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| **Cambridge Secondary 2** |  |

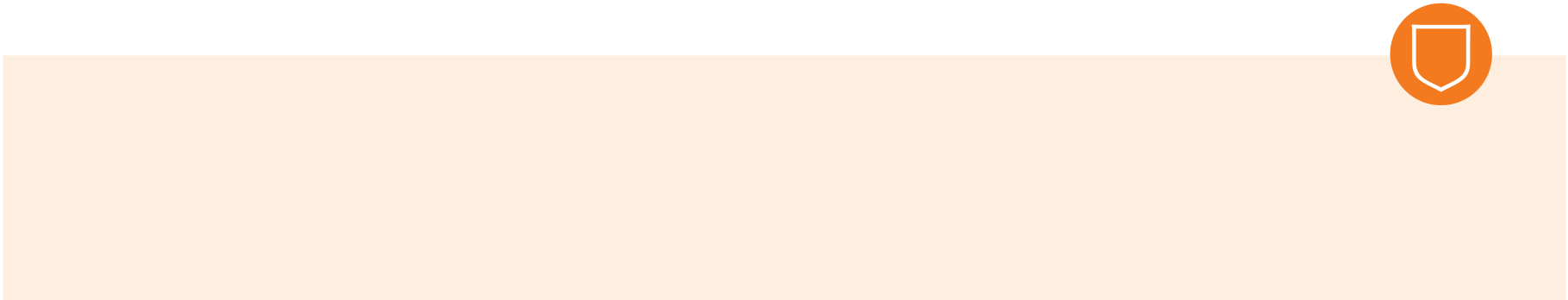
**Syllabus**   
Cambridge IGCSE®  
Mathematics **0580**

For examination in June and November 2019.

Also available for examination in March 2019 for India only.



Version 1 



**Why choose Cambridge?**

Cambridge International Examinations prepares school students for life, helping them develop an informed curiosity and a lasting passion for learning. We are part of Cambridge Assessment, a department of the University of Cambridge.

Our international qualifications are recognised by the world’s best universities and employers, giving students a wide range of options in their education and career. As a not-for-profit organisation, we devote our resources to delivering high-quality educational programmes that can unlock students’ potential.

Our programmes and qualifications set the global standard for international education. They are created by subject experts, rooted in academic rigour and reflect the latest educational research. They provide a strong platform for learners to progress from one stage to the next, and are well supported by teaching and learning resources.

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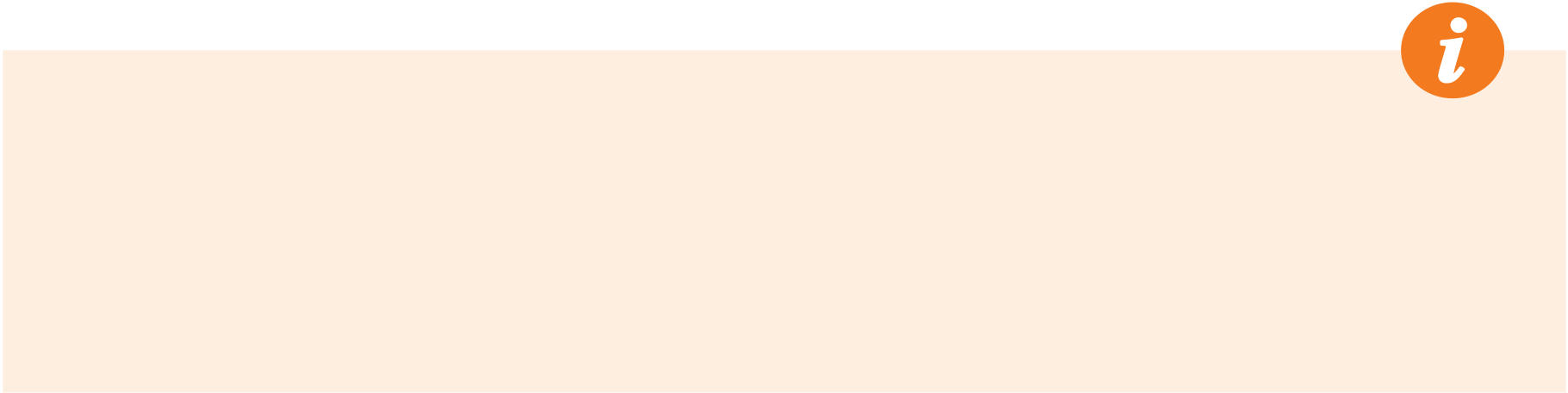
**Christoph Guttentag**, Dean of Undergraduate Admissions, Duke University, USA

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**Changes to this syllabus**

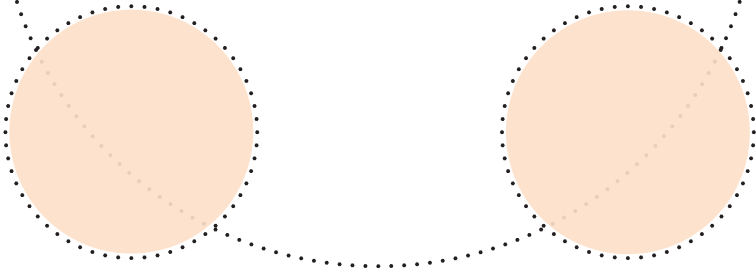
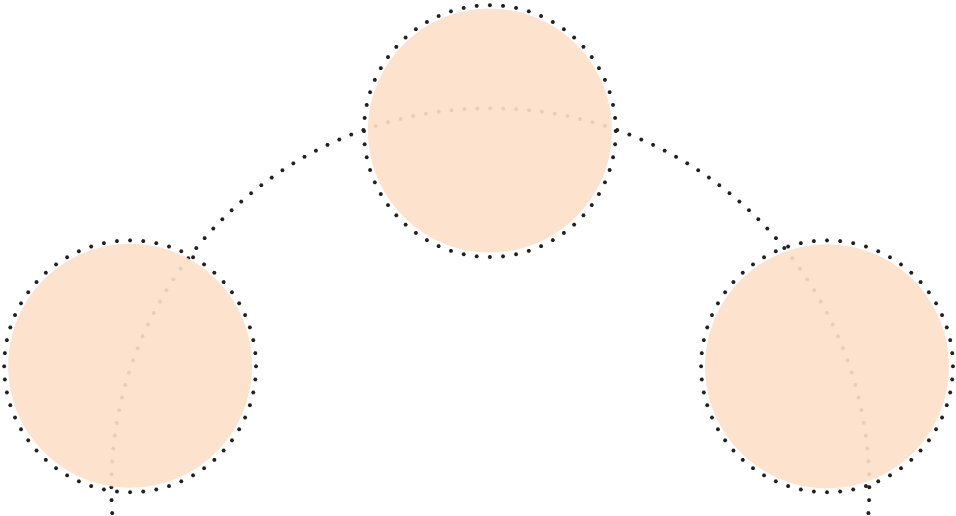
For information on changes to this syllabus for 2019, see page 37

The latest syllabus is version 1, published September 2016. There are no significant changes

which affect teaching.

Any textbooks endorsed to support the syllabus for examination from 2017 are still suitable for

use with this syllabus.



Cambridge IGCSE Mathematics 0580 syllabus for 2019.

**1 Why choose this syllabus?**

Key benefits

Cambridge IGCSE® syllabuses are created especially for international students. For over 25 years, we have worked with schools and teachers worldwide to develop syllabuses that are suitable for different countries, different types of schools and for learners with a wide range of abilities.

Cambridge IGCSE Mathematics learners gain lifelong benefits, including:

•� the development of their mathematical knowledge

•� confidence, by developing a feel for numbers, patterns and relationships

•� an ability to consider and solve problems and present and interpret results

•� skills in communication and reasoning using mathematical concepts

•� a solid foundation for further study.

Our programmes balance a thorough knowledge and understanding of a subject and help to develop the skills learners need for their next steps in education or employment.

Our approach encourages learners to be:

**Responsible**

**Confident**  **Reflective**   
 **Cambridge**   
 **learners**

**Engaged**  **Innovative**

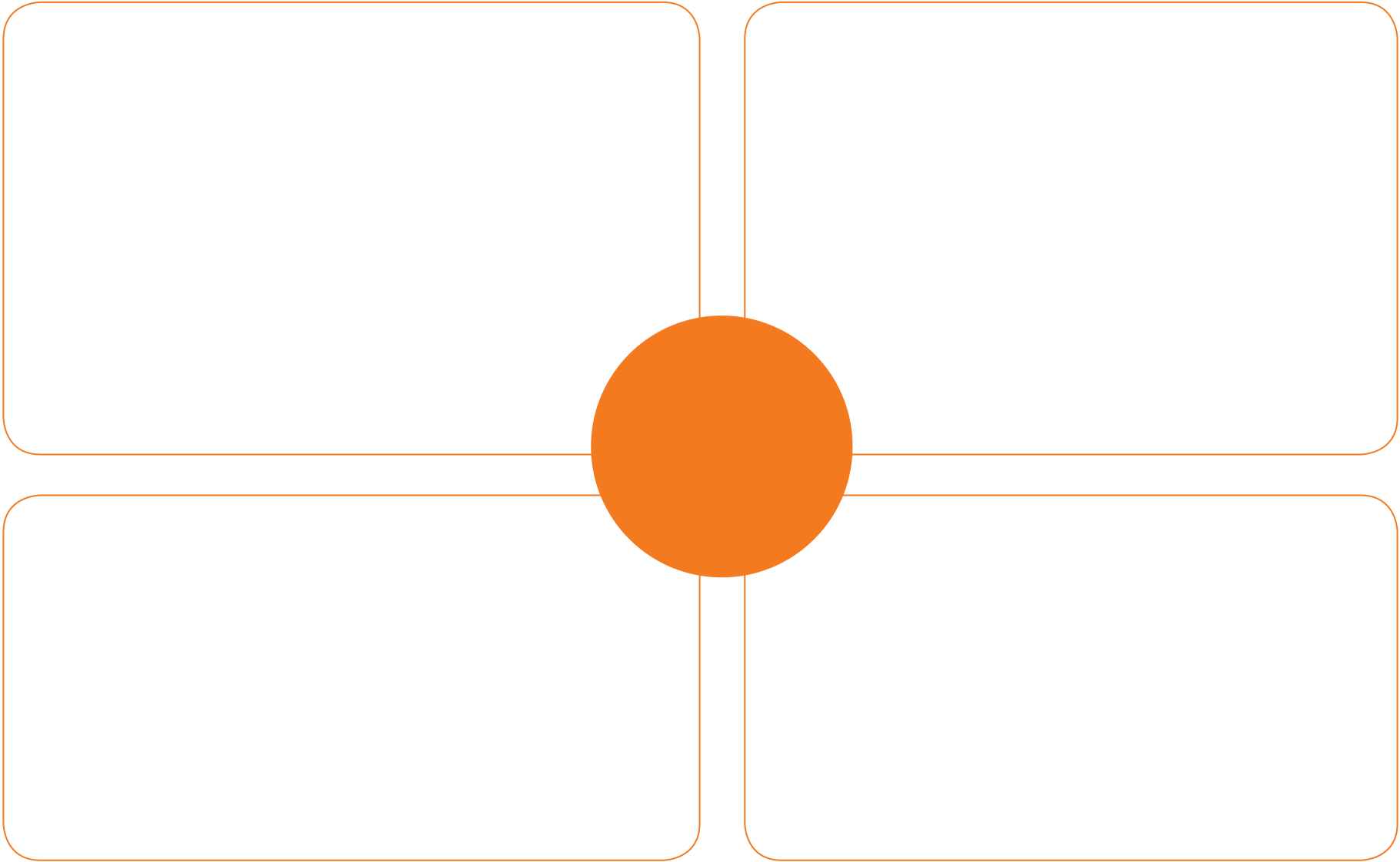
‘The strength of Cambridge IGCSE qualifications is internationally recognised

and has provided an international pathway for our students to continue their

studies around the world.’

**Gary Tan**, Head of Schools and CEO, Raffles International Group of Schools, Indonesia

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Why choose this syllabus?

Recognition and progression

The combination of knowledge and skills in Cambridge IGCSE Mathematics gives learners a solid foundation for further study. Candidates who achieve grades A\* to C are well prepared to follow a wide range of courses including Cambridge International AS & A Level Mathematics.

Cambridge IGCSEs are accepted and valued by leading universities and employers around the world as evidence of academic achievement. Many universities require a combination of Cambridge International AS & A Levels and Cambridge IGCSEs to meet their entry requirements.

Learn more at www.cie.org.uk/recognition

Supporting teachers

We provide a wide range of practical resources, detailed guidance and innovative training and professional development so that you can give your learners the best possible preparation for Cambridge IGCSE.

**Teaching resources**  **Exam preparation resources**

•�Syllabus •�Question�papers

•�Scheme�of�work •�Mark�schemes

•�Learner�guide •�Example�candidate�responses�to�

•�Endorsed�textbooks�and�digital�resources•�Teacher�support�teachers.cie.org.uk  
•�Discussion�forum  
•�Resource�List

understand what examiners are looking for at key grades

•� �Examiner�reports�to�improve�future�

|  |  |
| --- | --- |
| **Support for** | teaching |

**Cambridge**   
**IGCSE**

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•�Online�tutor-led�training  
•�Professional�development�qualifications

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‘Cambridge IGCSE is one of the most sought-after and recognised   
qualifications in the world. It is very popular in Egypt because it provides the perfect preparation for success at advanced level programmes.’

**Mrs Omnia Kassabgy**, Managing Director of British School in Egypt BSE

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.

**2 Syllabus overview**

Aims

The syllabus aims summarise the context in which you should view the syllabus content and describe

the purposes of a course based on this syllabus. They are not listed in order of priority.

The aims are to enable candidates to:

•� develop their mathematical knowledge and oral, written and practical skills in a way which

encourages confidence and provides satisfaction and enjoyment

•� read mathematics, and write and talk about the subject in a variety of ways

•� develop a feel for number, carry out calculations and understand the significance of the results

obtained

•� apply mathematics in everyday situations and develop an understanding of the part which

mathematics plays in the world around them

•� solve problems, present the solutions clearly, check and interpret the results

•� develop an understanding of mathematical principles

•� recognise when and how a situation may be represented mathematically, identify and interpret

relevant factors and, where necessary, select an appropriate mathematical method to solve the

problem

•� use mathematics as a means of communication with emphasis on the use of clear expression

•� develop an ability to apply mathematics in other subjects, particularly science and technology

•� develop the abilities to reason logically, to classify, to generalise and to prove

•� appreciate patterns and relationships in mathematics

•� produce and appreciate imaginative and creative work arising from mathematical ideas

•� develop their mathematical abilities by considering problems and conducting individual and

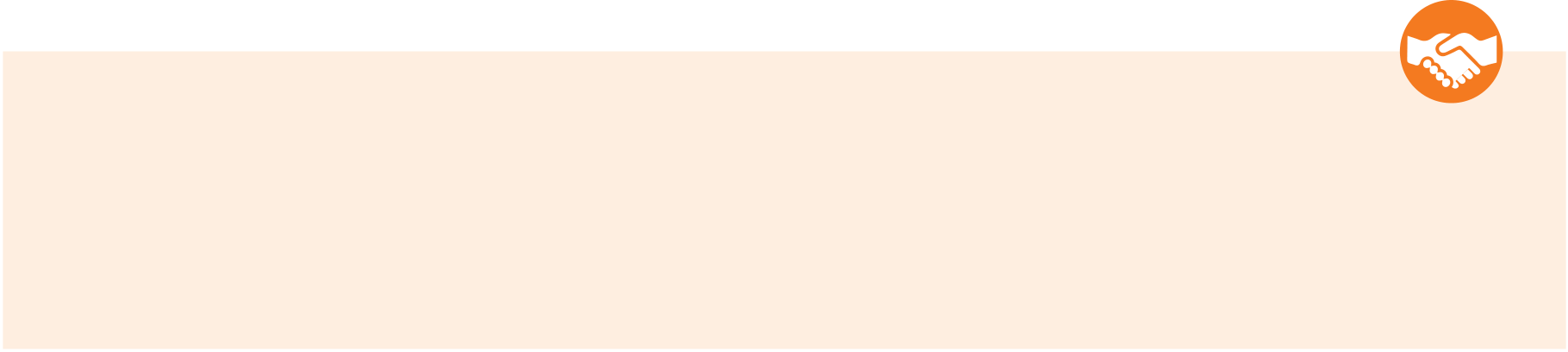
co-operative enquiry and experiment, including extended pieces of work of a practical and

investigative kind

•� appreciate the interdependence of different branches of mathematics

•� acquire a foundation appropriate to their further study of mathematics and of other disciplines.

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Syllabus overview

Content

Candidates may follow either the Core curriculum or the Extended curriculum. Candidates aiming for grades A\* to C should follow the Extended curriculum.

All candidates will study the following topics:

1 Number

2 Algebra and graphs

3 Geometry

4 Mensuration

5 Co-ordinate geometry

6 Trigonometry

7 Matrices and transformations

8� Probability

9 Statistics

The study of mathematics offers opportunities for the use of ICT, particularly spreadsheets and graph-drawing packages. For example, spreadsheets may be used in the work on percentages (C1.12 and E1.12), personal and small business finance (C1.16 and E1.16), algebraic formulae (C2.1 and E2.1), statistics (C9 and E9), etc. Graph-drawing packages may be used in the work on graphs in practical situations and graphs of functions (C2 and E2), statistics (C9 and E9), etc. It is important to note that use or knowledge of ICT will **not** be assessed in the examination papers.

Although use of an electronic calculator is permitted on all examination papers, candidates should develop�a�full�range�of�mental�and�non-calculator�skills�during�the�course�of�study.�Questions�demonstrating the mastery of such skills may be asked in the examination.

As well as demonstrating skill in the techniques listed in section 3, ‘Subject content’, candidates will be expected to apply them in the solution of problems.

The weightings in the assessment of the main topic areas of Mathematics are shown in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Components** | **Number** | **Algebra** | **Space and** | **Statistics and** |
| **%** | **%** | **shape** | **probability** |
| **%** | **%** |
| Core�(Papers�1�and�3) | 30–35 | 20–25 | 30–35 | 10–15 |
| Extended�(Papers�2�and�4) | 15–20 | 35–40 | 30–35 | 10–15 |

**Teacher support for Cambridge IGCSE Mathematics**

We provide a wide range of support resources to give your learners the best possible   
preparation for Cambridge programmes and qualifications. Support for IGCSE Mathematics includes a Scheme of Work and Example Candidate Responses. These and other resources are available online through Teacher Support at https://teachers.cie.org.uk

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Syllabus overview

Assessment

All candidates take two papers.

Candidates who have studied the Core syllabus content, or who are expected to achieve a grade D or below�should�be�entered�for�Paper�1�and�Paper�3.�These�candidates�will�be�eligible�for�grades�C�to�G.�

Candidates who have studied the Extended syllabus content, and who are expected to achieve a grade�C�or�above�should�be�entered�for�Paper�2�and�Paper�4.�These�candidates�will�be�eligible�for�grades A\* to E.

|  |
| --- |
| **Core candidates take:** |

|  |
| --- |
| **Extended candidates take:** |

**Paper 1 Core**  1 hour **Paper 2 Extended**  1 hour 30 minutes

56 marks 35% 70 marks 35%

Short-answer questions based on the Short-answer questions based on the

Core curriculum Extended curriculum

Externally marked Externally marked

|  |  |
| --- | --- |
| |  | | --- | | **and:** | |

|  |  |
| --- | --- |
| |  | | --- | | **and:** | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Paper 3 Core** | 2 hours | **Paper 4 Extended** | 2 hours 30 minutes |
| 104 marks | 65% | 130 marks | 65% |
| Structured questions based on the Core | | Structured questions based on the | |
| curriculum | | Extended curriculum | |
| Externally marked. | | Externally marked. | |
| •� | Candidates should have an electronic calculator for all papers. Algebraic or graphical calculators | | | |

are not permitted. Three significant figures will be required in answers except where otherwise stated.

•� Candidates should use the value of π from their calculators if their calculator provides this. Otherwise, they should use the value of 3.142 given on the front page of the question paper only.

|  |  |  |  |
| --- | --- | --- | --- |
| 6 | •� | Tracing paper may be used as an additional material for all of the written papers. | **Back to contents page** |
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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Syllabus overview

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.

**3 Subject content**

Candidates may follow either the Core curriculum or the Extended curriculum. Candidates aiming for

grades A\* to C should follow the Extended curriculum.

|  |  |  |
| --- | --- | --- |
| **C1 Number** | |  |
| Core curriculum | | Notes/Examples  Includes expressing numbers as a |
| C1.1 | Identify and use natural numbers, integers |

C1.2

|  |  |  |
| --- | --- | --- |
| (positive, negative and zero), prime  numbers, square numbers, common factors and common multiples, rational | | product of prime factors.  Finding the Lowest Common  Multiple (LCM) and Highest Common Factor (HCF) of two numbers. |
| and irrational numbers (e.g. π, | 2 ), real |
| numbers. | |

*Extended curriculum only*

C1.3 Calculate squares, square roots, cubes and   
 cube roots of numbers.

|  |  |  |
| --- | --- | --- |
| C1.4 | Use directed numbers in practical situations. | e.g. temperature changes, flood levels. |
| C1.5 | Use the language and notation of |

simple vulgar and decimal fractions and   
percentages in appropriate contexts.

Recognise equivalence and convert   
between these forms.

C1.6 Order quantities by magnitude and   
 demonstrate familiarity with the symbols   
 =, ≠, ., ,, ⩾, ⩽.

|  |  |  |
| --- | --- | --- |
| C1.7 | Understand the meaning and rules of | Evaluate 25, 5–2, 1000 |
| C1.8 | indices. | Work out 2–3 × 24 |
| Use the standard form *A* × 10*n* where *n* | Convert numbers into and out of |
| is a positive or negative integer, and | standard form. |
| 1 <*A*, 10. | Calculate with values in standard form. |
| Use the four rules for calculations with |

whole numbers, decimals and vulgar (and   
mixed) fractions, including correct ordering   
of operations and use of brackets.

|  |  |  |
| --- | --- | --- |
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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Subject content

|  |
| --- |
| **E1 Number** |

|  |  |  |
| --- | --- | --- |
| E1.1 | Extended curriculum | Notes/Examples |
| Identify and use natural numbers, integers | Includes expressing numbers as a |

(positive, negative and zero), prime   
numbers, square numbers, common factors and common multiples, rational and irrational numbers (e.g. π, 2 ), real numbers.

product of prime factors.

Finding the Lowest Common   
Multiple (LCM) and Highest Common Factor (HCF) of two or more numbers.

|  |  |  |  |
| --- | --- | --- | --- |
| E1.2 | Use language, notation and Venn diagrams | Notation | *n*(*A*) |
| to describe sets and represent relationships | Number of elements in set *A* |
| E1.3 | between sets. | “…is an element of…” | ∈ |
| “…is not an element of…” | ∉ |
| Definition of sets |
| Complement of set *A* | *A*’ |
| e.g. *A* = {*x*: *x* is a natural number} |
| The empty set | ∅ |
| *B* = {(*x*,*y*): *y* = *mx* + *c*} |
| Universal set |  |
| *C* = {*x*: *a*⩽*x*⩽*b*} |
| *A* is a subset of *B* | *A*⊆*B* |
| *D* = {*a*, *b*, *c*, …} |
| *A* is a proper subset of *B* | *A*⊂*B* |
| *A* is not a subset of *B* | *A*⊈*B* |
| *A* is not a proper subset of *B* | *A*⊄*B* |
| Calculate squares, square roots, cubes and | Union of *A* and *B* | *A*∪*B* |
| Intersection of *A* and *B* | *A*∩*B* |

cube roots of numbers.

|  |  |  |
| --- | --- | --- |
| E1.4 | Use directed numbers in practical situations. | e.g. temperature changes, flood levels. |
| E1.5 | Use the language and notation of |

simple vulgar and decimal fractions and   
percentages in appropriate contexts.

E1.6

|  |  |
| --- | --- |
| Recognise equivalence and convert between these forms. | Includes the conversion of recurring  decimals to fractions, e.g. change . 0 7o to |

a fraction.

Order quantities by magnitude and   
demonstrate familiarity with the symbols   
=, ≠, ., ,, ⩾, ⩽.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| E1.7 | Understand the meaning and rules of | 5 | 1 | = | 5 |  |  |  |  | 1 |  |  |  | 2 |
| 2 |
| indices. |
| Evaluate | | | |
|  |  | 5 | - | 2 , | 100 | 2 | , | 8 | - | 3 |

Work out 2–3× 24

|  |  |  |
| --- | --- | --- |
| E1.8 | Use the standard form *A* × 10*n* where *n* | Convert numbers into and out of |
| is a positive or negative integer, and | standard form. |
| 1 <*A*, 10. | Calculate with values in standard form. |
| Use the four rules for calculations with |

whole numbers, decimals and vulgar (and   
mixed) fractions, including correct ordering   
of operations and use of brackets.

|  |  |  |
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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Subject content

|  |
| --- |
| **C1 Number** |

|  |  |  |
| --- | --- | --- |
| C1.9 | Core curriculum continued | Notes/Examples continued |
| Make estimates of numbers, quantities and |

lengths, give approximations to specified   
numbers of significant figures and decimal   
places and round off answers to reasonable   
accuracy in the context of a given problem.

|  |  |  |
| --- | --- | --- |
| C1.10 | Give appropriate upper and lower bounds | e.g. measured lengths. |

for data given to a specified accuracy.

|  |  |  |
| --- | --- | --- |
| C1.11 | Demonstrate an understanding of ratio and | Divide a quantity in a given ratio. |
| proportion. | Direct and inverse proportion. |

Use common measures of rate. Calculate average speed.

Use scales in practical situations.

C1.12 Calculate a given percentage of a quantity.   
 Express one quantity as a percentage of   
 another.

Calculate percentage increase or decrease.

C1.13 Use a calculator efficiently.   
 Apply appropriate checks of accuracy.

C1.14 Calculate times in terms of the 24-hour and   
 12-hour clock.

Read clocks, dials and timetables.

C1.15 Calculate using money and convert from   
 one currency to another.

|  |  |  |
| --- | --- | --- |
| C1.16 | Use given data to solve problems on | Includes discount, profit and loss. |

C1.17

|  |  |
| --- | --- |
| personal and small business finance involving earnings, simple interest and compound interest. | Knowledge of compound interest formula is not required. |

Extract data from tables and charts.

*Extended curriculum only*

|  |  |  |
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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Subject content

|  |
| --- |
| **E1 Number** |

|  |  |  |
| --- | --- | --- |
| E1.9 | Extended curriculum continued | Notes/Examples continued |
| Make estimates of numbers, quantities and |

lengths, give approximations to specified   
numbers of significant figures and decimal   
places and round off answers to reasonable   
accuracy in the context of a given problem.

|  |  |  |
| --- | --- | --- |
| E1.10 | Give appropriate upper and lower bounds | e.g. measured lengths. |

for data given to a specified accuracy.

Obtain appropriate upper and lower bounds to solutions of simple problems given data to a specified accuracy.

e.g. the calculation of the perimeter or the area of a rectangle.

|  |  |  |
| --- | --- | --- |
| E1.11 | Demonstrate an understanding of ratio and | Divide a quantity in a given ratio. |
| proportion. | Direct and inverse proportion. |

Increase and decrease a quantity by a given   
ratio.

Use common measures of rate. Calculate average speed.

Use scales in practical situations.

E1.12 Calculate a given percentage of a quantity.

Express one quantity as a percentage of

another.

Calculate percentage increase or decrease.

|  |  |  |
| --- | --- | --- |
| E1.13 | Carry out calculations involving reverse | e.g. finding the cost price given the |
| percentages. | selling price and the percentage profit. |
| Use a calculator efficiently. |

Apply appropriate checks of accuracy.

E1.14 Calculate times in terms of the 24-hour and

12-hour clock.

Read clocks, dials and timetables.

E1.15 Calculate using money and convert from

one currency to another.

|  |  |  |
| --- | --- | --- |
| E1.16 | Use given data to solve problems on | Includes discount, profit and loss. |

personal and small business finance involving earnings, simple interest and compound interest.

Extract data from tables and charts.

Knowledge of compound interest

|  |
| --- |
| formula is required.  Value of investment = *P* J + L 100 *r*  N OO P *n*  where *P* is the amount invested, *r* is the |

percentage rate of interest and *n* is the number of years of compound interest.

|  |  |  |
| --- | --- | --- |
| E1.17 | Use exponential growth and decay in | e.g. depreciation, bacteria growth. |

relation to population and finance.

|  |  |  |
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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Subject content

|  |
| --- |
| **C2 Algebra and graphs** |

|  |  |  |
| --- | --- | --- |
| C2.1 | Core curriculum | Notes/Examples |
| Use letters to express generalised numbers |

and express basic arithmetic processes   
algebraically.

Substitute numbers for words and letters in   
formulae.

Transform simple formulae.

Construct simple expressions and set up   
simple equations.

C2.2 Manipulate directed numbers.

C2.3

Use brackets and extract common factors. e.g. expand 3*x*(2*x* – 4*y*), (*x* + 4)(*x* – 7)

e.g. factorise 9*x*2 + 15*xy*

*Extended curriculum only*

C2.4 Use and interpret positive, negative and   
 zero indices.

|  |  |  |
| --- | --- | --- |
| C2.5 | Use the rules of indices. | e.g. simplify 3*x*4 × 5*x*, 10*x*3 ÷ 2*x*2, (*x*6)2 |
| Solve simple linear equations in one |

unknown.

Solve simultaneous linear equations in two   
unknowns.

|  |  |  |
| --- | --- | --- |
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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Subject content

|  |
| --- |
| **E2 Algebra and graphs** |

|  |  |  |
| --- | --- | --- |
| E2.1 | Extended curriculum | Notes/Examples |
| Use letters to express generalised numbers |

and express basic arithmetic processes   
algebraically.

Substitute numbers for words and letters in   
complicated formulae.

E2.2

Construct and transform complicated e.g. transform formulae where the formulae and equations. subject appears twice.

Manipulate directed numbers.

Use brackets and extract common factors. e.g. expand 3*x*(2*x* – 4*y*), (*x* + 4)(*x* – 7), e.g. factorise 9*x*2 + 15*xy*   
Expand products of algebraic expressions.

Factorise where possible expressions of the   
form:   
*ax* + *bx* + *kay* + *kby*   
*a*2*x*2 – *b*2*y*2   
*a*2 + 2*ab* + *b*2   
*ax*2 + *bx* + *c*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| E2.3 |  | e.g. | | *x*  3 | + | | *x* | -2 | | 4 | , | 2 *x*  3 | | |  | 3 | ^ | *x* | - | 5 | h | 3 *a* |  | 9 *a* |  |
|  | Manipulate algebraic fractions. |  | - |  | | 2 | |  | , | 4 | # | 10 | , |
| 3 *a*  4 | ' | 9 *a*  10 | | , |  | | 1 - | | 2 | |  | *x* | 2 |
| E2.4 | Factorise and simplify rational expressions. | *x* | |  | - | 3 | |  |  |  |  |  |  |
| e.g. *x* | | | *x* 2  2- | | - | | 2 | *x* | | | | |
| 5 | *x* | | + | 6 | | | |
| Use and interpret positive, negative and |

zero indices.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Use and interpret fractional indices. | e.g. solve 32*x* = 2 | | | | | 2 3 | *x* | | 1 |
|  | e.g. simplify *x* | | | - # | |
|  | Use the rules of indices. | 2 |
| 2  5 | | 1 *x* | | 1 ' |
| 2 | *x* | - | 2 |
| J K | 2 *x*  3 | | | 5 3 N O |
| E2.5 | Solve simple linear equations in one | KK  L | OO  P |  |  |

unknown.

Solve simultaneous linear equations in two   
unknowns.

Solve quadratic equations by factorisation,   
completing the square or by use of the   
formula.

Solve simple linear inequalities.

|  |  |  |
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| --- |
| **C2 Algebra and graphs** |

C2.6

Core curriculum continued Notes/Examples continued

*Extended curriculum only*

C2.7 Continue a given number sequence.

Recognise patterns in sequences and

relationships between different sequences.

C2.8

Find the *n*th term of sequences. Linear sequences, simple quadratic and

cubic sequences.

*Extended curriculum only*

C2.9 Interpret and use graphs in practical   
 situations including travel graphs and   
 conversion graphs.

Draw graphs from given data.

|  |  |
| --- | --- |
| C2.10 | Construct tables of values for functions of the form *ax* + *b*, ±*x*2 + *ax* + *b*, *x a* (*x* ≠ 0), where *a* and *b* are integer constants. |

Draw and interpret such graphs.

Solve linear and quadratic equations   
approximately by graphical methods.

|  |  |  |  |
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| 14 | C2.11 | *Extended curriculum only* | **Back to contents page** |
| C2.12 | *Extended curriculum only* |
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| **E2 Algebra and graphs** |

|  |  |  |
| --- | --- | --- |
| E2.6 | Extended curriculum continued | Notes/Examples continued |
| Represent inequalities graphically and use | The conventions of using broken lines for |

E2.7

this representation in the solution of simple strict inequalities and shading unwanted

linear programming problems. regions will be expected.

Continue a given number sequence.

Recognise patterns in sequences and

relationships between different sequences.

Find the *n*th term of sequences. Linear sequences, quadratic and cubic

E2.8 Express direct and inverse variation in   
 algebraic terms and use this form of   
 expression to find unknown quantities.

E2.9 Interpret and use graphs in practical   
 situations including travel graphs and   
 conversion graphs.

Draw graphs from given data.

Apply the idea of rate of change to easy   
kinematics involving distance-time and   
speed-time graphs, acceleration and   
deceleration.

Calculate distance travelled as area under a   
linear speed-time graph.

E2.10 Construct tables of values and draw graphs   
 for functions of the form *axn*, where *a* is a   
 rational constant, and   
 *n* = –2, –1, 0, 1, 2, 3, and simple sums   
 of not more than three of these and for   
 functions of the form *ax*, where *a* is a   
 positive integer.

Solve associated equations approximately   
by graphical methods.

Draw and interpret graphs representing   
exponential growth and decay problems.

E2.11 Estimate gradients of curves by drawing   
 tangents.

E2.12 Use function notation, e.g. f(*x*) = 3*x* – 5,   
 f: *x*⟼ 3*x* – 5, to describe simple functions.

Find inverse functions f–1(*x*).

Form composite functions as defined by   
gf(*x*) = g(f(*x*)).

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| **C3 Geometry** |

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| --- | --- | --- |
| C3.1 | Core curriculum | Notes/Examples |
| Use and interpret the geometrical |

terms: point, line, parallel, bearing, right   
angle, acute, obtuse and reflex angles,   
perpendicular, similarity and congruence.

Use and interpret vocabulary of triangles,   
quadrilaterals, circles, polygons and simple   
solid figures including nets.

C3.2 Measure lines and angles.

Construct a triangle given the three sides   
using ruler and pair of compasses only.

Construct other simple geometrical figures   
from given data using ruler and protractor as   
necessary.

Construct angle bisectors and perpendicular   
bisectors using straight edge and pair of   
compasses only.

|  |  |  |  |
| --- | --- | --- | --- |
| 16 | C3.3 | Read and make scale drawings. | Includes properties of triangles, |
| C3.4 | Calculate lengths of similar figures. |
| C3.5 | Recognise rotational and line symmetry |
| (including order of rotational symmetry) in | | quadrilaterals and circles directly related |
| two dimensions. | | to their symmetries. |
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| **E3 Geometry** |

|  |  |  |
| --- | --- | --- |
| E3.1 | Extended curriculum | Notes/Examples |
| Use and interpret the geometrical |

terms: point, line, parallel, bearing, right   
angle, acute, obtuse and reflex angles,   
perpendicular, similarity and congruence.

Use and interpret vocabulary of triangles,   
quadrilaterals, circles, polygons and simple   
solid figures including nets.

E3.2 Measure lines and angles.

Construct a triangle given the three sides   
using ruler and pair of compasses only.

Construct other simple geometrical figures   
from given data using ruler and protractor as   
necessary.

Construct angle bisectors and perpendicular   
bisectors using straight edge and pair of   
compasses only.

E3.3 Read and make scale drawings.

E3.4 Calculate lengths of similar figures.

Use the relationships between areas of   
similar triangles, with corresponding results   
for similar figures and extension to volumes   
and surface areas of similar solids.

|  |  |  |
| --- | --- | --- |
| E3.5 | Recognise rotational and line symmetry | Includes properties of triangles, |
| (including order of rotational symmetry) in | quadrilaterals and circles directly related |
| two dimensions. | to their symmetries. |

Recognise symmetry properties of the   
prism (including cylinder) and the pyramid   
(including cone).

Use the following symmetry properties of   
circles:

•� equal chords are equidistant from the   
 centre

•� the perpendicular bisector of a chord   
 passes through the centre

•� tangents from an external point are   
 equal in length.

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| **C3 Geometry** |

|  |  |  |  |
| --- | --- | --- | --- |
| C3.6 | Core curriculum continued | | Notes/Examples continued |
| Calculate unknown angles using the | | Candidates will be expected to use the |
| following geometrical properties: | | correct geometrical terminology when |
| •� | angles at a point | giving reasons for answers. |
| •� | angles at a point on a straight line and |

intersecting straight lines

•� angles formed within parallel lines

•� angle properties of triangles and

quadrilaterals

•� angle properties of regular polygons

•� angle in a semi-circle

•� angle between tangent and radius of a

circle.

C3.7 Use the following loci and the method of

intersecting loci for sets of points in two

dimensions which are:

•� at a given distance from a given point

•� at a given distance from a given straight

line

•� equidistant from two given points

•� equidistant from two given intersecting

straight lines.

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| **E3 Geometry** |

|  |  |  |  |
| --- | --- | --- | --- |
| E3.6 | Extended curriculum continued | | Notes/Examples continued |
| Calculate unknown angles using the | | Candidates will be expected to use the |
| following geometrical properties: | | correct geometrical terminology when |
| •� | angles at a point | giving reasons for answers. |
| •� | angles at a point on a straight line and |

intersecting straight lines

•� angles formed within parallel lines

•� angle properties of triangles and

quadrilaterals

•� angle properties of regular polygons

•� angle in a semi-circle

•� angle between tangent and radius of a

circle.

•� angle properties of irregular polygons

•� angle at the centre of a circle is twice

the angle at the circumference

•� angles in the same segment are equal

•� angles in opposite segments are

supplementary; cyclic quadrilaterals.

E3.7 Use the following loci and the method of

intersecting loci for sets of points in two

dimensions which are:

•� at a given distance from a given point

•� at a given distance from a given straight

line

•� equidistant from two given points

•� equidistant from two given intersecting

straight lines.

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| **C4 Mensuration** |

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| --- | --- | --- |
| C4.1 | Core curriculum | Notes/Examples |
| Use current units of mass, length, area, | Convert between units including units of |
| volume and capacity in practical situations | area and volume. |

and express quantities in terms of larger or   
smaller units.

C4.2 Carry out calculations involving the   
 perimeter and area of a rectangle, triangle,   
 parallelogram and trapezium and compound   
 shapes derived from these.

C4.3 Carry out calculations involving the   
 circumference and area of a circle.

C4.4 Carry out calculations involving the volume   
 of a cuboid, prism and cylinder and the   
 surface area of a cuboid and a cylinder.

C4.5 Carry out calculations involving the areas   
 and volumes of compound shapes.

|  |  |  |
| --- | --- | --- |
| **C5 Co-ordinate geometry** | |  |
| Core curriculum | | Notes/Examples |
| C5.1 | Demonstrate familiarity with Cartesian |

co-ordinates in two dimensions.

|  |  |  |
| --- | --- | --- |
| C5.2 | Find the gradient of a straight line. | Problems�will�involve�finding�the�gradient� |

where the graph is given.

|  |  |  |  |
| --- | --- | --- | --- |
| 20 | C5.3 | *Extended curriculum only* | Problems�will�involve�finding�the� |
| C5.4 | Interpret and obtain the equation of a |
| straight line graph in the form *y* = *mx* + *c*. | | equation where the graph is given. |
| C5.5 | Determine the equation of a straight line | e.g. find the equation of a line parallel to |
| parallel to a given line. | | *y* = 4*x* – 1 that passes through (0, –3). |
| C5.6 | *Extended curriculum only* | **Back to contents page** |
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| --- |
| **E4 Mensuration** |

|  |  |  |
| --- | --- | --- |
| E4.1 | Extended curriculum | Notes/Examples |
| Use current units of mass, length, area, | Convert between units including units of |
| volume and capacity in practical situations | area and volume. |

and express quantities in terms of larger or   
smaller units.

E4.2 Carry out calculations involving the   
 perimeter and area of a rectangle, triangle,   
 parallelogram and trapezium and compound   
 shapes derived from these.

E4.3 Carry out calculations involving the   
 circumference and area of a circle.

Solve problems involving the arc length   
and sector area as fractions of the   
circumference and area of a circle.

E4.4 Carry out calculations involving the volume   
 of a cuboid, prism and cylinder and the   
 surface area of a cuboid and a cylinder.

Carry out calculations involving the surface area and volume of a sphere, pyramid and

Formulae will be given for the surface area and volume of the sphere, pyramid

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| --- | --- | --- |
| E4.5 | cone. | and cone. |
| Carry out calculations involving the areas |

and volumes of compound shapes.

|  |  |  |
| --- | --- | --- |
|  | **E5 Co-ordinate geometry** |  |
| E5.1 | Extended curriculum | Notes/Examples |
| Demonstrate familiarity with Cartesian |

co-ordinates in two dimensions.

E5.2 Find the gradient of a straight line.

Calculate the gradient of a straight line from   
the co-ordinates of two points on it.

E5.3 Calculate the length and the co-ordinates   
 of the midpoint of a straight line from the   
 co-ordinates of its end points.

E5.4 Interpret and obtain the equation of a   
 straight line graph in the form *y* = *mx* + *c*.

|  |  |  |
| --- | --- | --- |
| E5.5 | Determine the equation of a straight line | e.g. find the equation of a line parallel to |
| E5.6 | parallel to a given line. | *y* = 4*x* – 1 that passes through (0, –3). |
| Find the gradient of parallel and | e.g. find the gradient of a line |

perpendicular lines.

perpendicular to *y* = 3*x* + 1.

e.g. find the equation of a line   
perpendicular to one passing through the co-ordinates (1, 3) and (–2, –9).

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| **C6 Trigonometry** |

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| C6.1 | Core curriculum | Notes/Examples |
| Interpret and use three-figure bearings. | Measured clockwise from the North, |

i.e. 000°–360°.

|  |  |  |
| --- | --- | --- |
| C6.2 | Apply�Pythagoras’�theorem�and�the�sine,� | Angles will be quoted in, and answers |
| cosine and tangent ratios for acute angles | required in, degrees and decimals to one |
| to the calculation of a side or of an angle of | decimal place. |

a right-angled triangle.

|  |  |  |  |
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| 22 | C6.3 | *Extended curriculum only* | **Back to contents page** |
| C6.4 | *Extended curriculum only* |
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| **E6 Trigonometry** |

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| --- | --- | --- |
| E6.1 | Extended curriculum | Notes/Examples |
| Interpret and use three-figure bearings. | Measured clockwise from the North, |

i.e. 000°–360°.

|  |  |  |
| --- | --- | --- |
| E6.2 | Apply�Pythagoras’�theorem�and�the�sine,� | Angles will be quoted in, and answers |
| cosine and tangent ratios for acute angles | required in, degrees and decimals to one |
| to the calculation of a side or of an angle of | decimal place. |

a right-angled triangle.

Solve trigonometrical problems in two   
dimensions involving angles of elevation   
and depression.

Extend sine and cosine values to angles   
between 90° and 180°.

E6.3 Solve problems using the sine and cosine   
 rules for any triangle and the formula area of   
 triangle = 2 1 *ab* sin *C*.

E6.4 Solve simple trigonometrical problems in   
 three dimensions including angle between a   
 line and a plane.

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| **C7 Matrices and transformations** |

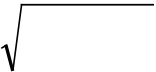
|  |  |  |  |
| --- | --- | --- | --- |
| C7.1 | Core curriculum | | Notes/Examples |
| Describe a translation by using a vector | |
| represented by e.g. J KKK *y x* , N OOO    *AB*  L P  Add and subtract vectors. | or **a**. |

Multiply a vector by a scalar.

C7.2 Reflect simple plane figures in horizontal or   
 vertical lines.

Rotate simple plane figures about the   
origin, vertices or midpoints of edges of the   
figures, through multiples of 90°.

|  |  |  |  |
| --- | --- | --- | --- |
| 24 | Construct given translations and | | Positive�and�fractional�scale�factors�for� |
| enlargements of simple plane figures. | | enlargements only. |
| Recognise and describe reflections, | | Positive�and�fractional�scale�factors�for� |
| rotations, translations and enlargements. | | enlargements only. |
| C7.3 | *Extended curriculum only* | **Back to contents page** |
| C7.4 | *Extended curriculum only* |
| C7.5 | *Extended curriculum only* |
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| **E7 Matrices and transformations** |

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| E7.1 | Extended curriculum | | Notes/Examples |
| Describe a translation by using a vector | |
| represented by e.g. J KKK *y x* , N OOO    *AB*  L P  Add and subtract vectors. | or **a**. |

Multiply a vector by a scalar.

E7.2 Reflect simple plane figures.

Rotate simple plane figures through

multiples of 90°.

Construct given translations and   
enlargements of simple plane figures.

Recognise and describe reflections,   
rotations, translations and enlargements.

Positive,�fractional�and�negative�scale�factors for enlargements.

Positive,�fractional�and�negative�scale�factors for enlargements.

|  |  |  |  |
| --- | --- | --- | --- |
| E7.3 | Calculate the magnitude of a vector *x* J  KKK *y*  as *x* 2 + *y* 2 . L | N  OOO  P | Vectors will be printed as *AB* or **a** and |
| their magnitudes denoted by modulus |
| signs, |
| Represent vectors by directed line |
| e.g. *AB* or **a** . |
| segments. |

Use the sum and difference of two vectors to express given vectors in terms of two

In their answers to questions, candidates are expected to indicate **a** in some

|  |  |  |
| --- | --- | --- |
| E7.4 | coplanar vectors. | definite way, e.g. by an arrow |
| Use position vectors. | or by underlining, thus *AB* or a. |
| Display information in the form of a matrix |

of any order.

Calculate the sum and product (where   
appropriate) of two matrices.

Calculate the product of a matrix and a   
scalar quantity.

Use the algebra of 2 × 2 matrices including   
the zero and identity 2 × 2 matrices.

Calculate the determinant I**A**I and inverse   
**A**–1 of a non-singular matrix **A**.

|  |  |  |
| --- | --- | --- |
| E7.5 | Use the following transformations of | If M(*a*) = *b* and R(*b*) = *c*, the notation |

the plane: reflection (M), rotation (R), translation (T), enlargement (E), and their combinations.

Identify and give precise descriptions of

RM(*a*) = *c* will be used. Invariants under these transformations may be assumed.

transformations connecting given figures.

Describe transformations using co-ordinates   
and matrices (singular matrices are   
excluded).

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| **C8 Probability** |

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| C8.1 | Core curriculum | Notes/Examples |
| Calculate the probability of a single event as | Problems�could�be�set�involving� |

either a fraction, decimal or percentage.

extracting information from tables or graphs.

C8.2 Understand and use the probability scale   
 from 0 to 1.

C8.3 Understand that the probability of an event   
 occurring = 1 – the probability of the event   
 not occurring.

C8.4 Understand relative frequency as an   
 estimate of probability.

|  |  |
| --- | --- |
| C8.5 | *Extended curriculum only* |

|  |  |  |
| --- | --- | --- |
| **C9 Statistics** | |  |
| Core curriculum | | Notes/Examples |
| C9.1 | Collect, classify and tabulate statistical data. |

Read, interpret and draw simple inferences   
from tables and statistical diagrams.

C9.2 Construct and read bar charts, pie charts,   
 pictograms, simple frequency distributions,   
 histograms with equal intervals and scatter   
 diagrams.

C9.3 Calculate the mean, median, mode and   
 range for individual and discrete data and   
 distinguish between the purposes for which   
 they are used.

C9.4 *Extended curriculum only*

C9.5 *Extended curriculum only*

C9.6 Understand what is meant by positive,   
 negative and zero correlation with reference   
 to a scatter diagram.

|  |  |  |  |
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| 26 | C9.7 | Draw a straight line of best fit by eye. | **Back to contents page** |
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| --- |
| **E8 Probability** |

|  |  |  |
| --- | --- | --- |
| E8.1 | Extended curriculum | Notes/Examples |
| Calculate the probability of a single event as | Problems�could�be�set�involving� |

either a fraction, decimal or percentage.

extracting information from tables or graphs.

E8.2 Understand and use the probability scale   
 from 0 to 1.

E8.3 Understand that the probability of an event   
 occurring = 1 – the probability of the event   
 not occurring.

E8.4 Understand relative frequency as an   
 estimate of probability.

|  |  |  |
| --- | --- | --- |
| E8.5 | Calculate the probability of simple combined | In possibility diagrams, outcomes will be |

events, using possibility diagrams and tree diagrams where appropriate.

represented by points on a grid, and in tree diagrams, outcomes will be written at the end of branches and probabilities by the side of the branches.

|  |  |  |
| --- | --- | --- |
| **E9 Statistics** | |  |
| Extended curriculum | | Notes/Examples |
| E9.1 | Collect, classify and tabulate statistical data. |

Read, interpret and draw simple inferences   
from tables and statistical diagrams.

|  |  |  |
| --- | --- | --- |
| E9.2 | Construct and read bar charts, pie charts, | For unequal intervals on histograms, |

pictograms, simple frequency distributions, histograms with equal and unequal intervals

areas are proportional to frequencies and the vertical axis is labelled ‘frequency

|  |  |  |
| --- | --- | --- |
| E9.3 | and scatter diagrams. | density’. |
| Calculate the mean, median, mode and |

range for individual and discrete data and   
distinguish between the purposes for which   
they are used.

E9.4 Calculate an estimate of the mean for   
 grouped and continuous data.

Identify the modal class from a grouped   
frequency distribution.

E9.5 Construct and use cumulative frequency   
 diagrams.

Estimate and interpret the median,   
percentiles, quartiles and inter-quartile   
range.

E9.6 Understand what is meant by positive,   
 negative and zero correlation with reference   
 to a scatter diagram.

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| E9.7 | Draw a straight line of best fit by eye. | www.cie.org.uk/igcse | 27 |
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**4 Details of the assessment**

For information on the Assessment objectives (AOs), see section 5.

Core Assessment

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| --- |
| Paper 1 – Core |

**1 hour, 56 marks**   
Candidates answer **all** questions.

This paper consists of short-answer questions based on the Core curriculum. This is a compulsory component for Core candidates.

This written paper is an externally set assessment, marked by Cambridge.

|  |
| --- |
| Paper 3 – Core |

**2 hours, 104 marks**   
Candidates answer **all** questions.

This paper consists of structured questions based on the Core curriculum. This is a compulsory component for Core candidates.

This written paper is an externally set assessment, marked by Cambridge.

Extended Assessment

|  |
| --- |
| Paper 2 – Extended |

**1 hour 30 minutes, 70 marks**   
Candidates answer **all** questions.

This paper consists of short-answer questions based on the Extended curriculum. This is a compulsory component for Extended candidates.

This written paper is an externally set assessment, marked by Cambridge.

|  |
| --- |
| Paper 4 – Extended |

**2 hours 30 minutes, 130 marks**   
Candidates answer **all** questions.

This paper consists of structured questions based on the Extended curriculum. This is a compulsory component for Extended candidates.

This written paper is an externally set assessment, marked by Cambridge.

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**5 Assessment objectives**

The assessment objectives (AOs) are:

|  |
| --- |
| AO1 Mathematical techniques |

|  |
| --- |
| AO2 Applying mathematical techniques to solve problems |

AO1 Mathematical techniques

Candidates should be able to:

•� organise, interpret and present information accurately in written, tabular, graphical and

diagrammatic forms

•� perform calculations by suitable methods

•� use an electronic calculator and also perform some straightforward calculations without a

calculator

•� understand systems of measurement in everyday use and make use of them in the solution of

problems

•� estimate, approximate and work to degrees of accuracy appropriate to the context and convert

between equivalent numerical forms

•� use mathematical and other instruments to measure and to draw to an acceptable degree of

accuracy

•� interpret, transform and make appropriate use of mathematical statements expressed in words or

symbols

•� recognise and use spatial relationships in two and three dimensions, particularly in solving

problems

•� recall, apply and interpret mathematical knowledge in the context of everyday situations.

AO2 Applying mathematical techniques to solve problems

In questions which are set in context and/or which require a sequence of steps to solve, candidates

should be able to:

•� make logical deductions from given mathematical data

•� recognise patterns and structures in a variety of situations, and form generalisations

•� respond to a problem relating to a relatively unstructured situation by translating it into an

appropriately structured form

•� analyse a problem, select a suitable strategy and apply an appropriate technique to obtain its

solution

•� apply combinations of mathematical skills and techniques in problem solving

•� set out mathematical work, including the solution of problems, in a logical and clear form using

appropriate symbols and terminology.

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.Assessment objectives

Weighting for assessment objectives

The approximate weightings allocated to each of the assessment objectives (AOs) are summarised below.

Assessment objectives as a percentage of the Core qualification

|  |  |
| --- | --- |
| **Assessment objective** | **Weighting in IGCSE** |

|  |  |
| --- | --- |
| AO1Mathematical techniques | **%**  75–85 |
| AO2Applying mathematical techniques to | 15–25 |

solve problems

Assessment objectives as a percentage of the Extended qualification

|  |  |
| --- | --- |
| **Assessment objective** | **Weighting in IGCSE** |

|  |  |
| --- | --- |
| AO1Mathematical techniques | **%**  40–50 |
| AO2Applying mathematical techniques to | 50–60 |

solve problems

Assessment objectives as a percentage of each component

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Assessment objective** |  | **Weighting in components %** | |  |
|  | **Paper 1** | **Paper 2** | **Paper 3** | **Paper 4** |
| AO1Mathematical techniques | 75–85 | 40–50 | 75–85 | 40–50 |
| AO2Applying mathematical | 15–25 | 50–60 | 15–25 | 50–60 |

techniques to solve   
problems

|  |  |  |
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Cambridge IGCSE Mathematics 0580 syllabus for 2019**.**

**6 What else you need to know**

This section is an overview of other information you need to know about this syllabus. It will help to share the administrative information with your exams officer so they know when you will need their support. Find more information about our administrative processes at www.cie.org.uk/examsofficers

Before you start

Previous study

We recommend that learners starting this course should have studied a mathematics curriculum such as the Cambridge Secondary 1 programme or equivalent national educational framework.

Guided learning hours

We design Cambridge IGCSE syllabuses based on learners having about 130 guided learning hours for each subject during the course. The number of hours a learner needs to achieve the qualification will vary according to local practice and their previous experience of the subject.

Availability and timetables

You can enter candidates in the June and November exam series. If your school is in India, you can enter your candidates in the March exam series. You can view the timetable for your administrative zone at www.cie.org.uk/timetables

Private�candidates�can�enter�for�this�syllabus.�

Combining with other syllabuses

Candidates can take this syllabus alongside other Cambridge syllabuses in a single exam series. The only exceptions are:

•� Cambridge IGCSE (9–1) Mathematics (0626)

•� Cambridge IGCSE International Mathematics (0607)

•� syllabuses with the same title at the same level.

Cambridge IGCSE, Cambridge IGCSE (9–1) (Level 1/Level 2 Certificates) and Cambridge O Level syllabuses are at the same level.

Group awards: Cambridge ICE

Cambridge ICE (International Certificate of Education) is a group award for Cambridge IGCSE. It allows schools to offer a broad and balanced curriculum by recognising the achievements of learners who pass examinations in a range of different subjects.

Learn more about Cambridge ICE at www.cie.org.uk/cambridgesecondary2

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.What else you need to know

Making entries

Exams officers are responsible for submitting entries to Cambridge. We encourage them to work closely with you to make sure they enter the right number of candidates for the right combination of syllabus components. Entry option codes and instructions for submitting entries are in the *Cambridge Guide to Making Entries*. Your exams officer has a copy of this guide.

Option codes for entries

To keep our exams secure we allocate all Cambridge schools to one of six administrative zones. Each zone has a specific timetable. The majority of option codes have two digits:

•� the first digit is the component number given in the syllabus

•� the second digit is the location code, specific to an administrative zone.

Support for exams officers

We know how important exams officers are to the successful running of exams. We provide them with the support they need to make your entries on time. Your exams officer will find this support, and guidance for all other phases of the Cambridge Exams Cycle, at www.cie.org.uk/examsofficers

Retakes

Candidates can retake the whole qualification as many times as they want to. This is a linear qualification so candidates cannot re-sit individual components.

Equality and inclusion

We have taken great care to avoid bias of any kind in the preparation of this syllabus and related assessment materials. In compliance with the UK Equality Act (2010) we have designed this qualification to avoid any direct and indirect discrimination.

The standard assessment arrangements may present unnecessary barriers for candidates with disabilities or learning difficulties. We can put arrangements in place for these candidates to enable them to access the assessments and receive recognition of their attainment. We do not agree access arrangements if they give candidates an unfair advantage over others or if they compromise the standards being assessed.

Candidates who cannot access the assessment of any component may be able to receive an award based on the parts of the assessment they have completed.

Information on access arrangements is in the *Cambridge Handbook* at www.cie.org.uk/examsofficers

Language

This syllabus and the related assessment materials are available in English only.

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.What else you need to know

After the exam

Grading and reporting

Grades A\*, A, B, C, D, E, F or G indicate the standard a candidate achieved at Cambridge IGCSE.

A\* is the highest and G is the lowest. ‘Ungraded’ means that the candidate’s performance did not meet the standard required for grade G. ‘Ungraded’ is reported on the statement of results but not on the certificate. In specific circumstances your candidates may see one of the following letters on their statement of results:

•� Q�(result�pending)

•� X (no result)

•� Y (to be issued)

These letters do not appear on the certificate.

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.What else you need to know

Grade descriptions

Grade descriptions are provided to give an indication of the standards of achievement candidates

awarded particular grades are likely to show. Weakness in one aspect of the examination may be

balanced by a better performance in some other aspect.

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| A **Grade A** Cambridge IGCSE Mathematics candidate will be able to: | |
| •� | make clear, concise and accurate statements, demonstrating ease and confidence in the use of |

symbolic forms and accuracy of arithmetic manipulation

•� apply the mathematics they know in familiar and unfamiliar contexts

•� apply their knowledge of rounding to determining the bounds of intervals, including in calculations

of, for example, areas

•� understand and use direct and inverse proportion

•� demonstrate an understanding of percentages by relating percentage change to a multiplying

factor and vice versa, e.g. multiplication by 1.03 results in a 3 per cent increase

•� apply knowledge of the four rules for fractions to simplifying algebraic fractions

•� apply algebraic manipulation to linear, simultaneous and quadratic equations

•� use positive, negative and fractional indices in both numerical and algebraic work, and interpret

the description of a situation in terms of algebraic formulae and equations

•� apply their knowledge of graphs of algebraic functions to the intersections and gradients of these

graphs

•� apply knowledge of scale factors to two and three dimensions and apply to calculating lengths,

areas and volumes between actual values and scale models

•� apply knowledge of right-angled trigonometry to three-dimensional situations as well as

demonstrate an understanding of how to solve problems on non-right-angled triangles

•� process data, discriminating between necessary and redundant information

•� use graphs in practical situations to make quantitative and qualitative deductions from distance-

time and speed-time graphs.

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| A **Grade C** Cambridge IGCSE Mathematics candidate will be able to: |

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| •� | demonstrate insight into the mathematical structures of problems, enabling them to justify |

generalisations, arguments or solutions

•� use mathematical presentation and stages of derivations in order to generate fuller solutions

•� appreciate the difference between mathematical explanation and experimental evidence

•� apply the four rules of number to positive and negative integers, fractions and decimal fractions,

in order to solve problems

•� apply their understanding of percentage to problems involving one quantity as a percentage of

another and its application to percentage change

•� carry out calculations involving several operations and demonstrate fluent and efficient use of

calculators, as well as giving reasonable approximations

•� appreciate the relationship between decimal and standard form of a number and apply to positive

and negative powers of 10

•� show familiarity with the differences between simple and compound interest and apply this to

calculating both

•� apply their knowledge of sequences to recognise, and in simple cases formulate, rules for

generating a pattern or sequence

•� solve linear equations involving appropriate algebraic manipulation, and solve simple simultaneous

equations in two unknowns

•� transform simple formulae and work with other formulae involving substitution, and evaluate the

remaining term

•� use brackets and common factor factorisation

•� plot points on graphs from given values and use them to draw and interpret graphs in practical

situations, including travel and conversion graphs and algebraic graphs of linear and quadratic

functions

•� apply knowledge of perimeter and area to circles

•� appreciate and use area and volume units in relation to finding the volume and surface area of a

prism and cylinder

•� demonstrate construction work, with appropriate geometrical instruments, and apply to accurate

scale diagrams to solve a two-dimensional problem

•� understand�and�apply�Pythagoras’�theorem�and�trigonometry�of�right-angled�triangles�to�solving,�

by calculation, problems in a variety of contexts

•� calculate angles in a variety of geometrical figures, including polygons and to some extent circles,

from straightforward diagrams

•� use a frequency table to construct a pie chart

•� understand and construct a scatter diagram and apply this to a judgement of the correlation

existing between two quantities.

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| A **Grade F** Cambridge IGCSE Mathematics candidate will be able to: |

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| •� •� •� •� •� | identify and obtain necessary information  recognise whether their solutions to problems are sensible  understand simple situations in order to describe them, using symbols, words and diagrams draw simple, basic conclusions with explanations where appropriate  use an understanding of place value to perform calculations using the four rules on positive |

integers and decimal fractions (one operation only), using a calculator where necessary

•� convert between fractions, decimals and percentages for the purpose of comparing quantities

between 0 and 1 in a variety of forms, and reduce a fraction to its simplest form

•� appreciate the idea of direct proportion and solve simple problems involving ratio

•� use basic knowledge of percentage to apply to simple problems involving percentage parts of

quantities

•� understand and apply metric units of length, mass and capacity, together with conversion

between units in these areas of measure

•� recognise and continue a straightforward pattern in sequences and understand the terms

multiples, factors and squares as a foundation to higher grade levels of applications in the areas of

number and algebra

•� use a very basic knowledge of algebra to construct simple algebraic expressions, substitute

numbers for letters and evaluate simple formulae

•� appreciate how a simple linear equation can represent a practical situation and be able to solve

such equations

•� use a basic knowledge of names and recognition of simple plane figures and common solids

to understand shape and space, and apply to the perimeter and area of a rectangle and other

rectilinear shapes

•� use geometrical instruments – ruler, protractor and compasses – to measure lengths and angles

and draw a triangle given three sides

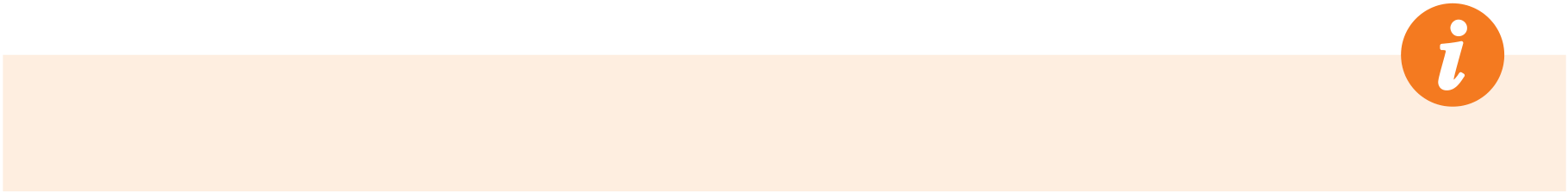
•� read data from a variety of sources and be able to extract data from them, in particular timetables

•� tabulate data in order to form frequency tables and draw a bar chart

•� plot given points on a graph and read a travel graph

•� calculate the mean, given a set of numbers.

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Cambridge IGCSE Mathematics 0580 syllabus for 2019.What else you need to know

Changes to this syllabus for 2019   
The syllabus has been updated. The latest syllabus is version 1, published September 2016. This docuent has been refreshed and rebranded. The subject content and the specimens remain the same.

Minor changes to the wording of some sections have been made to improve clarity.

Any textbooks endorsed to support the syllabus for examination from 2016 are still suitable for use with this syllabus.

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‘While studying Cambridge IGCSE and Cambridge International A Levels, students broaden

their horizons through a global perspective and develop a lasting passion for learning.’

**Zhai Xiaoning**,�Deputy�Principal,�The�High�School�Affiliated�to�Renmin�University�of�China

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