

Cambridge University Press
978-0-521-58849-2 - Core Science 2: Consolidation
Bryan Milner, Jean Martin and Peter Evans
Frontmatter
[More information](#)



Core Science

Bryan Milner, Jean Martin and Peter Evans



Cambridge University Press
978-0-521-58849-2 - Core Science 2: Consolidation
Bryan Milner, Jean Martin and Peter Evans
Frontmatter
[More information](#)

Series editor	Bryan Milner
Biology editor	Jean Martin
Chemistry editor	Peter Evans
Physics editor	Bryan Milner
Authors	Jenifer Burden Paul Butler Zoë Crompton Sam Ellis Peter Evans Jean Martin Bryan Milner
Consultants	Kate Chaytor Nigel Heslop Martyn Keeley

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press
The Edinburgh Building, Cambridge CB2 2RU, UK

www.cambridge.org
Information on this title: www.cambridge.org/9780521588492

© Cambridge University Press 1998

First published 1998
6th printing 2006

Printed in Dubai by Oriental Press

A catalogue record for this publication is available from the British Library

ISBN-13 978-0-521-58849-2 paperback
ISBN-10 0-521-58849-9 paperback

Designed and produced by Gecko Ltd, Bicester, Oxon

Cover photo: Bungee jumper/Telegraph Colour Library

NOTICE TO TEACHERS
It is illegal to reproduce any part of this work in material form (including photocopying and electronic storage) except under the following circumstances:

- (i) where you are abiding by a licence granted to your school or institution by the Copyright Licensing Agency;
- (ii) where no such licence exists, or where you wish to exceed the terms of a licence, and you have gained the written permission of Cambridge University Press;
- (iii) where you are allowed to reproduce without permission under the provisions of Chapter 3 of the Copyright, Designs and Patents Act 1988, which covers, for example, the reproduction of short passages within certain types of educational anthology and reproduction for the purposes of setting examination questions.

Contents

BIOLOGY

Living things

1.1 Cells	2	1.10 Specialised cells (core +)	20
1.2 Working together	4	1.11 Organ systems (core +)	21
1.3 Life processes	6	1.12 Pregnancy and birth (core +)	22
1.4 Cycles of life	8	1.13 The menstrual cycle (core +)	23
1.5 The start of pregnancy	10	1.14 Changing classifications (core +)	24
1.6 New plants	12	1.15 Champion leeks (core +)	25
1.7 Classification	14		
1.8 Groups of animals	16		
1.9 Variation	18		

Keeping fit and healthy

2.1 Illness and health	26	2.9 Self-defence (core +)	42
2.2 Some chemicals can damage your body	28	2.10 Smoking and health (core +)	43
2.3 Healthy eating	30	2.11 Vitamin tablets (core +)	44
2.4 Digesting your food	32	2.12 More about enzymes (core +)	45
2.5 Using your food	34	2.13 Born athletes (core +)	46
2.6 What happens when you exercise?	36	2.14 How to get a good exchange rate (core +)	47
2.7 Keeping fit	38	2.15 Capillaries in action (core +)	48
2.8 Take care when you exercise	40	2.16 Different athletes for different events (core +)	49

Survival

3.1 Daily and seasonal change	50	3.8 Stay-at-homes and migrants (core +)	64
3.2 Photosynthesis: a scientific detective story	52	3.9 More discoveries about photosynthesis (core +)	65
3.3 Growing tomato plants without soil	54	3.10 Growing enough food (core +)	66
3.4 Feed the world	56	3.11 Plants and animals respire (core +)	67
3.5 Food in Biosphere 2	58	3.12 Problems of Biosphere 2 (core +)	68
3.6 Can great crested newts survive?	60	3.13 Disappearing species (core +)	69
3.7 The American crayfish invasion	62	3.14 Survival (core +)	70
		3.15 A problem with pesticides (core +)	71

■ CHEMISTRY

■ Matter

1.1 Using everyday materials	72	1.9 What is density? (core +)	88
1.2 Metals and non-metals	74	1.10 Density of gases (core +)	89
1.3 Solids, liquids and gases	76	1.11 What makes a solid melt? (core +)	90
1.4 Making models of matter	78	1.12 Why do liquids evaporate? (core +)	91
1.5 Getting warmer, getting colder	80	1.13 Melting, boiling and temperature	
1.6 Mixtures	82	(core +)	92
1.7 Making pure white sugar	84	1.14 How does a gas fill its container? (core +)	93
1.8 Separating mixtures	86	1.15 How can you change gas pressure?	
		(core +)	94
		1.16 Why do solids expand when they are	
		heated? (core +)	95

■ Chemical reactions

2.1 Two sorts of change	96	2.9 Different kinds of mixtures (core +)	112
2.2 Chemical reactions	98	2.10 More about compounds and mixtures	
2.3 Elements and atoms	100	(core +)	113
2.4 Compounds	102	2.11 Simple chemical formulas (core +)	114
2.5 Elements reacting with oxygen	104	2.12 More complicated chemical formulas	
2.6 Metals reacting with acids	106	(core +)	115
2.7 Displacement reactions	108	2.13 Energy changes in chemical reactions	
2.8 Carrying out tests	110	(core +)	116
		2.14 More about the reactivity series (core +)	117
		2.15 Physical change and mass (core +)	118
		2.16 Chemical change and mass (core +)	119

■ Earth science

3.1 Different kinds of rocks	120	3.9 More about the rock cycle (core +)	136
3.2 Heating up the rock cycle	122	3.10 Smelting metals (core +)	138
3.3 Getting metals out of rocks	124	3.11 More about salts (core +)	139
3.4 Corroding metals	126	3.12 Why are ice and water so strange?	
3.5 Acids and alkalis	128	(core +)	140
3.6 Acids in the soil	130	3.13 Why do rocks dissolve? (core +)	141
3.7 Weathering rocks	132	3.14 Carbon dioxide and the greenhouse effect	
3.8 Looking after the environment	134	(core +)	142
		3.15 Waste and pollution (core +)	143

■ PHYSICS

■ Light and sound

1.1 The Sun and the Earth’s satellites	144	1.9 Another look at shadows (core +)	160
1.2 The solar system and the stars	146	1.10 Some astronomical speeds (core +)	161
1.3 Driving at night	148	1.11 Using two mirrors together (core +)	162
1.4 Colour	150	1.12 Mixing colours (core +)	163
1.5 What prisms do to light	152	1.13 More ways of using prisms (core +)	164
1.6 ‘Bent’ rulers and ‘shallow’ water	154	1.14 Why glass and plastic look thinner than they are (core +)	165
1.7 A rock band on the Moon	156	1.15 The speed of sound (core +)	166
1.8 Two different stringed instruments	158	1.16 More about frequency (core +)	167

■ Forces

2.1 Things that can attract or repel	168	2.9 Why do magnets point north and south (core +)	184
2.2 Gravity – a force that attracts	170	2.10 More about gravity and distance (core +)	185
2.3 Looking at orbits	172	2.11 More about orbits (core +)	186
2.4 Getting things moving	174	2.12 Comparing forces of friction (core +)	187
2.5 Slowing down	176	2.13 Raindrops and other falling things (core +)	188
2.6 Looking at speed	178	2.14 Measuring speed (core +)	189
2.7 Pressure	180	2.15 More about pressure (core +)	190
2.8 Forces that make things turn	182	2.16 More about moments (core +)	191

■ Energy and electricity

3.1 Energy sources	192	3.9 Energy from the Sun (core +)	208
3.2 Using energy sources to generate electricity	194	3.10 Comparing energy sources (core +)	209
3.3 Getting the energy we want from electricity	196	3.11 Renewable energy sources in action (core +)	210
3.4 Static electricity and electric currents	198	3.12 More about energy transfers (core +)	211
3.5 Measuring currents in circuits	200	3.13 Cells and batteries (core +)	212
3.6 Electromagnets	202	3.14 More about circuits (core +)	213
3.7 Using electromagnets	204	3.15 Switching on a car starter motor (core +)	214
3.8 What happens to all the energy we transfer?	206	3.16 Storing energy for when it’s needed (core +)	215

■ ‘What you need to remember’ completed passages 216

■ Glossary/index 227

■ Acknowledgements

We are grateful to the following for permission to reproduce photographs.

Page 2, 4c, Andrew Syred/Microscopix; **3t, 3c, 3l**, Biophoto Associates; **4t**, John Lawrence/Power Stock Photo Library; **14t, 17tl, 17tc, 17bl, 24tr, 50t, 64tl**, Dr Alan Beaumont; **14cl**, Dr David Patterson/Science Photo Library; **14cr**, NIBSC/Science Photo Library; **16tl, 24tl, 64cl**, Nigel Cattlin/Holt Studios International; **16tr**, P. Morris; **17tr**, P. Morris/Ardea; **17br**, Dennis Green/Windrush; **18t, 30c**, CEPHAS/Stockfood; **18b, 30b, 31lower tr, 31b, 44, 127, 158tl, 158tr, 158br, 159t, 159c**, Trevor Clifford Photography; **24b**, John Clegg/Ardea; **26**, James Stevenson/Science Photo Library; **28t, 28c**, Matt Meadows, Peter Arnold Inc./Science Photo Library; **30t**, Anthony Blake Photo Library; **31tl**, E & D Boyard/Still Pictures; **31tr**, Mark Edwards/Still Pictures; **36**, Mike Hewitt/Action Plus Photographic; **38**, John Watney/Science Photo Library; **39t**, Richard Francis/Action Plus Photographic; **39cl**, Terje Rakke/Image Bank; **39cm, 46t**, Steven Behr/Stockfile; **39cr**, Steve Dunwell/Image Bank; **40tl**, Chris Barry/Action Plus Photographic; **40tr**, Geoff Waugh/Action Plus Photographic; **46b**, Chris Wilkinson/ProSport; **49**, John Walmsley; **50tc**, © 1997 Lior Rubin/Natural Science Photos; **50b**, A P Barnes/Natural Science Photos; **54**, Horticultural Research International; **58** Martin Bond/Science Photo Library; **62**, Jon Beer; **64tr**, Eric Dragesco/Ardea; **64cr**, Jack A. Bailey/Ardea; **66**, Alexis Duclos/Frank Spooner Pictures; **69bl**, Jim Hudson/Environmental Images; **69br**, Greg Glendell/Environmental Picture Library; **75c, 126t**, Michael Holford; **75b**, Alfred Pasiaka/Science Photo Library; **76**, Crown copyright is reproduced with the permission of the Controller of Her Majesty's Stationary Office; **78**, Alan Smith/Getty Images; **84**, John Wright/Hutchison Library; **86tl**, Mark Wagner/Aviation Images; **86tc, 136**, GSF Picture Library; **86tr**, Ron Dahlquist/Getty Images; **86cl**, Christine Osborne Pictures; **86cr**, BOC Gases; **98, 103tl, 103tr, 120, 121t, 121c, 124b, 125, 129, 133c**, Andrew Lambert; **112**, Steve Barsky; **121bl, 124t**, NHM Picture Library; **123, 133t, 140**, B & C Alexander; **124c**, Anglo-American Corporation of South Africa Limited; **126c, 126b**, Neill Bruce; **132t**, John Mason/Ardea; **132c**, Jack Dykinga/Getty Images; **133b**, Jeremy Hoare/Garden and Wildlife Matters; **134**, Popperfoto; **135t**, Hulton Getty Images; **135c**, James Nelson/Getty Images; **141, 215**, Chris Howes FRPS; **143t**, Colin Newson/Wildlife Matters; **143c**, William Cross/Skyscan; **148**, Nicholas Judd; **158bl**, David Redferns; **164**, Aviation Picture Library; **166**, Lockheed Aircraft Corporation/Aviation Picture Library; **186**, Frank Zullo/Science Photo Library; **195t**, David Hoffman/Still Pictures; **195c**, Gilbert Gilkes & Gordon Ltd; **195b**, Gilbert Gilkes & Gordon, Kendal, Cumbria, LA9 7BZ; **210**, Bryan Milner.

Picture research: Maureen Cowdroy

Core Science