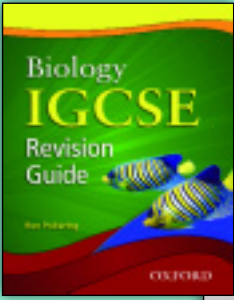
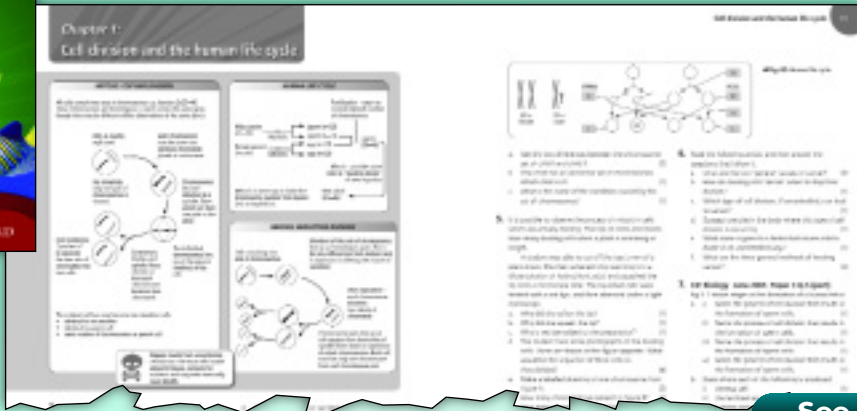


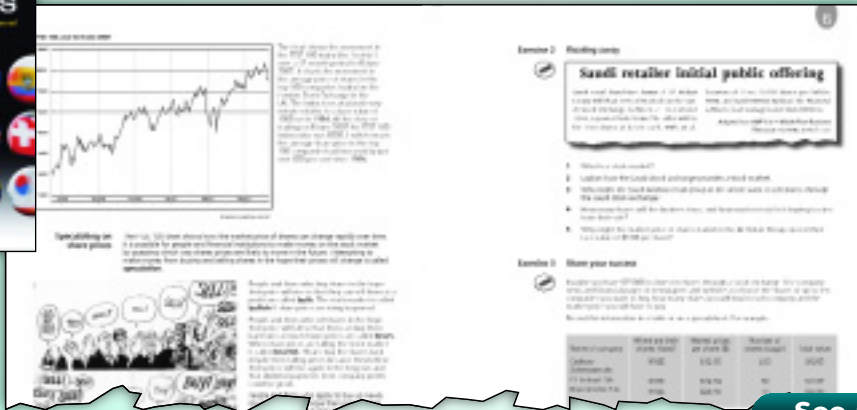
Top titles



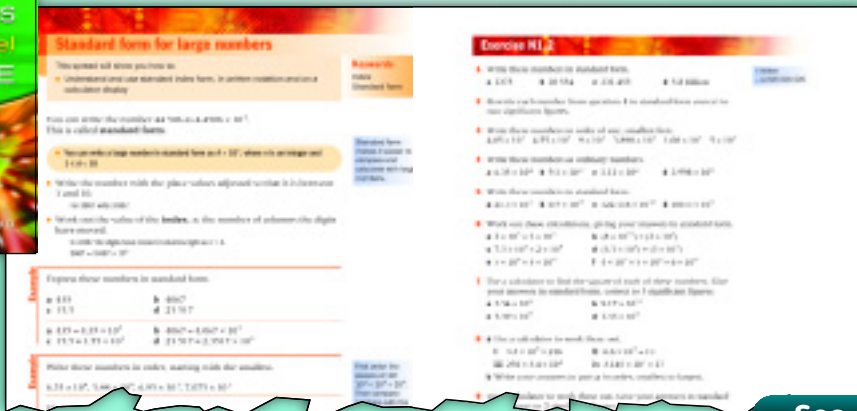
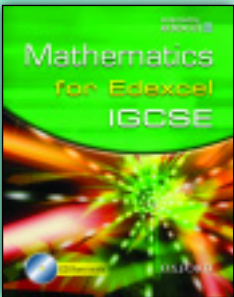
NEW



See page 1



See page 2



See page 5

OXFORD
UNIVERSITY PRESS

IGCSE 2009

Revision
Guides

Mathematics
for Edexcel IGCSE

Complete

Physics

for IGCSE

Contents

IGCSE Revision Guides	1
Economics	2
Geography	3
Environmental Management	3
Mathematics.....	4-5
Science	6-7
Business.....	8
Food Technology	8
ICT	8
PE	8
English	8
History	8
Ordering Information	9
International Sales Representatives	9

Request our full subject catalogues -
email education.export@oup.com



Oxford English: An International Approach

NEW



978 019 912664 4
September 2009

978 019 912665 1
September 2009

978 019 912666 8
January 2010

978 019 912667 5
January 2010

With a fresh, unique approach to English, this enquiry-based series for 11-16 year olds provides support for students with English as an additional language and mainstream students in all of the four language skills, making it the perfect resource for international schools.

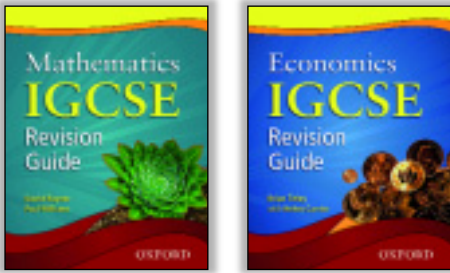
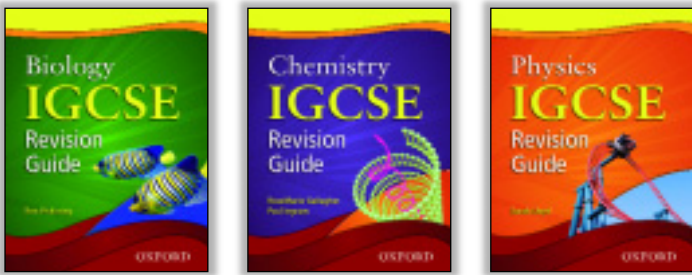
Email us for more information or to sign up for your inspection copy
– education.export@oup.com.

IGCSE

Revision Guides

NEW

IGCSE Revision Guides



A new series of revision guides for IGCSE to help your students achieve the best possible grade

Diagrams help students understand difficult concepts

Plenty of exam questions ensure students are ready for the real thing

Chapter 1: Cell division and the human life cycle

The page includes diagrams of mitosis and meiosis, and exam questions such as:

- 1. What is a chromosome?
- 2. The diagram shows the life cycle of a mammal. Copy and complete the diagram by writing in the space of those cells their normal complement and function.
- 3. What is a chromosome?
- 4. Why do chromosomes pair before a cell divides?
- 5. How do chromosomes pair before a cell divides?
- 6. How do chromosomes pair before a cell divides?
- 7. How do chromosomes pair before a cell divides?
- 8. How do chromosomes pair before a cell divides?
- 9. How do chromosomes pair before a cell divides?
- 10. How do chromosomes pair before a cell divides?

Biology

Vocabulary exercises support students with English as an additional language

Ordering details

Biology	9780199152650	£9.99
Chemistry	9780199152667	£9.99
Physics	9780199154364	£9.99
Mathematics	9780199154876	£9.99
Economics	9780199154869	£9.99

All available in September 2009

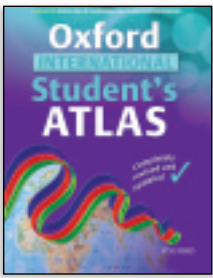
Find out more

Visit the website for more information or to sign up for our IGCSE eNewsletter – www.OxfordSecondary.co.uk/igcse.

IGCSE

Geography

Environmental Management



Oxford International Student's Atlas

Endorsed by
**University of Cambridge
International Examinations**

978 019 832579 6 £11.00

Fully updated with the very latest datasets and global issues, this atlas has been specifically designed for the international classroom.

- Clear and colourful continental thematic maps illustrating a variety of subjects
- World maps on motivating topics such as cyberspace, globalisation and climate change
- Easy-to-use features include a multi-access contents page, a two-colour index of place names, and flags of the world at a usable size

The definitive international student atlas

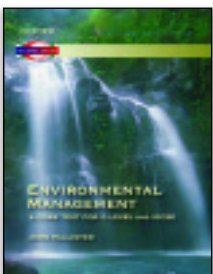
Find out more



Oxford International Student Atlas Skills Workbook

Perfect practice for 11-14 year olds

978 019 833219 0 £3.50



Environmental Management

John Pallister

Endorsed by
**University of Cambridge
International Examinations**

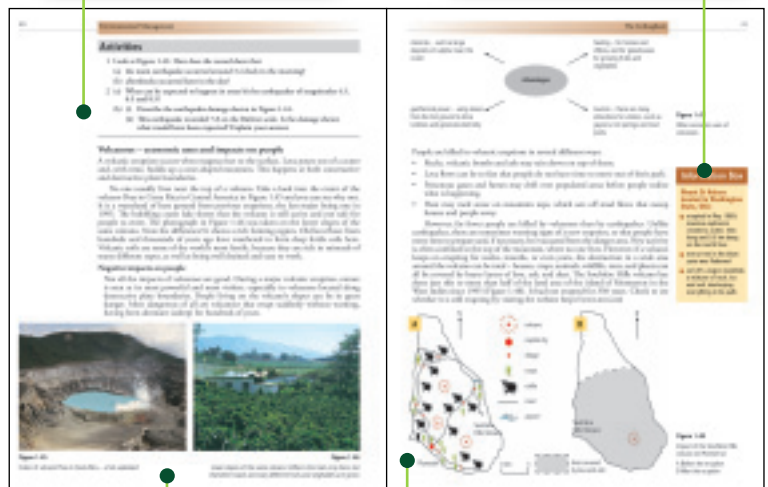
Students' Book	978 019 915131 8	£13.75
Teacher's Book	978 019 915130 1	£3.50

A core text for IGCSE and O Level

This textbook enables students to understand and appreciate the interdependence of the Earth's natural systems and resources and how best to manage them for the future.

Activities help to engage students in the subject matter and prepare them for their exams

'Information Boxes' provide interesting facts and definitions of key terms



International examples and case studies give students both a global and a local perspective

Helpful diagrams help explain difficult concepts

IGCSE

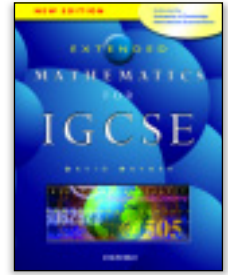
Mathematics

Mathematics for IGCSE

David Rayner

Endorsed by University of Cambridge International Examinations

Core 978 019 914995 7 £16.75
Extended 978 019 914994 0 £17.00



Your favourite Maths books for IGCSE

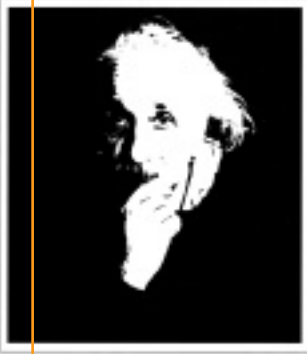
Focusing on the crucial skills of using and applying Mathematics, these popular textbooks offer full coverage of the curriculum along with thousands of practice questions to ensure that students achieve the best grade possible.

Clear objectives are given at the start of each chapter, along with syllabus references

Key facts are highlighted within the text so that students can immediately see what they need to know

274

9 MATRICES AND TRANSFORMATIONS



Albert Einstein (1879–1955) working as a patent office clerk in Bern, was responsible for the greatest advance in mathematical physics of this century. His theories of relativity, put forward in 1905 and 1915 were based on the postulate that the velocity of light is absolute: mass, length and even time can only be measured relative to the observer and undergo transformation when studied by another observer. His formula $E = mc^2$ laid the foundations of nuclear physics, a fact that he came to deplore in its application to warfare. In 1933 he moved from Nazi Germany and settled in America.

36 Display information in the form of a matrix; calculate the sum and product of two matrices; calculate the product of a matrix and a scalar quantity; calculate the determinant and inverse

37 Use the following transformations: reflection, rotation, translation, enlargement, shear, stretching and their combinations; identify and give descriptions of transformations connecting given figures; describe transformations using coordinates and matrices

9.1 Matrix operations

Addition and subtraction

Matrices of the same order are added (or subtracted) by adding (or subtracting) the corresponding elements in each matrix.

Example

$$\begin{pmatrix} 2 & -4 \\ 3 & 0 \end{pmatrix} + \begin{pmatrix} 3 & 3 \\ -1 & 7 \end{pmatrix} = \begin{pmatrix} 5 & 1 \\ 2 & 7 \end{pmatrix}$$

Matrix operations 275

Multiplication by a number

Each element of the matrix is multiplied by the multiplying number.

Example

$$3 \times \begin{pmatrix} 2 & -1 \\ 1 & 4 \end{pmatrix} = \begin{pmatrix} 6 & -2 \\ 3 & 12 \end{pmatrix}$$

Multiplication by another matrix

For 2×2 matrices,

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} e & f \\ g & h \end{pmatrix} = \begin{pmatrix} ae+bg & af+bd \\ ce+dg & cf+dh \end{pmatrix}$$

The same process is used for matrices of other orders.

Example

Perform the following multiplications.

(a) $\begin{pmatrix} 4 & 2 \\ 1 & 3 \end{pmatrix} \begin{pmatrix} 2 & 1 \\ 1 & 5 \end{pmatrix} = \begin{pmatrix} 8+2 & 3+10 \\ 2+3 & 4+15 \end{pmatrix} = \begin{pmatrix} 10 & 13 \\ 5 & 19 \end{pmatrix}$

(b) $\begin{pmatrix} 2 & 1 & -2 \\ 0 & 1 & 3 \end{pmatrix} \begin{pmatrix} 1 & 9 \\ 1 & -2 \\ 4 & 3 \end{pmatrix} = \begin{pmatrix} 2+1-8 & 18-2-6 \\ 0+1+12 & 9-2+9 \end{pmatrix} = \begin{pmatrix} -5 & -8 \\ 13 & 7 \end{pmatrix}$

Matrices may be multiplied only if they are compatible. The number of columns in the left-hand matrix must equal the number of rows in the right-hand matrix.

Matrix multiplication is not commutative, i.e. for square matrices A and B , the product AB does not necessarily equal the product BA .

Exercise F

In questions 1 to 36, the matrices have the following values:

$$A = \begin{pmatrix} 2 & -1 \\ 3 & 4 \end{pmatrix}; B = \begin{pmatrix} 0 & 3 \\ 1 & -2 \end{pmatrix}; C = \begin{pmatrix} 4 & 3 \\ 1 & -2 \end{pmatrix}; D = \begin{pmatrix} 1 & 5 & 1 \\ 4 & -6 & 1 \end{pmatrix}; E = \begin{pmatrix} 1 & 0 \\ -1 & 1 \\ 2 & 3 \end{pmatrix};$$

$$F = \begin{pmatrix} 1 & -2 \\ 0 & 1 \\ -7 & 0 \end{pmatrix}; G = \begin{pmatrix} 4 \\ 1 \end{pmatrix}; H = \begin{pmatrix} 0 & 1 & -2 \\ 3 & -4 & 5 \end{pmatrix}; I = \begin{pmatrix} 3 \\ 1 \end{pmatrix}; J = \begin{pmatrix} 1 & -2 \\ 0 & 1 \\ -7 & 0 \end{pmatrix};$$

Calculate the resultant value for each question where possible.

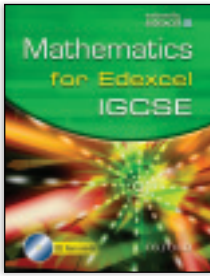
1. $A + B$	2. $D + H$	3. $J + F$
4. $B - C$	5. $2F$	6. $3H$

Note
In matrices, A^T means A is A . You must multiply the matrices together.

Extended IGCSE Mathematics

Worked examples show the important skills and techniques required

Comprehensive exercises are carefully graded, starting from the basics and going up to exam standard, allowing students to practise key skills and techniques



Mathematics for Edexcel IGCSE

endorsed by
edexcel

Derek Huby, Jayne Kranat,
Marguerite Appleton, Demetris Demitriov
978 019 915262 9 £17.00

This new textbook offers carefully compiled exercises and explanations along with worksheets, a PDF of the book and additional material for Foundation Level on a free CD-ROM.

Excellent coverage of the Higher Level IGCSE

Objectives show students what they will be learning

Important terms are highlighted

Hints and tips are integrated throughout

Lots of practice questions ensure consolidation

N1.2 Standard form for large numbers

This spread will show you how to:

- Understand and use standard index form, in written notation and on a calculator display

You can write the number 44 586 as 4.4586×10^4 . This is called **standard form**.

- You can write a large number in standard form as $a \times 10^n$, where a is an integer and $1 < a < 10$
- Write the number with the place values adjusted so that it is between 1 and 10. For 3007 write 3.007.
- Work out the value of the **index**, n , the number of columns the digits have moved. In 3.007 the digits have moved 3 columns right so $n = -3$. $3007 = 3.007 \times 10^3$

Keywords: Index, Standard form

Standard form makes it easier to compare and calculate with large numbers.

Hint: 1000 the powers of 10: $10^3 = 10^2 \times 10^1$. Then compare numbers with the same powers of 10: $5.44 < 6.35$

Some calculators have an $\frac{\square}{\square}$ key. To enter 3.2×10^3 you press $\frac{\square}{\square}$ 3.2 $\frac{\square}{\square}$ 3

The calculator displays: 3200

Example 1: Express these numbers in standard form.

a 435 b 4067
c 15.5 d 23 517

a $435 = 4.35 \times 10^2$ b $4067 = 4.067 \times 10^3$
c $15.5 = 1.55 \times 10^1$ d $23\,517 = 2.3517 \times 10^4$

Example 2: Write these numbers in order, starting with the smallest.

6.35×10^4 , 5.44×10^5 , 6.85×10^3 , 3.075×10^2

The correct order is 3.075×10^2 , 6.85×10^3 , 5.44×10^4 , 6.35×10^5

You can use numbers written in standard form in calculators.

The Andromeda Galaxy is 21 900 000 000 000 000 km from the Earth.

a Write 21 900 000 000 000 000 in standard form.
b Light travels 9.46×10^{12} km in one year. Calculate the number of years that light takes to travel from the Andromeda Galaxy to Earth. Give your answer in standard form correct to 2 significant figures. (Edexcel/IAL, (15pc))

a $21\,900\,000\,000\,000\,000 = 2.19 \times 10^{16}$
b $(2.19 \times 10^{16}) \div (9.46 \times 10^{12}) = 2.3 \times 10^3$ years

Exercise N1.2

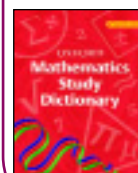
- Write these numbers in standard form.
a 1375 b 20 554 c 231 455 d 5.8 billion
1 billion = 1 000 000 000
- Rewrite each number from question 1 in standard form correct to two significant figures.
- Write these numbers in order of size, smallest first.
 4.05×10^3 , 4.35×10^3 , 9×10^3 , 3.898×10^3 , 1.08×10^4 , 3×10^3
- Write these numbers as ordinary numbers.
a 6.35×10^4 b 9.1×10^{17} c 1.11×10^2 d 2.998×10^6
- Write these numbers in standard form.
a 21.5×10^3 b 0.7×10^{11} c $122\,516 \times 10^{18}$ d 0.015×10^5
- Work out these calculations, giving your answers in standard form.
a $2 \times 10^3 \times 3 \times 10^2$ b $(8 \times 10^7) \div (2 \times 10^3)$
c $7.5 \times 10^3 \div 2 \times 10^2$ d $(3.5 \times 10^3) + (5 \times 10^3)$
e $5 \times 10^2 \times 3 \times 10^4$ f $4 \times 10^3 \times 5 \times 10^2 \times 6 \times 10^2$
- Use a calculator to find the square of each of these numbers. Give your answers in standard form, correct to 3 significant figures.
a 2.34×10^3 b 9.17×10^{11}
c 5.49×10^7 d 3.33×10^3
- Use a calculator to work these out.
I $3.4 \times 10^6 \div 256$ II $6.6 \times 10^7 \div 15$
III $292 \times 3.4 \times 10^4$ IV $3.185 \times 10^7 \div 17$
Write your answers to part a in order, smallest to largest.
- Use a calculator to work these out. Give your answers in standard form correct to 2 significant figures.
a $6.22 \times 10^3 \div 9.1 \times 10^{11}$ b $(9.7 \times 10^4) \div (3.7 \times 10^2)$
c $(4.15 \times 10^{12}) \div (9.7 \times 10^3)$
- As the moon orbits Earth the distance between them varies between 4.07×10^5 km and 3.56×10^5 km. Find the difference between these two distances. **DID YOU KNOW?** The gravitational force between Earth and the moon is due to the moon's mass, not its high tide.
- The radius of Earth is approximately 6380 km. Find the volume of Earth in cm^3 , giving your answer in standard form correct to 3 significant figures. (Use the formula $V = \frac{4}{3}\pi r^3$.)

Worked examples show students how it is done

Exam questions prepare students for the real thing

'Did you know?' boxes bring Mathematics to life

Find out more



Oxford Mathematics Study Dictionary
Perfect partner
978 019 911688 1
£11.99

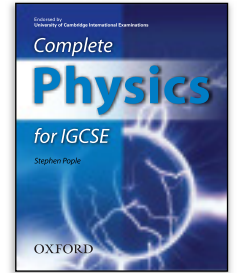
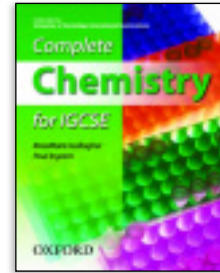
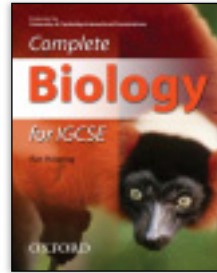
IGCSE

Science

Complete Science for IGCSE

Ron Pickering, RoseMarie Gallagher
and Paul Ingram, Stephen Pople

Endorsed by
University of Cambridge
International Examinations



Complete coverage of IGCSE Science

Offering stimulating and challenging content for international students with a fresh, contemporary look, these new textbooks for IGCSE provide students with everything they need to achieve a top grade.

Key theory is pulled out in separate boxes

Extensive use of photos and illustrations to explain concepts and a clear layout assists non-native speakers

Double page spread format allows students to cross reference and find the information they need

A wealth of exercises help students actively learn Science

6.03 Sound waves

When a loudspeaker cone vibrates, it moves forwards and backwards very fast. This squashes and stretches the air in front. As a result, a series of compressions ('squashes') and rarefactions ('stretches') travel out through the air. These are **sound waves**. When they reach your ear, they make your ear-drums vibrate and you hear a sound.

The nature of sound waves
Sound waves are caused by vibrations. Any vibrating object can be a source of sound waves. As well as loudspeaker cones, examples include vibrating guitar strings, the vibrating air inside a trumpet, and the vibrating prongs of a tuning fork. Also, when hard objects (such as cymbals and steel drums) are struck, they vibrate and produce sound waves.

Wavefront essentials
For convenience, waves are often drawn using lines called **wavefronts**. In the case of sound waves, you can think of each wavefront as a compression.

Sound waves are longitudinal waves The air oscillates backwards and forwards as the compressions and rarefactions pass through it. When a compression passes, the air pressure rises. When a rarefaction passes, the pressure falls. The distance from one compression to the next is the **wavelength**.

Sound waves need a material to travel through This material is called a **medium**. Without it, there is nothing to pass on any oscillations. Sound cannot travel through a vacuum (completely empty space).

Sound waves can travel through solids, liquids, and gases Most sound waves reaching your ear have travelled through air. But you can also hear when swimming underwater, and walls, windows, doors, and ceilings can all transmit (pass on) sound.

Diffraction of sound waves
You can hear someone through an open window even if you cannot see them. That is because sound waves spread through gaps, or bend round obstacles, of a similar size to their wavelength. The effect is called **diffraction**. Most sound waves have wavelengths between a few centimetres and a few metres, so they are diffracted by everyday objects.

Sound cannot travel through a vacuum. When the air is removed from this jar, the bell goes quiet, even though the hammer is still striking the metal. (The rubber bands reduce the sound transmitted by the connecting wires.)

Displaying sounds
Sound waves can be displayed graphically using a microphone and an **oscilloscope** as on the right. When sound waves enter the microphone, they make a crystal or a metal plate inside it vibrate. The vibrations are changed into electrical oscillations, and the oscilloscope uses these to make a spot oscillate up and down on the screen. It moves the spot steadily sideways at the same time, producing a wave shape called a **waveform**. The waveform is really a graph showing how the air pressure at the microphone varies with time. It is *not* a picture of the sound waves themselves: sound waves are *not* transverse (up-and-down).

Wave effects explained
Reflection, refraction, and diffraction occur with all types of waves, including sound (for more about the reflection and refraction of sound, see the next spread). The **wave theory** can be used to explain these effects. It starts with the idea shown below left – that each point on a wavefront is the source of a new, circular wave which radiates from that point. Together, the new waves combine to create a new wavefront. Waves spread from all points on this wavefront... and so on. In this way, the wavefront travels along.

▲ A new wave radiates from each point on the original wavefront. Together, the new waves combine to create a new wavefront.

▲ Refraction (bending) as waves pass from one medium to another. A new wave travels from A to A' in the same time as another travels from B to B'. But AA' is shorter than BB' because waves travel more slowly in the different medium. So the angle of the wavefront changes.

▲ Diffraction (spreading) as waves pass through a gap. Only part of the original wavefront can pass through. New waves coming from it combine to create a new curved wavefront.

1 Give an example which demonstrates each of the following:
a) Sound can travel through a gas.
b) Sound can travel through a liquid.
c) Sound can travel through a solid.
d) Sound cannot travel through a vacuum.
e) It is possible to hear round corners.

2 Explain each of the following:
a) Sound cannot travel through a vacuum.
b) It is possible to hear round corners.

3 a) Sound waves are *longitudinal* waves. Explain what this means.
b) If sound waves are longitudinal, why are transverse (up-and-down) 'waves' seen on the screen of the oscilloscope above when someone whistles into the microphone?
c) Waves are diffracted when they pass through a narrow gap. How does the wave theory explain this?

Related topics: air pressure 3.08; longitudinal waves 6.01; diffraction 6.02; loudspeaker 9.05; oscilloscope 10.08

Complete Physics for IGCSE

Ordering details

Complete Biology for IGCSE
978 019 915136 3

£18.00

Complete Chemistry for IGCSE
978 019 915135 6

£18.00

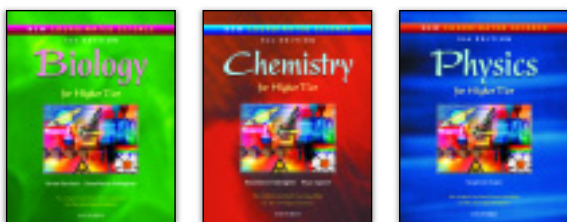
Complete Physics for IGCSE
978 019 915133 2

£18.00

IGCSE

Science

CIE recommended resources

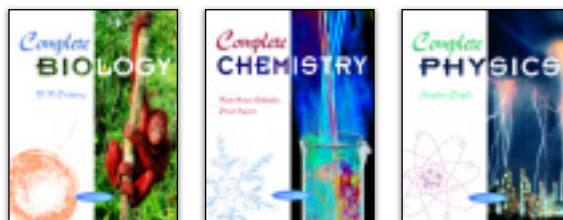


New Coordinated Science

Brian Beckett, RoseMarie Gallagher, Paul Ingram

- Recommended by University of Cambridge International Examinations
- Clear and easy-to-use approach trusted by many high-achieving schools
- Plenty of differentiated material and exam-style questions to stretch the most able

Biology	978 019 914819 6	£20.00
Chemistry	978 019 914817 2	£20.00
Physics	978 019 914822 6	£20.00

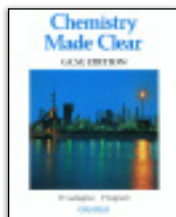
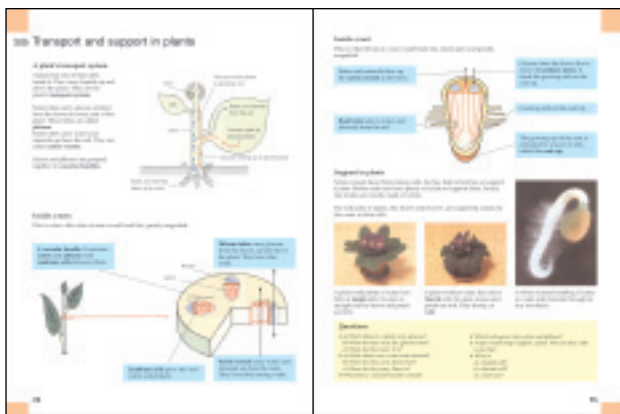


The Complete Series

Ron Pickering, RoseMarie Gallagher and Paul Ingram, Stephen Pople

- Recommended by University of Cambridge International Examinations
- Ideal for a single subject approach
- Stretching and inspiring

Biology	978 019 914739 7	£19.00
Chemistry	978 019 914799 1	£19.00
Physics	978 019 914734 2	£19.00

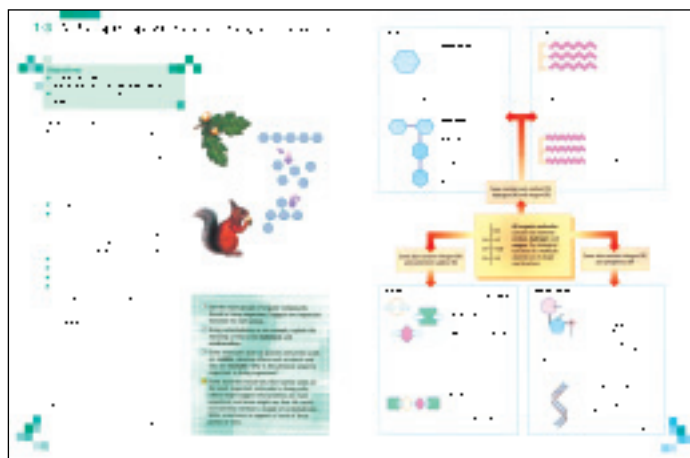


Chemistry Made Clear

RoseMarie Gallagher and Paul Ingram

- Recommended by University of Cambridge International Examinations
- Simple and direct style highlighting Chemistry in the real world
- Questions on every spread test understanding

978 019 914267 5	£13.50
------------------	--------



Complete Biology

Find out more



Oxford Science Study Dictionary

Perfect partner

978 019 911637 9

£11.99

IGCSE

Stock list

Oxford
recommends

For more recommended titles visit:
www.OxfordSecondary.co.uk/igcse



Economics and Business GCSE Business Studies

Brian Butler and John Hardy
Recommended by University of Cambridge
International Examinations, this popular textbook offers
case studies to make content relevant to students and
exam style questions to provide essential practice.

978 019 832835 3 £22.00



PE

PE to 16

Sally Fountain and Linda Goodwin
Recommended by University of Cambridge
International Examinations, this is the clearest, most
accessible book on the subject available.

978 019 913444 1 £16.00



English

New Oxford English 4

Geoff Barton, John O'Connor, Anne Powling
The last book in this lively, four-part genre-based course
contains a rich and varied range of authors, poets, and
playwrights from different countries and cultures.

978 019 831196 6 £15.75



Food Technology

Food and Nutrition

Anita Tull
The popular choice for Food and Nutrition, this
bestselling textbook is recommended by University of
Cambridge International Examinations.

978 019 832766 0 £15.00



History

The Arab-Israeli Conflict

Tony Rea and John Wright
'Feature spreads' bring together different sources and
perspectives and offer students a range of ways into the
subject matter. Recommended by University of
Cambridge International Examinations.

978 019 917170 5 £12.75



ICT

ICT for GCSE

Tim Roderick and Geoff Rushbrook
Recommended by University of Cambridge
International Examinations this is an informative
summary book with a clear, motivating text.

978 019 832816 2 £17.00



International Relations 1914-1995

Tony Rea and John Wright
Strongly narrative in approach with many primary and
secondary sources, this book provides coverage of the
major topics in the Modern World. Recommended by
University of Cambridge International Examinations.

978 019 917167 5 £18.00

Our service to you

Customer Services

Our phones are answered by **real people**, not machines, all day from 8.30am to 5pm, Monday to Friday. Contact us with any query, to make an order, or to evaluate a resource. For postage and packing information see the back of the order form.

T +44 (0) 1536 741068

F +44 (0) 1536 454519

E schools.orders.uk@oup.com
schools.enquiries.uk@oup.com

W www.OxfordSecondary.co.uk

P Oxford University Press,
Educational Supply Section,
Saxon Way West,
FREEPOST NH 2357,
Corby, NN18 9BR, UK

Technical support

T +44 (0) 1865 353374

E Oxedcdrom.uk@oup.com

International Representatives

T +44 (0) 1865 353448

F +44 (0) 8458 333052

E education.export@oup.com

Europe

Contact: Beatrice Welsh
beatrice.welsh@oup.com
T +44 1865 354622

Spain, Portugal,
Luxembourg, Belgium

Contact:
Paloma Gutierrez Kever
paloma.gutierrezkeever@oup.com
T +44 1865 354578

Malta and Cyprus

Contact: Anna Caruana
actrading@onvol.net

Eastern Europe

Contact: Jacek Lewinson
jacek.lewinson@data.pl

Middle East

UAE, Bahrain, Oman,
Qatar, Kuwait
Contact: Beverley Arnell
beverley.oxford@hotmail.com
T +971 50 394 8131

Wider Middle East

Contact: Laura Wilkinson
laura.wilkinson@oup.com
T +44 1865 354482

Asia

East Asia

Contact: Jamie Kirby
jamie.kirby@oup.com
T +44 1865 353376

India and Subcontinent

Contact: Nicola Johanson
nicola.johanson@oup.com
T +44 1865 353448

Latin America

Contact:
Paloma Gutierrez Kever
paloma.gutierrezkeever@oup.com
T +44 1865 354578

USA and Canada

Contact: Nicola Johanson
nicola.johanson@oup.com
T +44 1865 353448

Africa and the Caribbean

Contact: Graham Anderson
graham.anderson@oup.com
T +44 1865 354678

www.OxfordSecondary.co.uk/igcse

Sign up for eNewsletters and alerts – timely information on new courses, free downloads and access to competitions and giveaways – straight to your inbox.

Browse our catalogue by age, book format or exam board. Find what you are looking for quickly and easily.

Find your Education Consultant, check out up-coming events from our *Information & Services* menu.

Quickly access the latest course information, read customer reviews, access sample chapters and browse the course overview.

Order an inspection copy or place an order, quickly and efficiently. Schools have access to special discounts through the online shopping basket.

