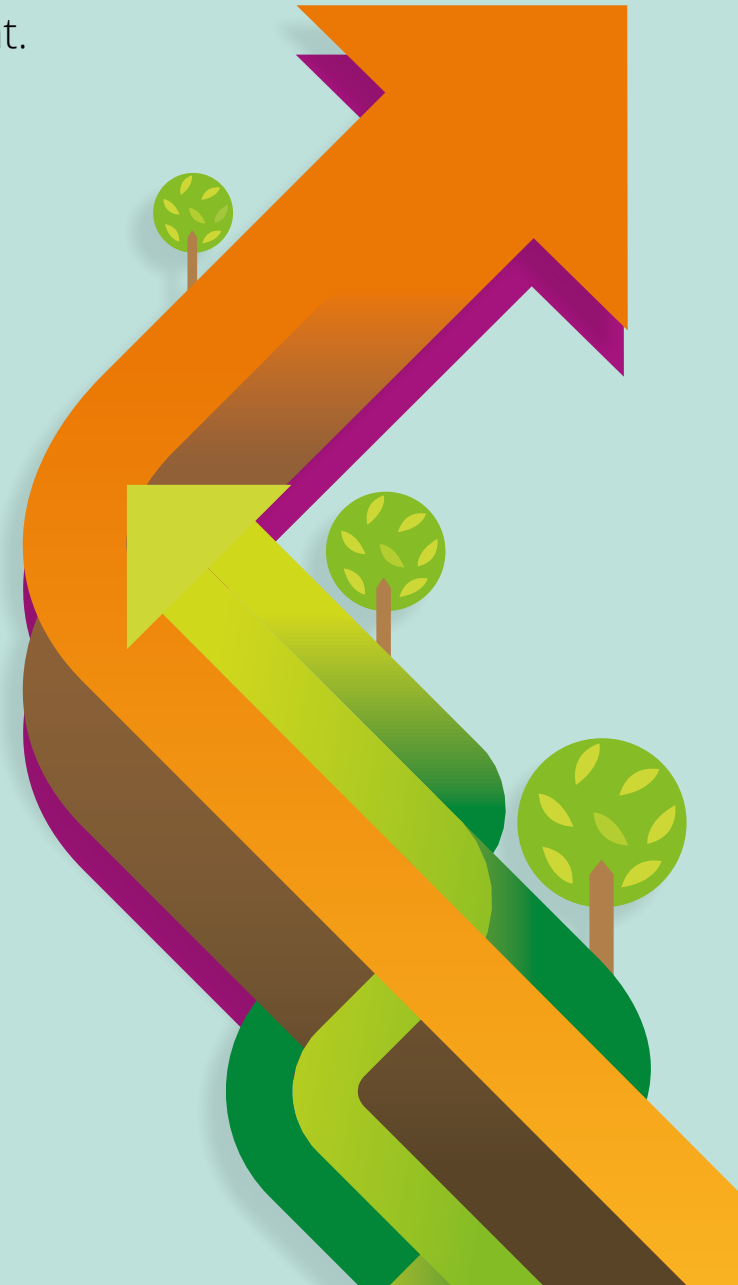
11-16 Science

5-year curriculum

progression built in

- Prepare in KS3 for success at GCSE.
- Support for all abilities.
- Built-in tracking and assessment.



Pearson

11-16 Science 5-year curriculum with

Key Stage 3

Free support

- Course planner
- PD and Events
- Subject Guides

Key Stage 4

Free support

- Training
- Year 10 exam
- Practical guides
- Exemplars & specimen papers

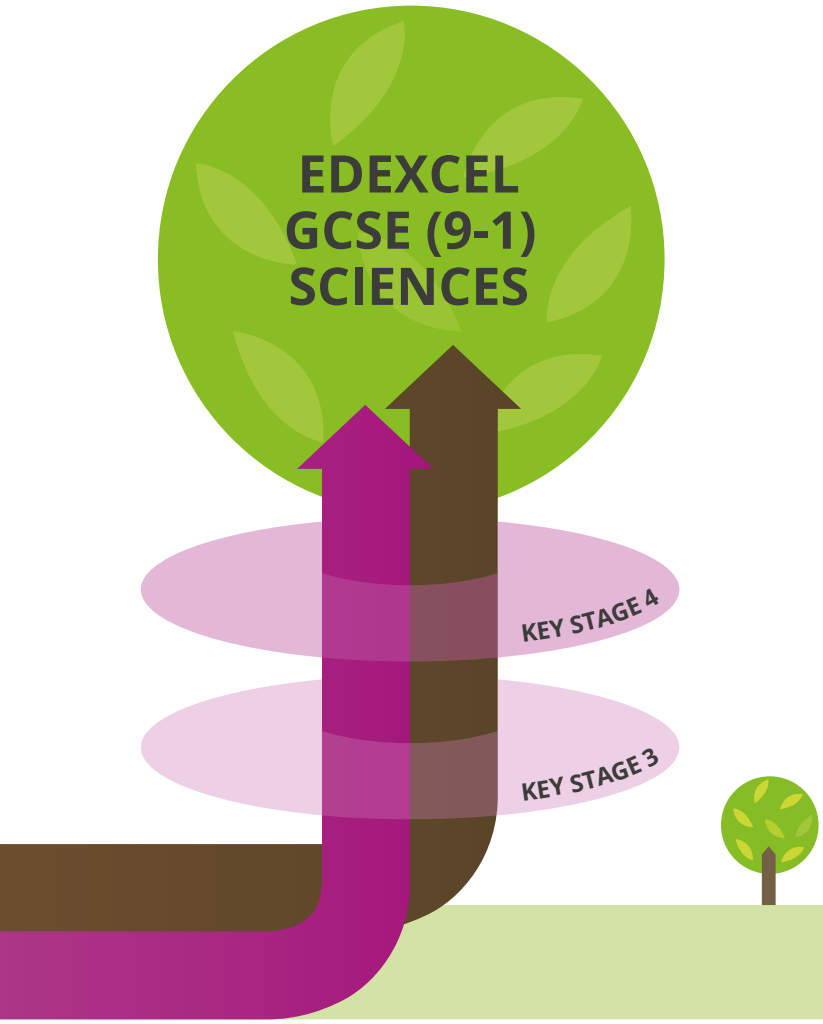
5–year schemes of work

Pearson Progression Services

Pearson published resources

Pearson published resources

progression built in.



The best preparation for Edexcel GCSE from the start of KS3

- Our popular **KS3 course Exploring Science** gives your students the best start in Science with engaging topics presented in a relevant and accessible way. **Pages 8-11**
- **Edexcel GCSE (9-1) Combined and single science** courses build on the skills and knowledge taught in Exploring Science. **Pages 12-13**

Support for all abilities

- **The Support Edition for Edexcel GCSE (9-1)** means you can co-teach GCSE (9-1) Combined Science and Entry Level Certificate to lower-ability students. **Pages 14-15**
- **Lab Books and Checklist Books** support core practicals and independent study. **Pages 16-18**

Built in tracking and assessment

- **Pearson Progression Services** help you track and assess students' progress throughout KS3 and KS4. **Pages 6-7**.

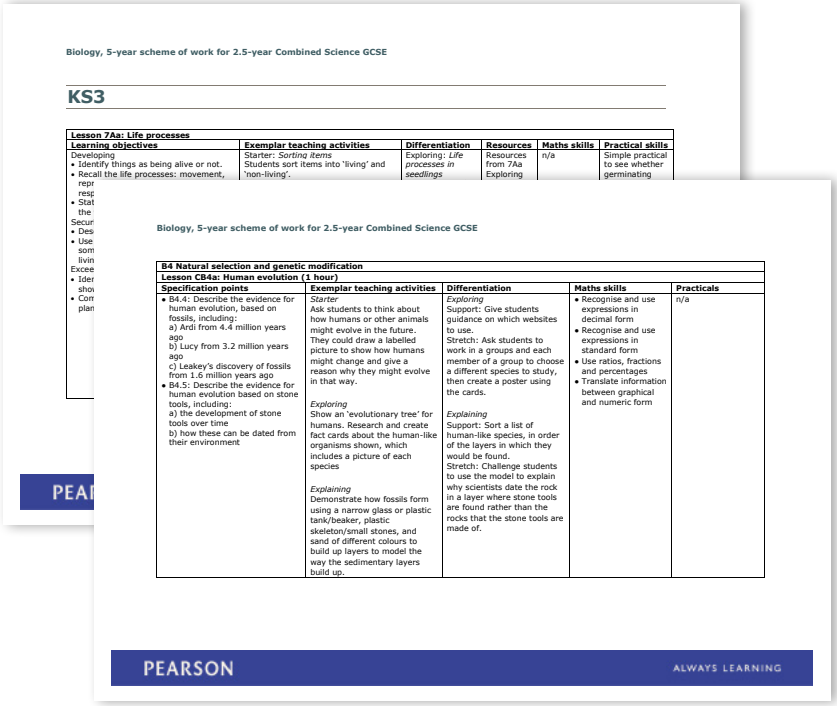
Go to: **www.pearsonschools.co.uk/5yearCurriculum**

Plan using our 5-year curriculum

Schemes of work

Our KS3 and KS4 resources support the 5-year schemes of work for Edexcel GCSE (9-1) Sciences in one simple, inclusive and inspiring course.

These schemes of work provide routes through the curriculum that are suitable for you whether you are following a 2, 2.5 or 3-year KS4.



Biology, 5-year scheme of work for 2.5-year Combined Science GCSE

KS3

Lesson 7Aa: Life processes					
Learning objectives	**Exemplar teaching activities**	**Differentiation**	**Resources**	**Maths skills**	**Practical skills**
Developing • Identify things as being alive or not. • Recall the life processes: movement, repr resp • Stat the Secur • Des • Use som livin Excee • Ider sho • Corr plan	Starter: *Sorting items* Students sort items into 'living' and 'non-living'.	Exploring: *Life processes in seedlings*	Resources from 7Aa Exploring	n/a	Simple practical to see whether germinating

Biology, 5-year scheme of work for 2.5-year Combined Science GCSE

B4 Natural selection and genetic modification Lesson CB4a: Human evolution (1 hour)				
Specification points	**Exemplar teaching activities**	**Differentiation**	**Maths skills**	**Practicals**
• B4.4: Describe the evidence for human evolution, based on fossils, including: a) Ardi from 4.4 million years ago b) Lucy from 3.2 million years ago c) Leakey's discovery of fossils from 1.6 million years ago • B4.5: Describe the evidence for human evolution based on stone tools, including: a) the development of stone tools over time b) how these can be dated from their environment	*Starter* Ask students to think about how humans or other animals might evolve in the future. They could draw a labelled picture to show how humans might change and give a reason why they might evolve in that way. *Exploring* Show an 'evolutionary tree' for humans. Research and create fact cards about the human-like organisms shown, which includes a picture of each species *Explaining* Demonstrate how fossils form using a narrow glass or plastic tank/beaker, plastic skeleton/small stones, and sand of different colours to build up layers to model the way the sedimentary layers build up.	*Exploring* Support: Give students guidance on which websites to use. Stretch: Ask students to work in a groups and each member of a group to choose a different species to study, then create a poster using the cards. *Explaining* Support: Sort a list of human-like species, in order of the layers in which they would be found. Stretch: Challenge students to use the model to explain why scientists date the rock in a layer where stone tools are found rather than the rocks that the stone tools are made of.	• Recognise and use expressions in decimal form • Recognise and use expressions in standard form • Use ratios, fractions and percentages • Translate information between graphical and numeric form	n/a

PEARSON ALWAYS LEARNING

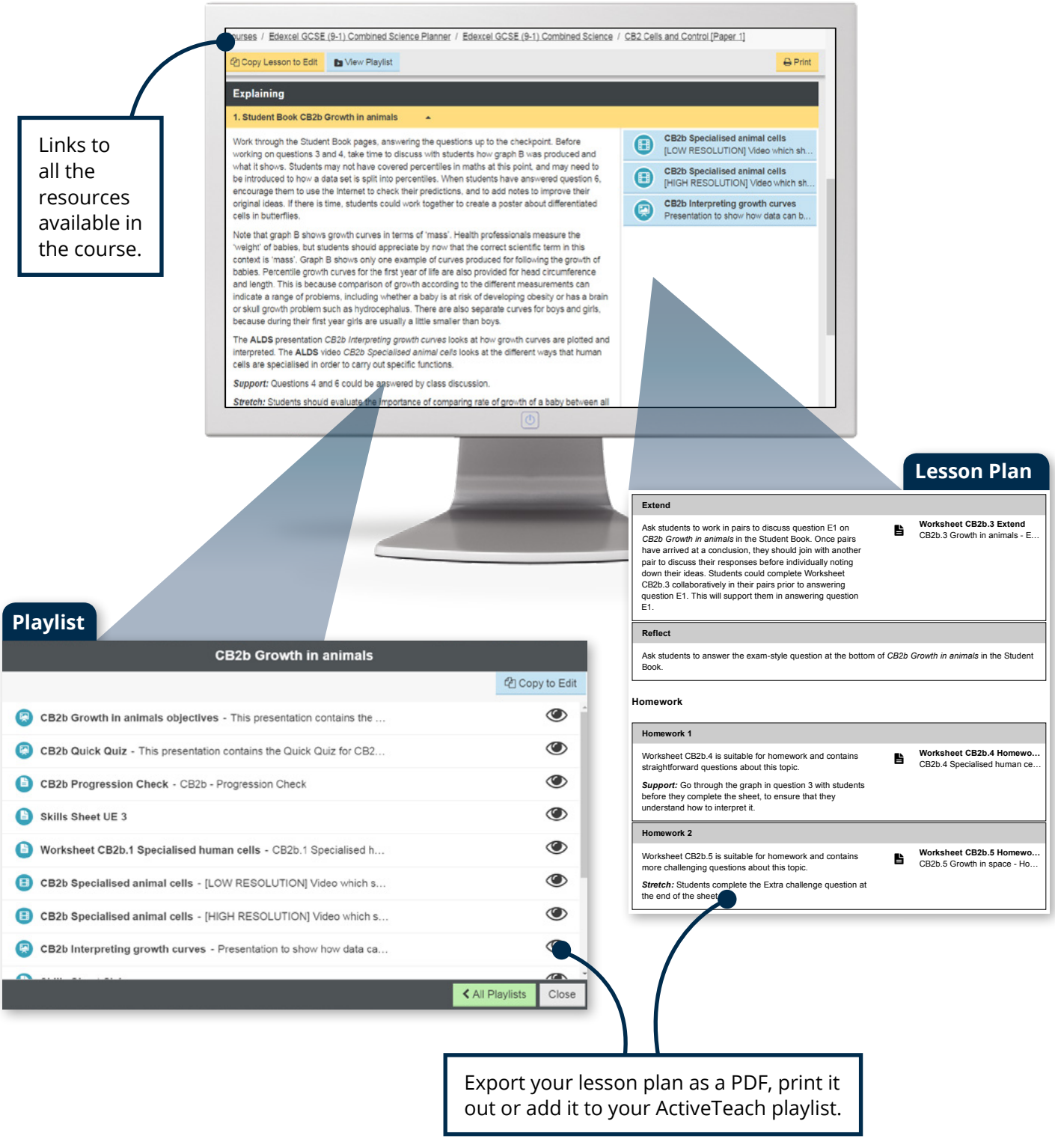
Course Planner

Our free editable Excel course planner helps you plan your teaching. It covers a number of different approaches for teaching Combined Science and separate sciences over 2, 2.5 or 3 years to suit your requirements.

You can download the schemes of work and course planners from: **qualifications.pearson.com/SciPlanner**

The ActiveLearn Digital Service Planner

Our ActiveLearn Digital Service Planner provides detailed lesson plans for each topic in the schemes of work. It also links directly to the relevant resources. It allows you to choose from four pre-populated differentiated routes through the course covering 2, 2.5 and 3-year schemes of work.



Go to: **www.pearsonschools.co.uk/5yearCurriculum**

Pearson Progression Services

Helping you to track and assess progress throughout Science Key Stage 3 and Key Stage 4.

Progression Scale and Map

Our **Science Progression Scale** is a reliable, easy-to-use tool to track students' progress over Key Stage 3 and Key Stage 4. It comprises of 12 Steps ranging from low (1) to high (12) challenge. We anticipate that the average student will enter Year 7 working at the 3rd or 4th step. The expectation is that a student will make one Step of progress a year.

The **Science Progression Map** builds on the Scale, breaking down the curriculum with clear progress descriptors, any prior knowledge required and boosters for additional challenge. This provides you with a more detailed view of how learning progresses across each of the 12 steps.

Find out more about our Progression Scale and Map at:
www.pearsonschools.co.uk/SciProg

Assessments

We have created a range of **Science assessments** aligned to our Progression Scale and tied to the Edexcel schemes of work, which can be used to assess students' understanding, skills and knowledge.

	Key Stage 3	Key Stage 4
Baseline tests*	✓	✓
End of unit tests	✓	✓
End of year tests	✓	✓

Each assessment has an accompanying markbook to help you track progress and quickly identify problems. Coming soon, our new online reporting tool offers visual data analysis to help predict future performance. For more information, visit **www.pearsonschools.co.uk/SciProg**

Indicative Grades

You have told us that mapping the Steps from the Pearson Progression Maps to indicative grades will make it simpler for you to accumulate the evidence to formulate your own grade predictions, apply any interventions and track student progress. Our initial mapping of steps to grades for GCSE Sciences 2016 is available to view online now: **www.pearsonschools.co.uk/SciProg**

KS3 resources – **Exploring Science**

The best preparation for studying GCSE Science

Exploring Science: Working Scientifically provides **simple, inclusive and inspiring** resources to support you and your students in Key Stage 3.

- Following the Edexcel 5-year Scheme of Work for GCSE (9-1) Sciences.
- Building the required skills in literacy, mathematics and practicals.
- With built-in progression from Pearson Progression Services, with baseline, end-of-unit and end-of-year assessments .

Exploring Science: Working Scientifically course components

ActiveLearn Digital Service

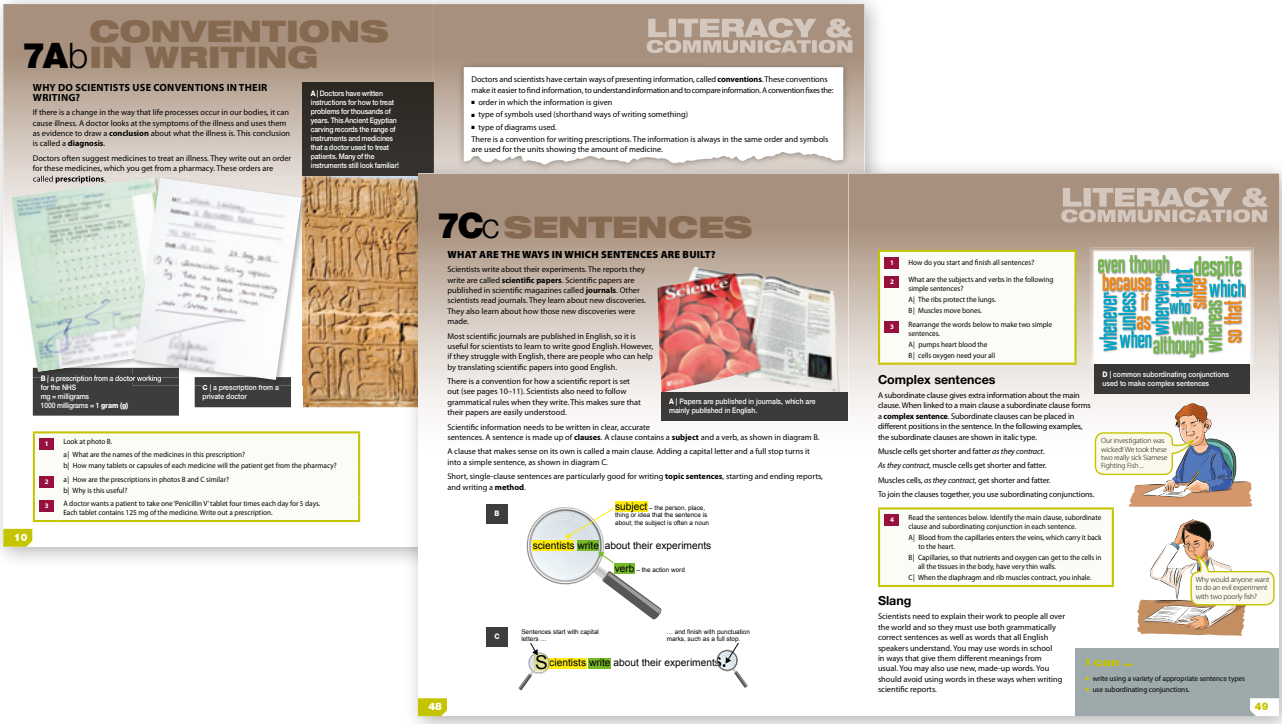
	Year 7	Year 8	Year 9
Teaching Service part of *Active*Teach Digital Service			
	• Front-of-class Teaching Resources • Activity Pack • Assessment Support Pack • Teacher and Technican Planning Pack • Planner	• Front-of-class Teaching Resources • Activity Pack • Assessment Support Pack • Teacher and Technican Planning Pack • Planner	• Front-of-class Teaching Resources • Activity Pack • Assessment Support Pack • Teacher and Technican Planning Pack • Planner
Homework, Practice and Support part of *Active*Learn Digital Service			
	• Interactive Homework tests • Sample answers • Automarked activities • Detailed feedback on each student's progress • 100+ Learning aids.	• Interactive Homework tests • Sample answers • Automarked activities • Detailed feedback on each student's progress • 100+ Learning aids.	• Interactive Homework tests • Sample answers • Automarked activities • Detailed feedback on each student's progress • 100+ Learning aids.

Print and Online

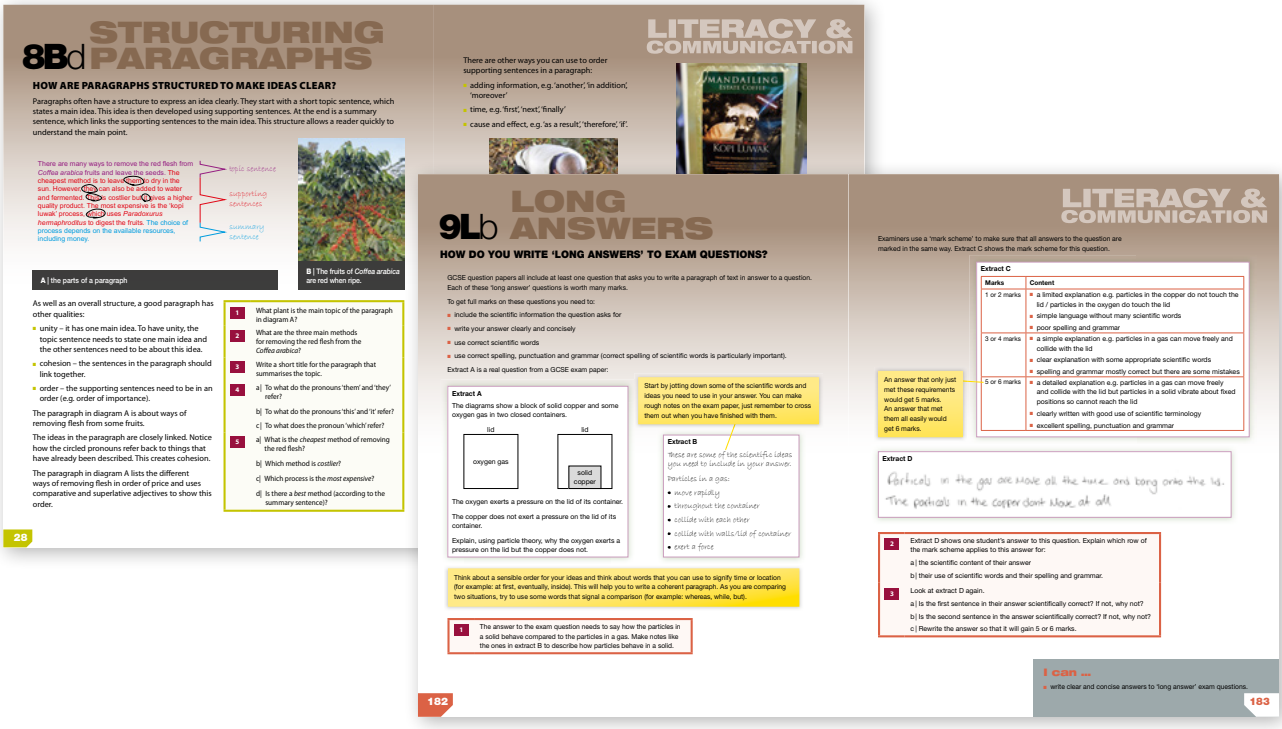
Student books are available in print or as an ActiveBook subscription. The Teacher and Technician Planning Pack, The Activity Pack and the Assessment Support Packs are available in print or downloadable online.

Literacy skills

Informed by literacy experts, **Exploring Science** helps students gradually build up science literacy skills. These skills are then met again in increasingly specific exam contexts before practising writing long answers in Year 9.



Exploring Science also provides repetition, practice and the honing of these techniques. Students will build up the required literacy skills and have sufficient practice to gain confidence and fluency in their technique under exam conditions.



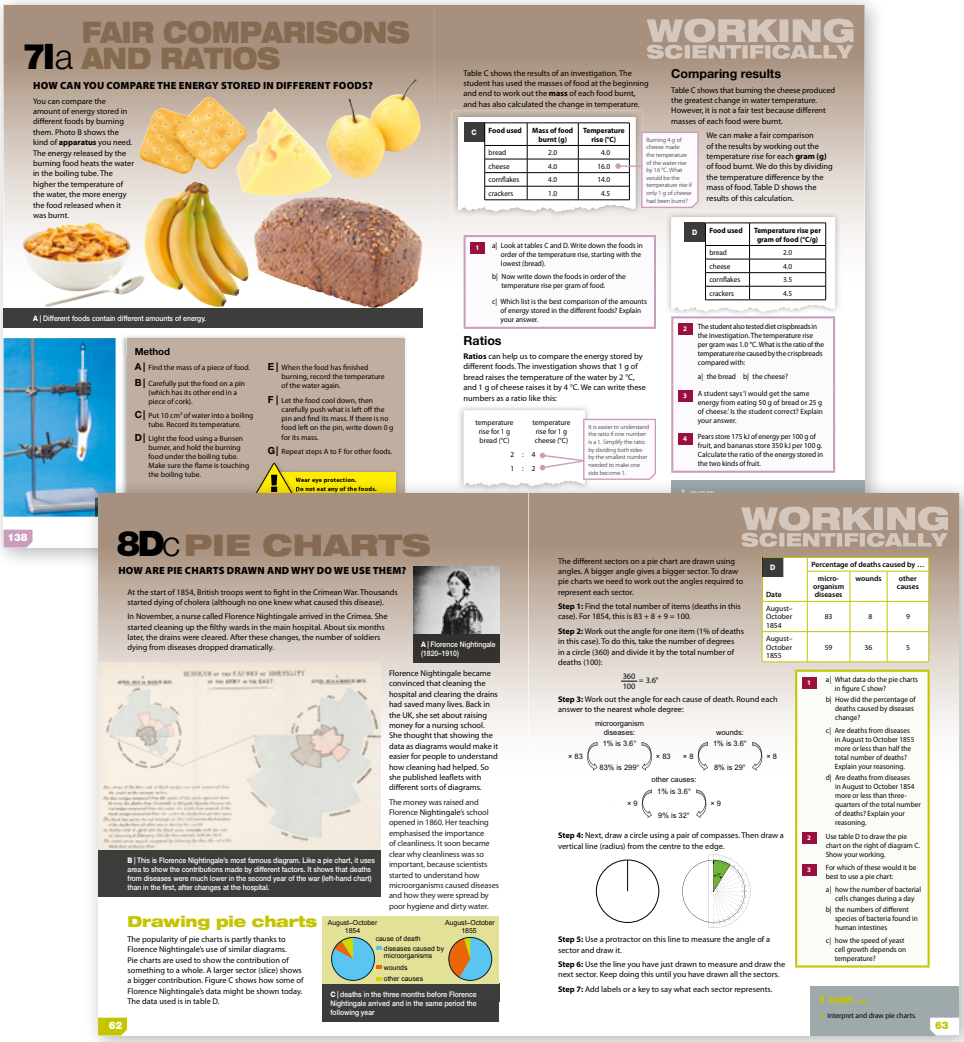
KS3 resources – Exploring Science

Maths skills

The maths requirements of the new GCSE assessments are integrated right from the beginning of Year 7.

Language and teaching approaches are consistent with those from maths classes so they are familiar to students.

Terminology and concepts from the GCSE specification are introduced early at KS3, allowing students to become familiar with the application of maths within science.



Worked example

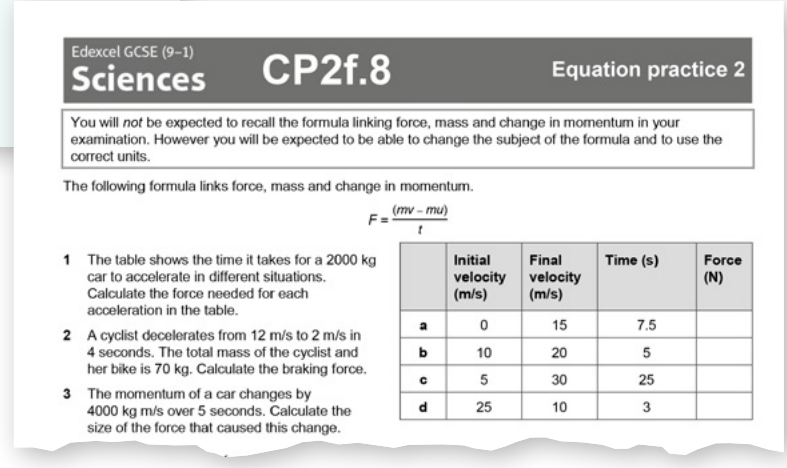
A 2000 kg car accelerates from 10 m/s to 25 m/s in 10 seconds. What resultant force produced this acceleration?

$$\text{force} = \frac{mv - mu}{t}$$

$$= \frac{2000\ \text{kg} \times 25\ \text{m/s} - 2000\ \text{kg} \times 10\ \text{m/s}}{10\ \text{s}}$$

$$= \frac{50\,000\ \text{kg m/s} - 20\,000\ \text{kg m/s}}{10\ \text{s}}$$

$$= 3000\ \text{N}$$



Edexcel GCSE (9–1) **Sciences** **CP2f.8** Equation practice 2

You will *not* be expected to recall the formula linking force, mass and change in momentum in your examination. However you will be expected to be able to change the subject of the formula and to use the correct units.

The following formula links force, mass and change in momentum.

$$F = \frac{(mv - mu)}{t}$$

1 The table shows the time it takes for a 2000 kg car to accelerate in different situations. Calculate the force needed for each acceleration in the table.

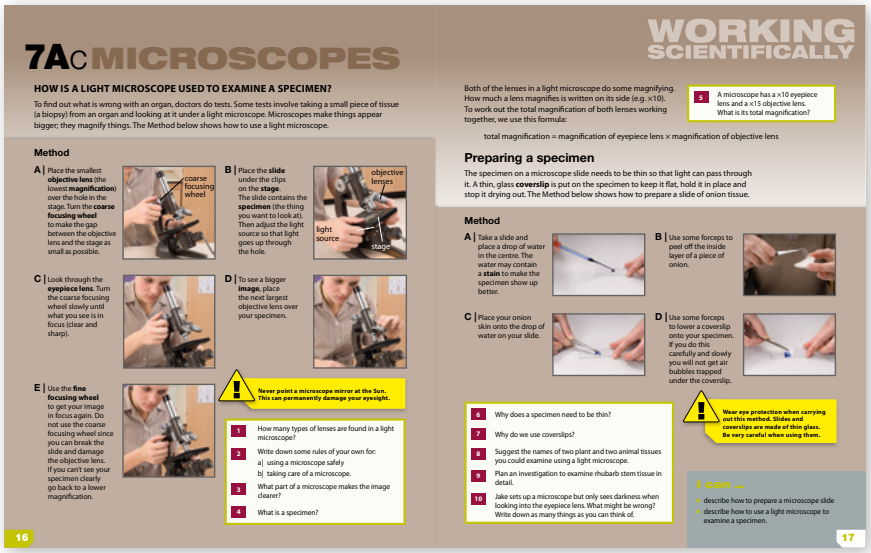
2 A cyclist decelerates from 12 m/s to 2 m/s in 4 seconds. The total mass of the cyclist and her bike is 70 kg. Calculate the braking force.

3 The momentum of a car changes by 4000 kg m/s over 5 seconds. Calculate the size of the force that caused this change.

	Initial velocity (m/s)	Final velocity (m/s)	Time (s)	Force (N)
a	0	15	7.5	
b	10	20	5	
c	5	30	25	
d	25	10	3	

Core Practical skills

For GCSE, students need to be able to complete a series of core practicals and answer exam questions.



7AC MICROSCOPES

HOW IS A LIGHT MICROSCOPE USED TO EXAMINE A SPECIMEN?

To find out what is wrong with an organ, doctors do tests. Some tests involve taking a small piece of tissue (a biopsy) from an organ and looking at it under a light microscope. Microscopes make things appear bigger; they magnify things. The Method below shows how to use a light microscope.

Method

A | Place the smallest **objective lens** (the lowest **magnification**) over the hole in the stage. Turn the **coarse focusing wheel** to make the gap between the objective lens and the stage as small as possible.

B | Place the **slide** under the clips on the **stage**. The slide contains the **specimen** (the thing you want to look at). Then adjust the light source so that light goes up through the hole.

C | Look through the **eyepiece lens**. Turn the coarse focusing wheel slowly until what you see is in focus (clear and sharp).

D | To see a bigger **image**, place the next largest objective lens over your specimen.

E | Use the **fine focusing wheel** to get your image in focus again. Do not use the coarse focusing wheel since you can break the slide and damage the objective lens. If you can't see your specimen clearly go back to a lower magnification.

Never point a microscope mirror at the Sun. This can permanently damage your eyesight.

1 How many types of lenses are found in a light microscope?
2 Write down some rules of your own for:
a| using a microscope safely
b| taking care of a microscope.
3 What part of a microscope makes the image clearer?
4 What is a specimen?

16

WORKING SCIENTIFICALLY

Both of the lenses in a light microscope do some magnifying. How much a lens magnifies is written on its side (e.g. ×10). To work out the total magnification of both lenses working together, we use this formula:

total magnification = magnification of eyepiece lens × magnification of objective lens

5 A microscope has a ×10 eyepiece lens and a ×15 objective lens. What is its total magnification?

Preparing a specimen

The specimen on a microscope slide needs to be thin so that light can pass through it. A thin, glass **coverslip** is put on the specimen to keep it flat, hold it in place and stop it drying out. The Method below shows how to prepare a slide of onion tissue.

Method

A | Take a slide and place a drop of water in the centre. The water may contain a **stain** to make the specimen show up better.

B | Use some forceps to peel off the inside layer of a piece of onion.

C | Place your onion skin onto the drop of water on your slide.

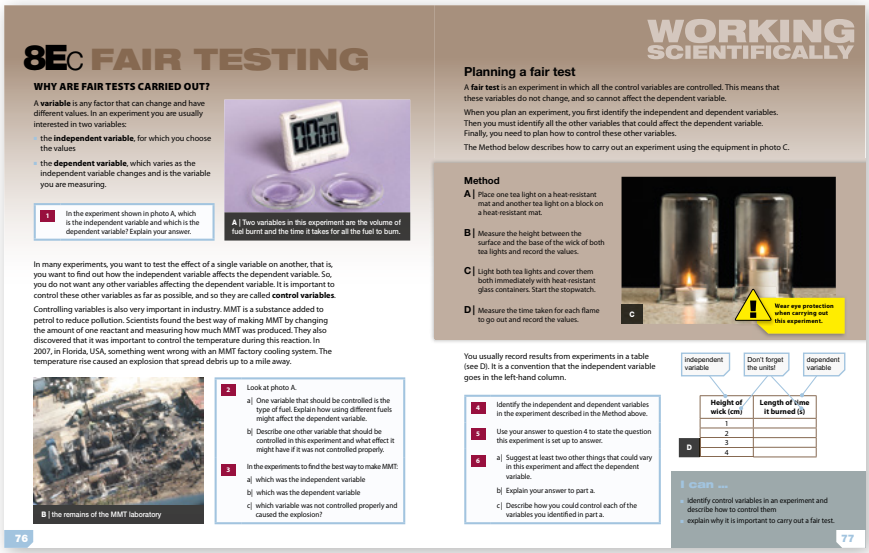
D | Use some forceps to lower a coverslip onto your specimen. If you do this carefully and slowly you will not get air bubbles trapped under the coverslip.

Wear eye protection when carrying out this method. Slides and coverslips are made of thin glass. Be very careful when using them.

6 Why does a specimen need to be thin?
7 Why do we use coverslips?
8 Suggest the names of two plant and two animal tissues you could examine using a light microscope.
9 Plan an investigation to examine rhubarb stem tissue in detail.
10 Jake sets up a microscope but only sees darkness when looking into the eyepiece lens. What might be wrong? Write down as many things as you can think of.

I can ...
- describe how to prepare a microscope slide
- describe how to use a light microscope to examine a specimen.

17



8EC FAIR TESTING

WHY ARE FAIR TESTS CARRIED OUT?

A **variable** is any factor that can change and have different values. In an experiment you are usually interested in two variables:

- the **independent variable**, for which you choose the values
- the **dependent variable**, which varies as the independent variable changes and is the variable you are measuring.

1 In the experiment shown in photo A, which is the independent variable and which is the dependent variable? Explain your answer.

A | Two variables in this experiment are the volume of fuel burnt and the time it takes for all the fuel to burn.

In many experiments, you want to test the effect of a single variable on another, that is, you want to find out how the independent variable affects the dependent variable. So, you do not want any other variables affecting the dependent variable. It is important to control these other variables as far as possible, and so they are called **control variables**.

Controlling variables is also very important in industry. MMT is a substance added to petrol to reduce pollution. Scientists found the best way of making MMT by changing the amount of one reactant and measuring how much MMT was produced. They also discovered that it was important to control the temperature during this reaction. In 2007, in Florida, USA, something went wrong with an MMT factory cooling system. The temperature rise caused an explosion that spread debris up to a mile away.

B | the remains of the MMT laboratory

2 Look at photo A.
a| One variable that should be controlled is the type of fuel. Explain how using different fuels might affect the dependent variable.
b| Describe one other variable that should be controlled in this experiment and what effect it might have if it was not controlled properly.

3 In the experiments to find the best way to make MMT:
a| which was the independent variable
b| which was the dependent variable
c| which variable was not controlled properly and caused the explosion?

76

WORKING SCIENTIFICALLY

Planning a fair test

A **fair test** is an experiment in which all the control variables are controlled. This means that these variables do not change, and so cannot affect the dependent variable.

When you plan an experiment, you first identify the independent and dependent variables. Then you must identify all the other variables that could affect the dependent variable. Finally, you need to plan how to control these other variables.

The Method below describes how to carry out an experiment using the equipment in photo C.

Method

A | Place one tea light on a heat-resistant mat and another tea light on a block on a heat-resistant mat.

B | Measure the height between the surface and the base of the wick of both tea lights and record the values.

C | Light both tea lights and cover them both immediately with heat-resistant glass containers. Start the stopwatch.

D | Measure the time taken for each flame to go out and record the values.

C

Wear eye protection when carrying out this experiment.

You usually record results from experiments in a table (see D). It is a convention that the independent variable goes in the left-hand column.

4 Identify the independent and dependent variables in the experiment described in the Method above.
5 Use your answer to question 4 to state the question this experiment is set up to answer.
6 a| Suggest at least two other things that could vary in this experiment and affect the dependent variable.
b| Explain your answer to part a.
c| Describe how you could control each of the variables you identified in part a.

I can ...
- identify control variables in an experiment and describe how to control them
- explain why it is important to carry out a fair test.

77

Exploring Science outlines to students the key principles around scientific methods such as fair testing and controlling variables. This prepares students for the types of skills and analysis they will need for core practical assessments. At GCSE the course covers the core practicals in depth and provides practice answering exam-style questions.

Go to: **www.pearsonschools.co.uk/5yearCurriculum**

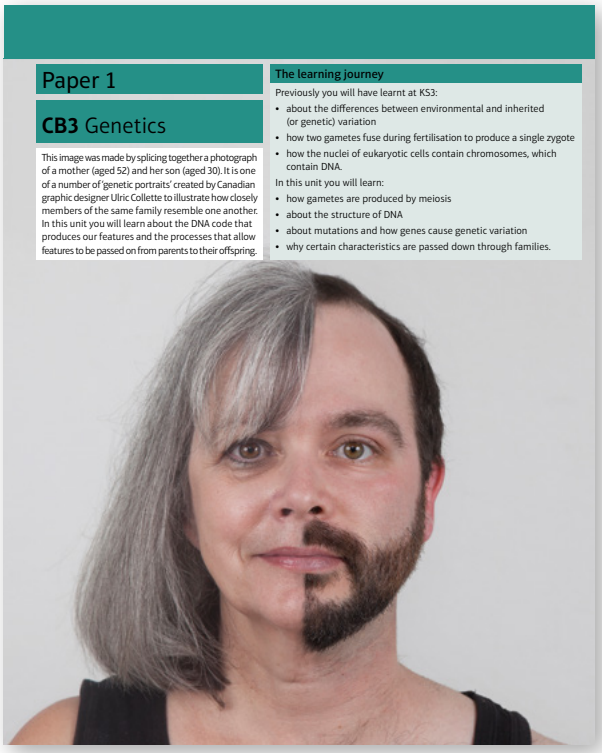
KS4 resources – **Edexcel GCSE (9-1)**

Building on the topics and skills introduced in Exploring Science, these **simple, inclusive and inspiring** resources help deliver the Edexcel GCSE (9-1) Scheme of Work to get students ready for their exams.

Simple: The resources, teaching approach and our digital service are simple to use and intuitive.

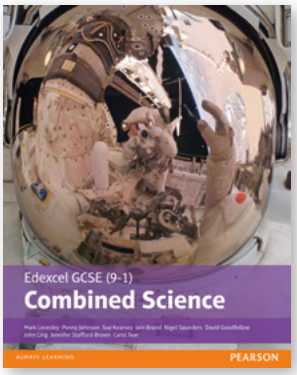
Inclusive: Lessons and activities support a full range of ability levels.

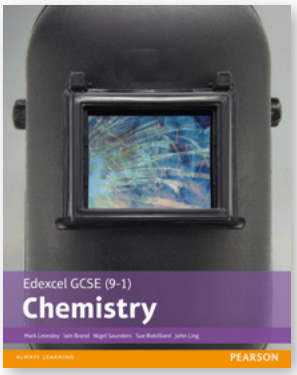
Inspiring: We go one step further to make our resources, lessons and activities truly engaging to motivate students.

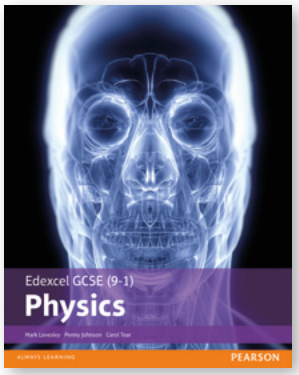


Student Books

Our GCSE (9-1) Science Student Books focus on helping students to develop the skills required for the new GCSE exams. They tie in seamlessly with our teaching resources and Pearson Progression Services.







Sciences

ALDS teaching and learning resources.

What's in the *Active*Learn Digital Service?

The subscription includes:

- access for all students in your school
- all content for Combined and Single sciences
- full support, including FREE initial training.

100+ Videos

50+ Animations

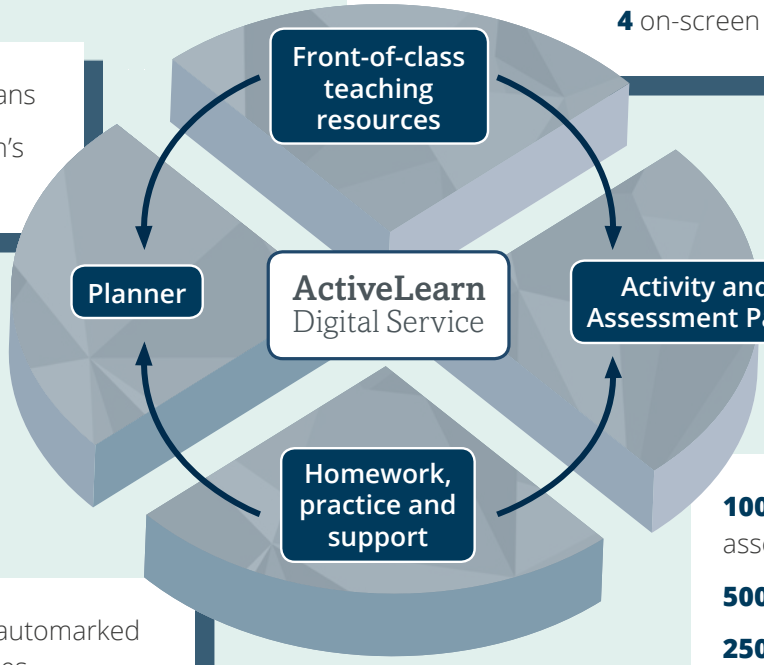
50+ Interactive activities

500+ Powerpoint presentations

4 on-screen Student Books

250+ Lesson Plans

250+ Technician's notes



100+ End-of-unit assessments

500+ worksheets

250+ practical activities

450+ automarked activities

100+ Learning aids

Supporting great Science teaching

Go to: **www.pearsonschools.co.uk/5yearCurriculum**

Support for your lower-attainers

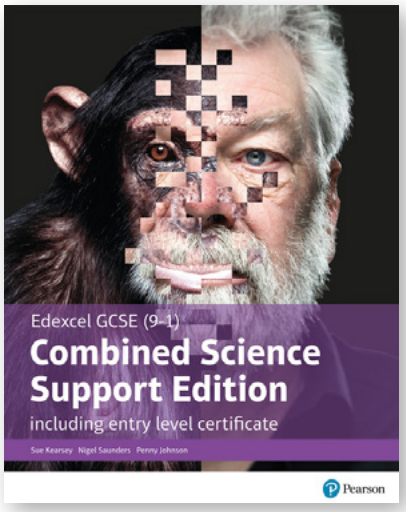
Our new **Edexcel GCSE (9-1) Combined Science Support Edition including entry level certificate** is more accessible for students targeting grades 1-3.

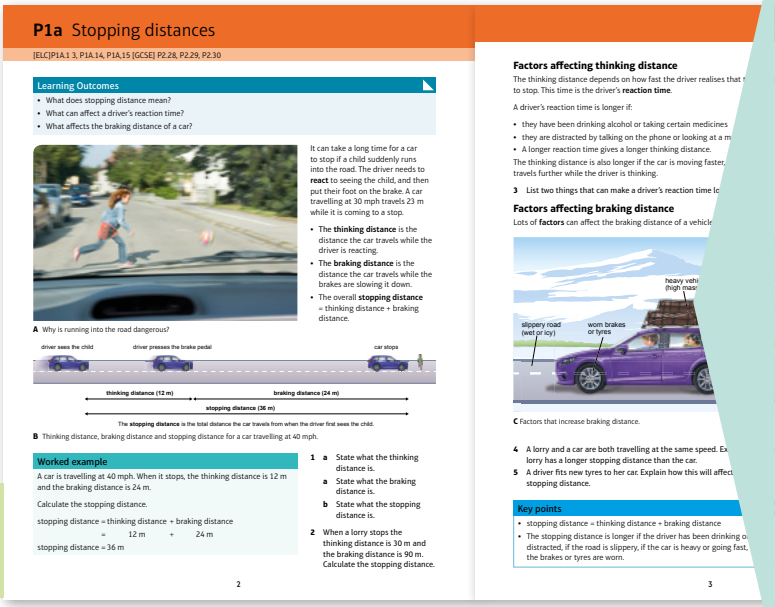
It helps you to co-teach Edexcel GCSE (9-1) Combined Science and the new Entry Level Certificate, allowing you to see how low attainers cope with the KS4 content and assessments before deciding whether to enter them for the GCSE or ELC.

Student Book

The questions and explanations in this book are simple and easy to read with examples that relate to everyday life and are easy to understand. The specially designed structure of the course allows for repetition to help students to memorise key concepts and words.

Try print and digital resources free at **www.pearsonschools.co.uk/BuySci11-16**




P1a Stopping distances

[ELC]P1A.1 3, P1A.14, P1A.15 [GCSE] P2.28, P2.29, P2.30

Learning Outcomes

- What does stopping distance mean?
- What can affect a driver's reaction time?
- What affects the braking distance of a car?

It can take a long time for a car to stop if a child suddenly runs into the road. The driver needs to **react** to seeing the child, and then put their foot on the brake. A car travelling at 30 mph travels 23 m while it is coming to a stop.

- The **thinking distance** is the distance the car travels while the driver is reacting.
- The **braking distance** is the distance the car travels while the brakes are slowing it down.
- The overall **stopping distance** = thinking distance + braking distance.

A Why is running into the road dangerous?

driver sees the child | driver presses the brake pedal | car stops

thinking distance (12 m) | braking distance (24 m)

stopping distance (36 m)

The **stopping distance** is the total distance the car travels from when the driver first sees the child.

B Thinking distance, braking distance and stopping distance for a car travelling at 40 mph.

Worked example

A car is travelling at 40 mph. When it stops, the thinking distance is 12 m and the braking distance is 24 m.

Calculate the stopping distance.

stopping distance = thinking distance + braking distance

= 12 m + 24 m

stopping distance = 36 m

1 a State what the thinking distance is.

a State what the braking distance is.

b State what the stopping distance is.

2 When a lorry stops the thinking distance is 30 m and the braking distance is 90 m. Calculate the stopping distance.

2

Factors affecting thinking distance

The thinking distance depends on how fast the driver realises that t... to stop. This time is the driver's **reaction time**.

A driver's reaction time is longer if:

- they have been drinking alcohol or taking certain medicines
- they are distracted by talking on the phone or looking at a m...
- A longer reaction time gives a longer thinking distance.

The thinking distance is also longer if the car is moving faster, ... travels further while the driver is thinking.

3 List two things that can make a driver's reaction time lo...

Factors affecting braking distance

Lots of **factors** can affect the braking distance of a vehicl...

slippery road (wet or icy) | worn brakes or tyres | heavy vehi... (high mass)

C Factors that increase braking distance.

4 A lorry and a car are both travelling at the same speed. Ex... lorry has a longer stopping distance than the car.

5 A driver fits new tyres to her car. Explain how this will affec... stopping distance.

Key points

- stopping distance = thinking distance + braking distance
- The stopping distance is longer if the driver has been drinking o... distracted, if the road is slippery, if the car is heavy or going fast, the brakes or tyres are worn.

3

*Active*Learn Digtial Service

This online resource includes:

- 180 lesson plans
- 700+ worksheets
- 150+ presentations
- Front-of-class digital version of the Student Book
- 12 End of Unit tests to track progress against the Pearson Progression Scale.

Entry Level Certificate - Flexibility for your lower-attaining students

If your students aren't ready to take **Edexcel GCSE (9-1) Combined Science**, you can enter them for the **Edexcel Entry Level Certificate in Science** and **Edexcel Further Entry Level Certificate**. The Entry Level Certificate (ELC) is co-teachable with GCSE (9-1) Sciences using our lower ability scheme of work.

Register your interest to access the assessments at: **qualifications.pearson.com/SciELC**

If you're not already with Edexcel, don't forget to check out our course planner for switching! **qualifications.pearson.com/SciPlanner**

Supporting Core Practicals

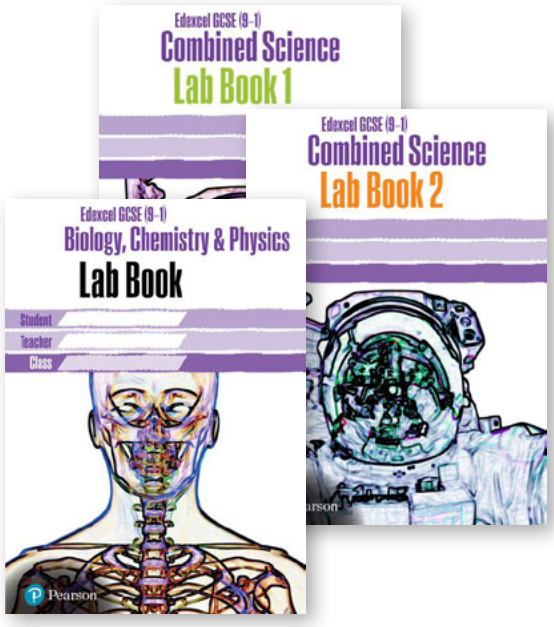
Support for Core Practicals is included throughout our resources, starting at KS3 and continuing throughout KS4 to give students the confidence and skills to succeed.

Teaching resources (delivered via ActiveLearn Digital Service)	Student Books	Lab Books (new!)
✓ Student worksheets ✓ Teacher guides ✓ Technician notes	✓ Practice in the types of skills and analysis they will need for the assessments ✓ Summaries of the method ✓ Sample exam-style questions	✓ Instructions ✓ Writing frames ✓ Practical based exam-style questions ✓ Practical Skills ✓ Checklist ✓ List of required equipment* ✓ Set of answers

Each Lab Book includes:

- ✓ all the instructions students need to perform the Core Practicals, consistent with our best-selling Edexcel GCSE Online Teaching Resources
- ✓ writing frames for students to record their results and reflect on their work

Lab Books



The Edexcel GCSE (9-1) Science Lab Books are a new type of resource to support all of your GCSE Science students in completing the Core Practical requirements. They help students to keep a record of Core Practical work and they're cheaper and easier than photocopying.

They will help students to:

- develop a stronger understanding of the skills and knowledge for the assessment of Core Practicals
- create a record of all of the Core Practical work they will have done in preparation for revision
- practise answering practical based exam-style questions, in a similar format to the exam.

They will help teachers to:

- save time and money - we have been able to price the Lab Books so that they are cheaper and easier to use than photocopying worksheets
- maintain records of what students have done in their Core Practicals.

- ✓ a selection of practical based exam-style questions, taken from our Edexcel GCSE Student Book
- ✓ a Practical Skills Checklist, so that students can track the practical skills they have learned in preparation for the exam
- ✓ an illustrated list of the equipment students will use*
- ✓ a full list of equations that students need to learn
- ✓ a full set of answers at the back.

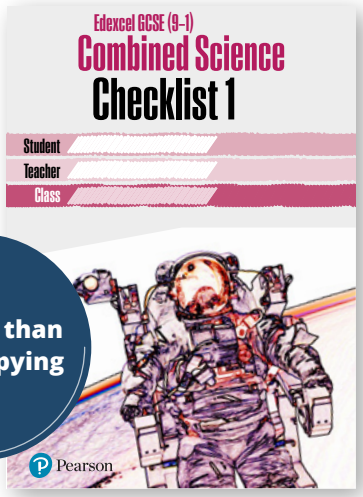
*Combined Science books only.

Go to: **www.pearsonschools.co.uk/5yearCurriculum**

Brand new support resources

Checklist Book

Our new Checklist Books are workbooks that give you all the Learning Outcomes collated into one book.



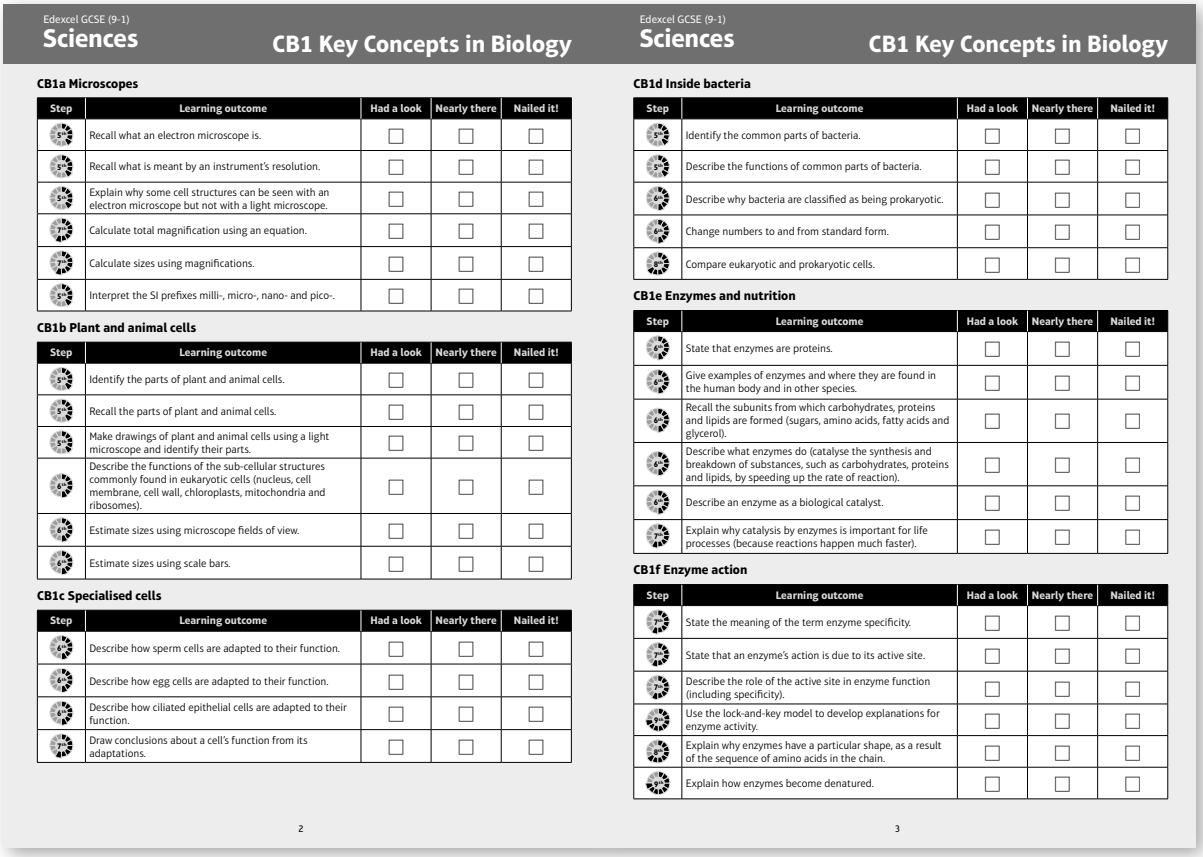
Cheaper than photocopying

Helping students to:

- self-assess their own learning
- keep a record of their progress
- develop plans for revision.

Each Learning Outcome is rated on a scale from 1 to 12 using the Pearson Progression Scale. Students will be able to see if they are able to master increasingly difficult concepts as they progress through the course.

Checklist 1 covers units CB1-5, CC1-8, CP1-6 from the Edexcel GCSE (9-1) Combined Science scheme of work.



Edexcel GCSE (9-1) Sciences — CB1 Key Concepts in Biology

CB1a Microscopes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5	Recall what an electron microscope is.	☐	☐	☐
5	Recall what is meant by an instrument's resolution.	☐	☐	☐
5	Explain why some cell structures can be seen with an electron microscope but not with a light microscope.	☐	☐	☐
7	Calculate total magnification using an equation.	☐	☐	☐
7	Calculate sizes using magnifications.	☐	☐	☐
5	Interpret the SI prefixes milli-, micro-, nano- and pico-.	☐	☐	☐

CB1b Plant and animal cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5	Identify the parts of plant and animal cells.	☐	☐	☐
5	Recall the parts of plant and animal cells.	☐	☐	☐
5	Make drawings of plant and animal cells using a light microscope and identify their parts.	☐	☐	☐
6	Describe the functions of the sub-cellular structures commonly found in eukaryotic cells (nucleus, cell membrane, cell wall, chloroplasts, mitochondria and ribosomes).	☐	☐	☐
6	Estimate sizes using microscope fields of view.	☐	☐	☐
6	Estimate sizes using scale bars.	☐	☐	☐

CB1c Specialised cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6	Describe how sperm cells are adapted to their function.	☐	☐	☐
6	Describe how egg cells are adapted to their function.	☐	☐	☐
6	Describe how ciliated epithelial cells are adapted to their function.	☐	☐	☐
7	Draw conclusions about a cell's function from its adaptations.	☐	☐	☐

2

Edexcel GCSE (9-1) Sciences — CB1 Key Concepts in Biology

CB1d Inside bacteria

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5	Identify the common parts of bacteria.	☐	☐	☐
5	Describe the functions of common parts of bacteria.	☐	☐	☐
6	Describe why bacteria are classified as being prokaryotic.	☐	☐	☐
6	Change numbers to and from standard form.	☐	☐	☐
6	Compare eukaryotic and prokaryotic cells.	☐	☐	☐

CB1e Enzymes and nutrition

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6	State that enzymes are proteins.	☐	☐	☐
6	Give examples of enzymes and where they are found in the human body and in other species.	☐	☐	☐
6	Recall the subunits from which carbohydrates, proteins and lipids are formed (sugars, amino acids, fatty acids and glycerol).	☐	☐	☐
6	Describe what enzymes do (catalyse the synthesis and breakdown of substances, such as carbohydrates, proteins and lipids, by speeding up the rate of reaction).	☐	☐	☐
6	Describe an enzyme as a biological catalyst.	☐	☐	☐
7	Explain why catalysis by enzymes is important for life processes (because reactions happen much faster).	☐	☐	☐

CB1f Enzyme action

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7	State the meaning of the term enzyme specificity.	☐	☐	☐
7	State that an enzyme's action is due to its active site.	☐	☐	☐
7	Describe the role of the active site in enzyme function (including specificity).	☐	☐	☐
8	Use the lock-and-key model to develop explanations for enzyme activity.	☐	☐	☐
8	Explain why enzymes have a particular shape, as a result of the sequence of amino acids in the chain.	☐	☐	☐
9	Explain how enzymes become denatured.	☐	☐	☐

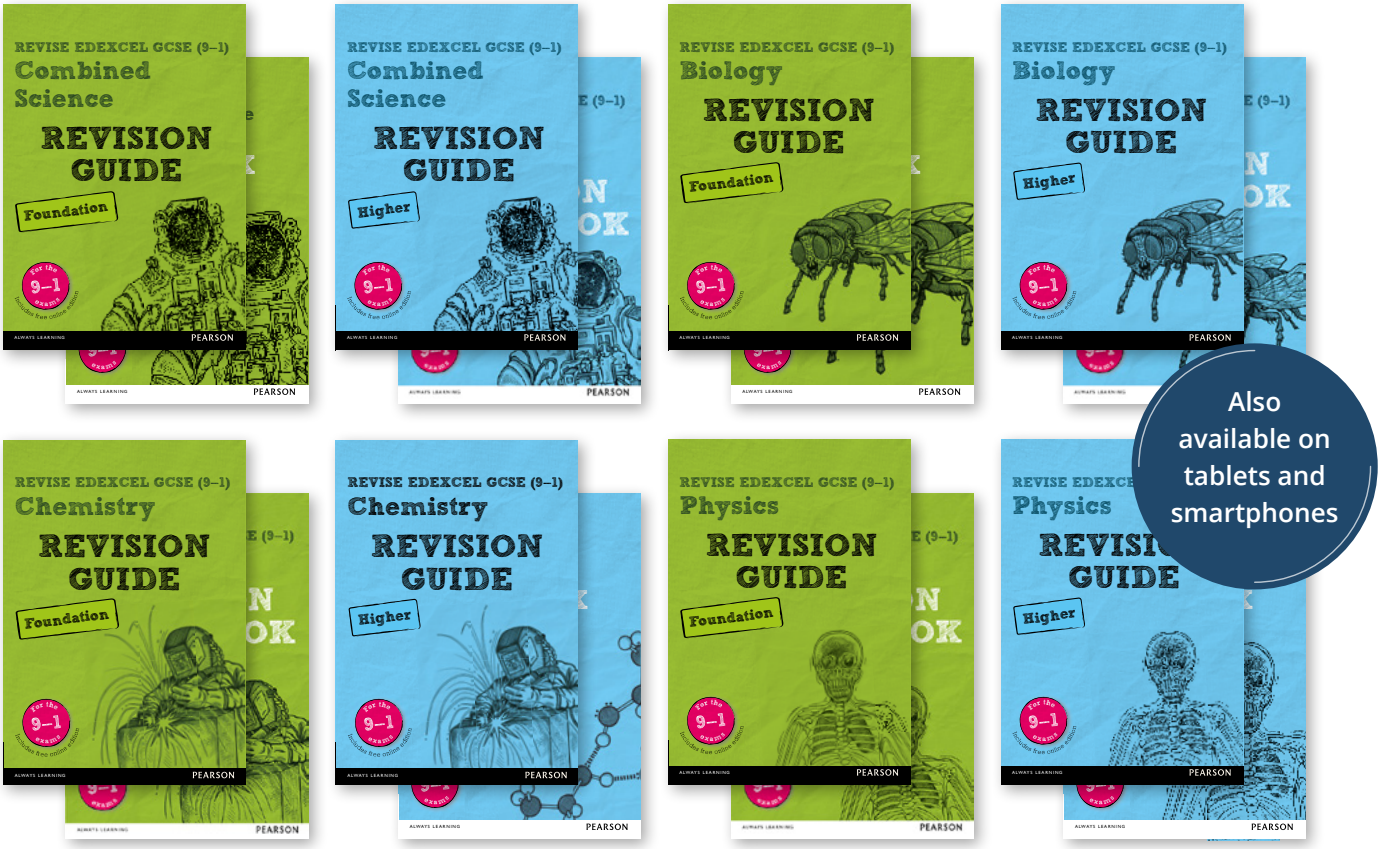
3

Revision Guides

Designed for hassle-free classroom and independent study, our **Revision Guides include a FREE online edition** and complement the Student Books with a range of features.

- One-topic-per-page format helps students revise more quickly, without the hassle.
- Exam-style worked examples match the new specification and demonstrate good exam technique.
- 'Now try this' exam-style practice questions let students test their understanding of a topic.
- 'Putting it into practice' pages support the key skills needed for the new GCSE exams.
- Step clock shows students exactly what level they're working at.

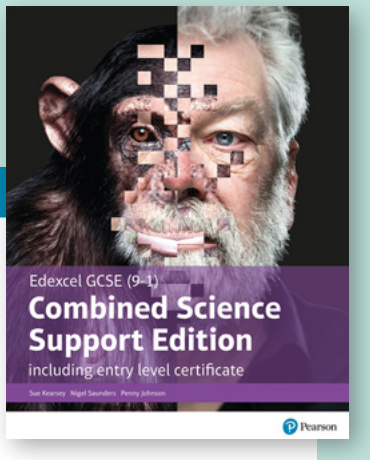
Also available are **Revision Workbooks** matched to the Revision Guides.



Also available on tablets and smartphones

Go to: **www.pearsonschools.co.uk/5yearCurriculum**

Next steps



Try it for yourself

Request a free copy of the Learning Support Edition for GCSE (9-1) including ELC

www.pearsonschools.co.uk/5yearCurriculum

Request a free copy of our Exploring Science Student books and try free teaching resources online

www.pearsonschools.co.uk/5yearCurriculum

Speak to us

Speak to your local Curriculum Support Consultant to discuss the resource options available to you.

www.pearsonschools.co.uk/TalkSci11-16

Buy online

Save up to 20% when you buy online.

www.pearsonschools.co.uk/BuySci11-16

Get in touch

Call us on: **0845 630 111**

Talk to us: **www.pearsonschoolsandfecolleges.co.uk/secondary/GlobalPages/talk-to-us.aspx**

Follow us: **@pearsonsciences**

Visit us online: **www.pearsonschools.co.uk/BuySci11-16**

PEUK A1909