer. Sometimes an adult in the room may read the instructions to you.

## What kind of questions are in the question booklets?

In the test, it will take about an hour to answer the questions in each booklet.

There are a number of sections in each booklet. You may be asked questions about reading, sentences, words and their meanings, mathematics and you will also be asked to solve some shape puzzles.

Each section starts with some examples, showing how to answer the different types of questions.

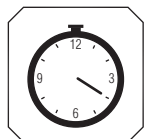
**Example questions  
are numbered using  
Roman numerals  
from i up to vi.**

Roman numeral	number
i	1
ii	2
iii	3
iv	4
v	5
vi	6

**Please note**, these numbers will be read-out on the voice recording as 'one', 'two', 'three' etc.

Within each section, you can look back to the example page as often as you wish.

The time available to answer the questions is shown at the start of each section, at the bottom of the example page.



**You have 20 minutes for this section.**

# How to answer the questions

The heading of the section you are working on in the question booklet will be the same on the answer sheet.

## Maths 1

**Example i.**  
What is  $18 - 15$ ?  
The answer is 3.  
The answer 3 has been completed for you on your answer sheet.  
The number 3 is written as '03' in the top boxes and the matching digits '0' and '3' are marked in the boxes below.

0	3
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

page 12

i	0	3
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

**Example ii.**  
What is  $4 \times 3$ ?  
The answer is 12.  
Mark the boxes and write the answer on your answer sheet.  
Remember to write the number in the spaces at the top of the boxes AND mark the matching digit below each number.

Remember, your test is marked by a computer and it can only record the marked boxes.

page 15

1		
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

page 16

4		
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

page 17

7		
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

You must make sure that you mark your answers in the **CORRECT SECTION** of the answer sheet.

	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

7	7
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

1		
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

7	7
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

4		
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

7	7
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

7		
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

7	7
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

The rows on the answer sheet are arranged to match the pages of the question booklet.

The green text tells you on which page the questions appear in the question booklet.

Use this information to check that you are marking your answer in the correct place.

## Take care!

If you miss out an answer, remember to leave a gap and mark your next answer on the correct line.


### Remember:

In the real test, you will be given a separate answer sheet for each question booklet.

You **DO NOT** mark your answers in the question booklet. Following the real test, a computer is used to mark your answer sheets, your question booklets will not be marked, so it is not a good use of your time to be writing answers into the question booklets.

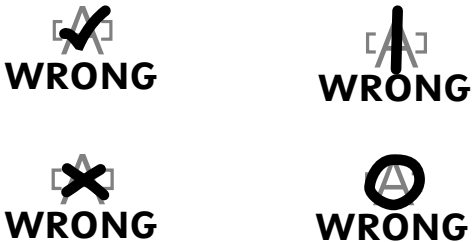
Mark your answers carefully with one straight line, using a pencil





The **RIGHT** way to mark your answers on the answer sheet



~~A~~ [B] [C] [D]  
**RIGHT**

The **WRONG** way to mark your answers on the answer sheet



 **WRONG**       **WRONG**  
 **WRONG**       **WRONG**

Mark only one answer on each line.

If you don't know an answer, move-on, but take care to mark your next answer on the correct line.

If you make a mistake, or change your mind, rub-out your answer carefully and clearly mark the new answer.

## What will a Maths section be like?

The maths sections test your ability to solve problems which will require you to use your knowledge of addition, subtraction, division and multiplication to answer them. In the real test, there are likely to be 2 maths sections.

# Maths 1 questions: Examples

- At the beginning of the Maths 1 exercise, there are four examples which explain the two methods of answering the maths questions.
- The first 12 questions ask for a 2-digit answer
- The next 12 questions ask you to choose your answer from 5 options, the choices are labelled A, B, C, D and E.

**Maths 1 - Examples**

<p>page 12</p> <p>i</p> <table border="1"> <tr><td>0</td><td>3</td></tr> <tr><td><del>0</del></td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td><del>3</del></td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> </table>		0	3	<del>0</del>	0	1	1	2	2	3	<del>3</del>	4	4	5	5	6	6	7	7	8	8	9	9	<p>page 12</p> <p>ii</p> <table border="1"> <tr><td></td><td></td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> </table>				0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	<p>page 13</p> <p>iii</p> <table border="1"> <tr><td>A</td><td><del>B</del></td><td>C</td><td>D</td><td>E</td></tr> </table> <p>iv</p> <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> </table>		A	<del>B</del>	C	D	E	A	B	C	D	E																																																																				
0	3																																																																																																																														
<del>0</del>	0																																																																																																																														
1	1																																																																																																																														
2	2																																																																																																																														
3	<del>3</del>																																																																																																																														
4	4																																																																																																																														
5	5																																																																																																																														
6	6																																																																																																																														
7	7																																																																																																																														
8	8																																																																																																																														
9	9																																																																																																																														
0	0																																																																																																																														
1	1																																																																																																																														
2	2																																																																																																																														
3	3																																																																																																																														
4	4																																																																																																																														
5	5																																																																																																																														
6	6																																																																																																																														
7	7																																																																																																																														
8	8																																																																																																																														
9	9																																																																																																																														
A	<del>B</del>	C	D	E																																																																																																																											
A	B	C	D	E																																																																																																																											
<p>Questions</p> <p>page 15</p> <p>1</p> <table border="1"> <tr><td></td><td></td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> </table>				0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	<p>page 16</p> <p>4</p> <table border="1"> <tr><td></td><td></td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> </table>				0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	<p>page 17</p> <p>7</p> <table border="1"> <tr><td></td><td></td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> </table>				0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	<p>page 18</p> <p>10</p> <table border="1"> <tr><td></td><td></td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> </table>				0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	<p>page 18</p> <p>13</p> <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> </table> <p>14</p> <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> </table> <p>page 19</p> <p>15</p> <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> </table> <p>16</p> <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> </table> <p>17</p> <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> </table> <p>18</p> <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> </table>		A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
0	0																																																																																																																														
1	1																																																																																																																														
2	2																																																																																																																														
3	3																																																																																																																														
4	4																																																																																																																														
5	5																																																																																																																														
6	6																																																																																																																														
7	7																																																																																																																														
8	8																																																																																																																														
9	9																																																																																																																														
0	0																																																																																																																														
1	1																																																																																																																														
2	2																																																																																																																														
3	3																																																																																																																														
4	4																																																																																																																														
5	5																																																																																																																														
6	6																																																																																																																														
7	7																																																																																																																														
8	8																																																																																																																														
9	9																																																																																																																														
0	0																																																																																																																														
1	1																																																																																																																														
2	2																																																																																																																														
3	3																																																																																																																														
4	4																																																																																																																														
5	5																																																																																																																														
6	6																																																																																																																														
7	7																																																																																																																														
8	8																																																																																																																														
9	9																																																																																																																														
0	0																																																																																																																														
1	1																																																																																																																														
2	2																																																																																																																														
3	3																																																																																																																														
4	4																																																																																																																														
5	5																																																																																																																														
6	6																																																																																																																														
7	7																																																																																																																														
8	8																																																																																																																														
9	9																																																																																																																														
A	B	C	D	E																																																																																																																											
A	B	C	D	E																																																																																																																											
A	B	C	D	E																																																																																																																											
A	B	C	D	E																																																																																																																											
A	B	C	D	E																																																																																																																											
A	B	C	D	E																																																																																																																											

- In the real test, the methods of answering may be in a different order.
- The first way of marking your answers is by writing a number as tens and units and marking the digits of the same number in the columns below.
- Remember:** if your answer is a single digit number, mark a '0' in the tens column.

## Have a look at Examples i. and ii.

### Example i.

What is  $18 - 15$ ?

The answer is 3.

The answer 3 has been completed for you on your answer sheet.

The number 3 is written as '03' in the top boxes and the matching digits '0' and '3' are marked in the boxes below.

i	0	3
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

- In Example ii. the answer boxes have been left empty for you to practise marking your answer.

### Example ii.

What is  $4 \times 3$ ?

The answer is 12.

Mark the boxes and write the answer on your answer sheet.

Remember to write the number in the spaces at the top of the boxes AND mark the matching digit below each number.

## Try marking your answer here:

- write 1 in the first top box and 2 in the second box
- next, mark a line across 1 in the tens column
- then, mark a line across 2 in the units column
- In the real test there may also be 3-digit answer boxes, which include a hundreds column.

ii		
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>



## Have a look at Examples iii. and iv.

- In examples iii. and iv. you are asked to solve a maths problem and then to choose your answer from 5 options, the choices are labelled A, B, C, D and E.
- Once you have worked out the answer to the problem, find your answer in the table and take note of which letter appears above it.

### Example iii.

What is  $20 + 21$ ?

Choose one option from A - E to answer the question.

A	B	C	D	E
40	41	42	43	44

The answer is: 

B
41

The answer B has been marked for you on your answer sheet.



iii	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D	<input type="radio"/> E
iv	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D	<input type="radio"/> E

- The answer has not been marked in for Example iv. Try to answer the question and then mark in the correct answer.

### Example iv.

Which of these numbers is an even number and is greater than 15?

A	B	C	D	E
11	14	19	22	27

The answer is: 

D
22

Mark the box with the letter D on your answer sheet.

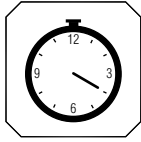
iii	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D	<input type="radio"/> E
iv	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D	<input type="radio"/> E

- As the letter 'D' appears above the correct answer, mark a line across 'D' here.

## How long will you have to answer the Maths questions?

In this exercise there are 24 questions to answer. You will have 20 minutes to answer the questions in this section.

In the real test you will be told how long you have to answer the questions in a section by a message in the question booklet like this:



You have **20** minutes for this section.

The recorded voice instructions will also provide you with a reminder.

## Helpful things to remember

You can write in the question booklet to help you work out the answer, but you must remember to mark your answer on the answer sheet using a pencil.

The question booklet will NOT be marked, so don't spend too much time writing in it, use it for making quick calculations only.

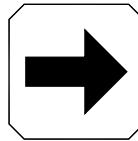
Some of the questions will include simple diagrams. These are not drawn to scale, so do NOT try to measure lengths or angles from them; they are there for information only.

If you are unable to answer a question, move-on to the next question. If you have time at the end you can always come back and try again.

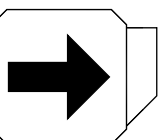
## Take care!

If you miss a question out, remember to mark the answer to the next question on the correct line of your answer sheet.

**Go to the next page.**



**Go to the next page.**



**Example i.**

What is  $18 - 15$ ?

The answer is 3.

The answer 3 has been completed for you on your answer sheet.

The number 3 is written as '03' in the top boxes and the matching digits '0' and '3' are marked in the boxes below.

0	3
<del>0</del>	0
1	1
2	2
3	<del>3</del>
4	4
5	5
6	6
7	7
8	8
9	9

**Example ii.**

What is  $4 \times 3$ ?

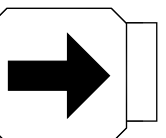
The answer is 12.

Mark the boxes and write the answer on your answer sheet.

Remember to write the number in the spaces at the top of the boxes AND mark the matching digit below each number.

**Remember, your test is marked by a computer and it can only record the marked boxes.**

**Go to the next page.**



### Example iii.

What is  $20 + 21$ ?

Choose one option from A - E to answer the question.

A	B	C	D	E
40	41	42	43	44

The answer is: 

B
41

The answer B has been marked for you on your answer sheet.

---

### Example iv.

Which of these numbers is an even number and is greater than 15?

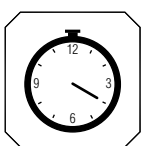
A	B	C	D	E
11	14	19	22	27

The answer is: 

D
22

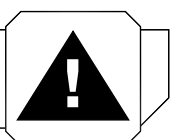
Mark the box with the letter D on your answer sheet.

---

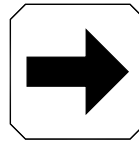


You have **20** minutes for this section.

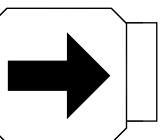
**DO NOT** turn this page until you are told to do so.



**Go to the next page.**



**Go to the next page.**



**Remember to mark your answers on your answer sheet.**

- 1** Alex has 92 DVDs. 12 belong to his brother, 5 to his father and 7 to his best friend. The rest belong to Alex.

How many DVDs does Alex own?

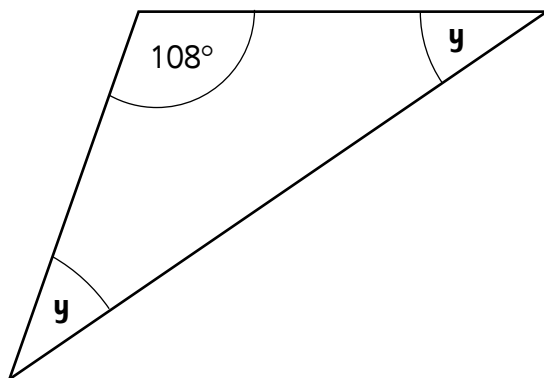
- 2** Sean takes a pie out of the freezer. The temperature of the pie is  $-4^{\circ}\text{C}$ . After 2 hours, the temperature of the pie is  $9^{\circ}\text{C}$ .

What is the change in temperature in  $^{\circ}\text{C}$ ?

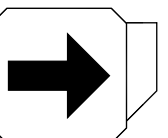
- 3** Both angles labelled **y** are the same size.

What is the size, in degrees, of one of the angles labelled **y**?

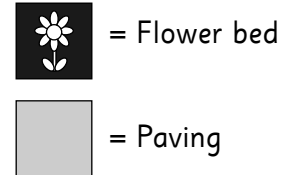
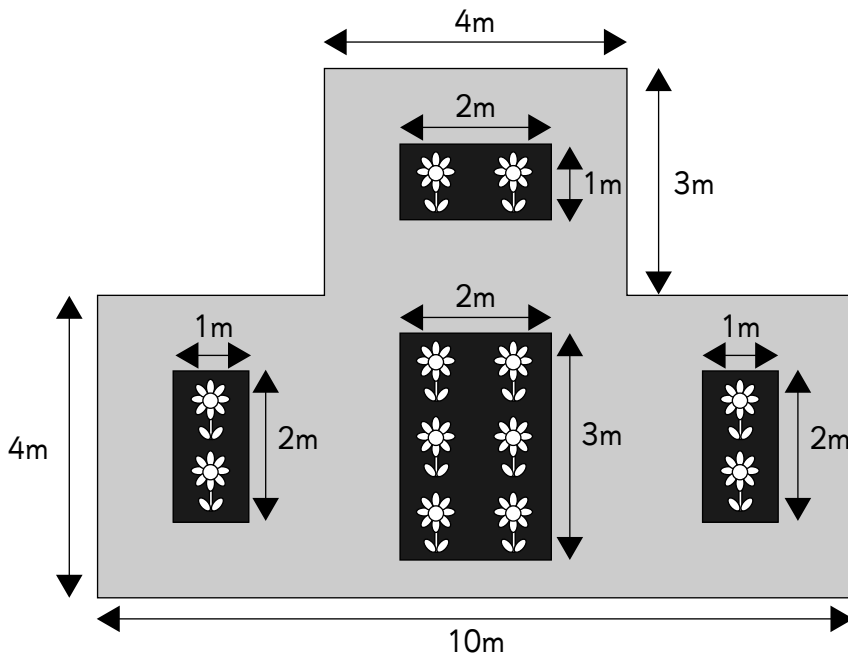
**Information:** The angles in a triangle add up to  $180^{\circ}$



**Go to the next page.**



In a park there is a paved area containing some flower beds as shown below.

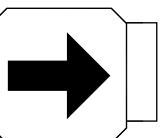


**Information:**

The area of a rectangle is length  $\times$  width

- 4** What is the total area, in  $m^2$ , of the flower beds?
- 5** What is the total distance, in metres, around the outside edge of the paving?
- 
- 6** Stanley sells programmes at a football match for £7 each. The organisers promise to pay him 10% of the cost of each programme he sells. Stanley sells 120 programmes.  
How many pounds should the organisers pay him?

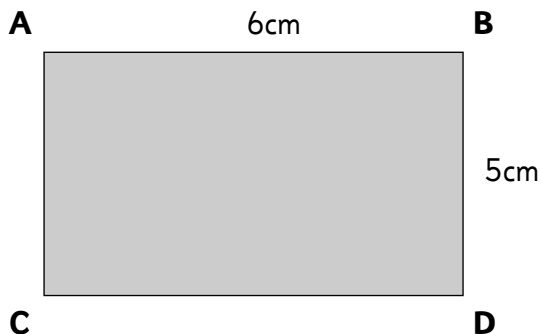
**Go to the next page.**





**7** If  $72 \times 9 = 648$  and  $18 \times ? = 648$ , what is the value of **?**

**8** The area of the rectangle below is  $6\text{cm} \times 5\text{cm} = 30\text{cm}^2$ .



**Information:**

The area of a rectangle is length  $\times$  width.

If the length of each side is doubled, what is the **difference** in area (in  $\text{cm}^2$ ) between the new area and the original area?

**Museum ticket prices**

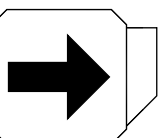
Adults: £8

Children: half the adult price

Buy 10 child tickets and receive 1 adult ticket free.

**9** If 17 children and 3 adults visit the museum, what is the total cost of their tickets?

**Go to the next page.**



- 10** A cycling team has 24 members, of which 12 are girls and 12 are boys.  
In a competition they win 9 medals between them.  
If the girls won 3 more medals than the boys, how many medals did the boys win?
- 11** The team won a mixture of bronze, silver and gold medals. Of the 9 medals won, one third were gold and there was only 1 bronze medal.  
How many silver medals were won?
- 12** Each member of the cycling team competed in the following number of races:
- Each team member competed in different races.
  - 2 members competed in 3 races.
  - The rest competed in only 2 races.
- What is the total number of races that the members competed in?

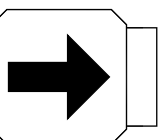
- 13** A shopkeeper buys a box of 5 coffee mugs for £30. He wishes to sell them separately for double the cost he paid for each mug. How much will he sell each mug for?

A	B	C	D	E
£6.00	£8.00	£10.00	£12.00	£60.00

- 14** Adrian and Neera ran a 100m race. Adrian finished in 18.70 seconds. Neera finished in 17.35 seconds. What is the difference between Neera and Adrian's running times?

A	B	C	D	E
0.35 seconds	1.35 seconds	1.40 seconds	1.45 seconds	1.65 seconds

**Go to the next page.**

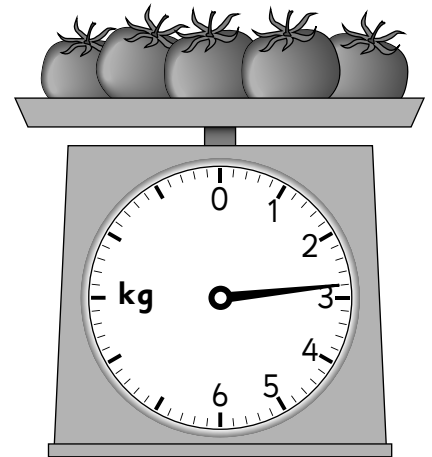


- 15** Ed buys tickets to a concert. Adult tickets cost £20 and child tickets are 25% cheaper. He buys 2 adult tickets and 1 child ticket. How much does he spend?

A	B	C	D	E
£40	£44	£45	£50	£55

- 16** Michael needs 5.5kg of tomatoes. He puts some tomatoes on the scale as shown. How many more kg of tomatoes does he need?

A	B	C	D	E
2.5kg	2.6kg	2.7kg	2.8kg	2.9kg



- 17** In 5 years I will be half the age my uncle is now. My uncle is 46. How old am I?

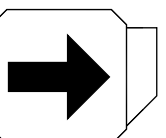
A	B	C	D	E
16	17	18	19	20

- 18**
- | Tour       | Start Time | Duration of Tour |
|------------|------------|------------------|
| Ghost Tour | 11:15      | 85 minutes       |

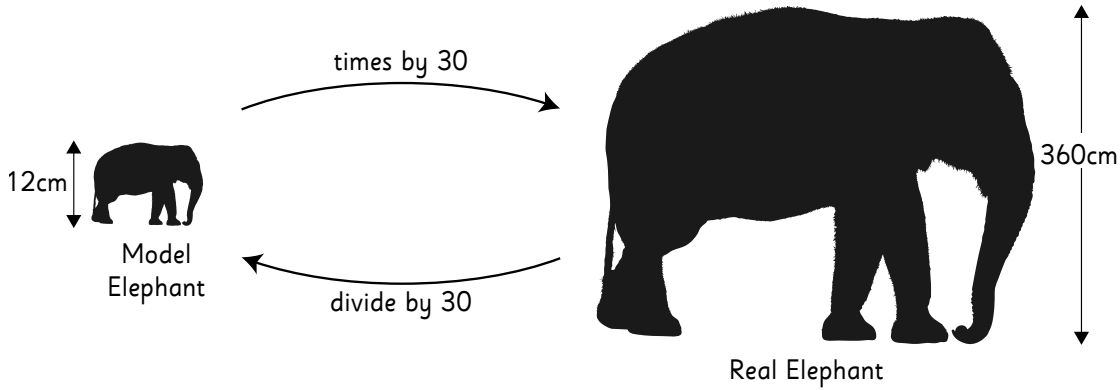
What time will the Ghost Tour return?

A	B	C	D	E
12:15	12:20	12:30	12:35	12:40

**Go to the next page.**



**Information:** 1 metre (m) = 100 centimetres (cm)



### Example

Harry collects animals for his model zoo. The scale of his model is 1:30. This means that a model elephant that is 12cm high is based on a real elephant that is 360cm high.

(  $12 \times 30 = 360$  and  $360 \div 30 = 12$  )

- 19** A model lion is 7.5cm long. What would be the length of a real lion?

A	B	C	D	E
150cm	175cm	210cm	215cm	225cm

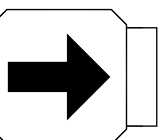
- 20** A real giraffe is 4.8m tall. How tall will a model giraffe be?

A	B	C	D	E
15cm	16cm	17cm	18cm	20cm

- 21** Books are packed into boxes for storage. There are 5, 6 or 7 books in a box. Which option could be the possible number of books in 4 boxes?

A	B	C	D	E
18	19	23	29	30

**Go to the next page.**



**22**

**Moreton Car Park parking charges**

First 2 hours	free
Next 2 hours	80p per hour
Additional hours	50p per hour

How much will it cost to park for 7 hours?

A	B	C	D	E
£2.50	£3.10	£3.50	£4.10	£5.60

**23**

Steven's birthday is on Saturday 22nd April.

If his birthday is in 19 days' time, what day would it be today?

A	B	C	D	E
Monday	Tuesday	Wednesday	Thursday	Friday

**24**

The diagram shows a number line.

Some of the values are missing.



What is the value at the point Y?

A	B	C	D	E
$\frac{9}{4}$	$\frac{10}{4}$	$\frac{11}{4}$	$\frac{12}{4}$	$\frac{13}{4}$

**STOP WORKING. You may check your work from this section only.**



## Answer sheets

The following pages contain the answer sheets, which you can remove from the booklet.

### Remember


The **RIGHT** way to mark your answers on the answer sheet



The **WRONG** way to mark your answers on the answer sheet



Answers to Maths 1 section							
Question	Answer		Question	Answer		Question	Answer
1	68		9	84		17	C
2	13		10	3		18	E
3	36		11	5		19	E
4	12		12	50		20	B
5	34		13	D		21	C
6	84		14	B		22	B
7	36		15	E		23	A
8	90		16	C		24	C

	Exam No:	DfE Number:
	Name:	Gender:
	Date of Birth:	Date of Test:
	Current School:	
	Venue:	
	Session:	

Please write your name here:

Do not write outside the box.

**Instructions**

1. Check that you are marking the answer for the correct question number.
2. Mark ONE answer only for each question on this answer sheet.
3. Use an HB pencil and rub out any errors thoroughly.

Remember, you **must** mark the answers the **RIGHT** way like this: ~~A~~ For example, ~~A~~ B C D

**Comprehension**

**Examples** page 2

- i ~~A~~ B C D  
 ii A B C D

**Questions** page 4

- 1 A B C D

page 5

- 2 A B C D

- 3 A B C D

- 4 A B C D

- 5 A B C D

- 6 A B C D

- 7 A B C D

- 8 A B C D

- 9 A B C D

page 7

- 10 A B C D

- 11 A B C D

- 12 A B C D

page 8

- 13 A B C D

- 14 A B C D

- 15 A B C D

- 16 A B C D

page 9

- 17 A B C D

- 18 A B C D

- 19 A B C D

- 20 A B C D

page 10

- 21 A B C D

- 22 A B C D

- 23 A B C D

- 24 A B C D

**Word Choice**

**Examples** page 12

- i A ~~B~~ C D E  
 ii A B C D E

**Questions** page 13

- 1 A B C D E

- 2 A B C D E

- 3 A B C D E

- 4 A B C D E

- 5 A B C D E

- 6 A B C D E

- 7 A B C D E

page 14

- 8 A B C D E

- 9 A B C D E

- 10 A B C D E

- 11 A B C D E

- 12 A B C D E

- 13 A B C D E

- 14 A B C D E

page 15

- 15 A B C D E

- 16 A B C D E

- 17 A B C D E

- 18 A B C D E

- 19 A B C D E

- 20 A B C D E

- 21 A B C D E

page 16

- 22 A B C D E

- 23 A B C D E

- 24 A B C D E

- 25 A B C D E

- 26 A B C D E

- 27 A B C D E

- 28 A B C D E

**Pictures 1**

**Examples** page 18

- i ~~A~~ B C D E F  
 ii A B C D E F

**Questions** page 20

- 1 A B C D E F

- 2 A B C D E F

- 3 A B C D E F

page 21

- 4 A B C D E F

- 5 A B C D E F

- 6 A B C D E F

page 22

- 7 A B C D E F

- 8 A B C D E F

- 9 A B C D E F

page 23

- 10 A B C D E F

- 11 A B C D E F

- 12 A B C D E F

page 24

- 13 A B C D E F

- 14 A B C D E F

- 15 A B C D E F

page 25

- 16 A B C D E F

- 17 A B C D E F

- 18 A B C D E F

page 26

- 19 A B C D E F

- 20 A B C D E F

- 21 A B C D E F

You can cut off these pages to make it easier to mark your answers.

Remember, you **must** mark the answers the **RIGHT** way like this: ~~A~~ For example, ~~A~~ B C D

Maths 1 - Examples

page 12

i	0	3
	<del>0</del>	<del>0</del>
	1	1
	2	2
	3	<del>3</del>
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

page 12

ii		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

page 13

iii	A	<del>B</del>	C	D	E
iv	A	B	C	D	E

Questions

page 15

1		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

page 16

4		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

page 17

7		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

page 18

10		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

page 18

13	A	B	C	D	E
14	A	B	C	D	E

page 19

15	A	B	C	D	E
16	A	B	C	D	E
17	A	B	C	D	E
18	A	B	C	D	E

page 20

19	A	B	C	D	E
20	A	B	C	D	E
21	A	B	C	D	E

page 21

22	A	B	C	D	E
23	A	B	C	D	E
24	A	B	C	D	E

2		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

5		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

8		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

11		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

3		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

6		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

9		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

12		
	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

Carefully mark your answers here. Make sure you have the right question.



**This page has been left blank.**

**This page has been left blank.**

**This page has been left blank.**

**WARNING:** THIS PAPER AND ITS CONTENTS ARE COPYRIGHT PROTECTED. ANY UNAUTHORISED REPRODUCTION, MODIFICATION, DISTRIBUTION, DISPLAY, TRANSMISSION OR PUBLICATION OF THIS PAPER OR ANY CONTENT CONTAINED HEREIN IS ILLEGAL AND IS EXPRESSLY PROHIBITED. THE COPYRIGHT HOLDER RESERVES THE RIGHT TO TAKE FORMAL LEGAL ACTION AGAINST ANYONE FOUND TO HAVE ILLEGALLY PHOTOCOPIED, REPRODUCED OR PUBLISHED (INCLUDING VIA ANY THIRD PARTY WEBSITE BY ANY MEANS), OR TRANSMITTED THIS PAPER IN WHOLE OR IN PART, IN ANY FORM OR BY ANY MEANS. ALL RIGHTS ARE RESERVED. FAILURE TO COMPLY WITH THIS NOTICE SHALL ESTABLISH PERSONAL LIABILITY AGAINST THE OFFENDER AND THE COPYRIGHT HOLDER RESERVES THE RIGHT TO PURSUE CIVIL ACTION AGAINST ANY INDIVIDUAL FOUND TO BE IN BREACH OF THIS WARNING. SUCH ACTION MAY GIVE RISE TO SIGNIFICANT FINANCIAL PENALTY OR CRIMINAL PROSECUTION.