

CAMBRIDGE

Mary Jones, Diane Fellowes-Freeman
and David Sang

Cambridge Checkpoint Science

Workbook



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**Mary Jones, Diane Fellowes-Freeman
and David Sang**

**Cambridge Checkpoint
Science**

Workbook

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What is this Workbook for?

This Workbook will help you to develop your knowledge and skills in science.

As you work carefully through it, you should find that you get gradually better and better at doing things such as:

- using your knowledge to work out the answers to questions, rather than just remembering the answers
- planning experiments, recording results, drawing graphs and making conclusions.

How is the Workbook organised?

Laboratory apparatus

The first few pages in the Workbook show you diagrams of the different kinds of laboratory apparatus you will use when you do practical work.

You can write in their names and what you used them for.

Useful words

There are some words that you will use quite often during your science course. Their meanings are explained on pages **10** and **11**.

Exercises

The exercises will help you to develop the skills you need to do well in science.

The exercises are not quite the same as the questions that you will meet on the Progression Tests or your Checkpoint examination.

This is because the exercises are to help you to get better at doing particular things, rather than testing how well you can do them.

The exercises are arranged in the same order as the topics in your Coursebook.

Each exercise has the same number as a topic in the Coursebook.

There is not always an exercise for each topic. For example, there is an exercise for each of topics 1.1, 1.2, 1.3 and 1.5. There is no exercise for topics 1.4 or 1.6.

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Laboratory apparatus

You will use lots of different pieces of apparatus when you do practical work.

Each time you use a new piece of apparatus, find its picture here and write in its correct name. Then describe what you used the apparatus for. There are spaces on page 9 to add more apparatus you have used.

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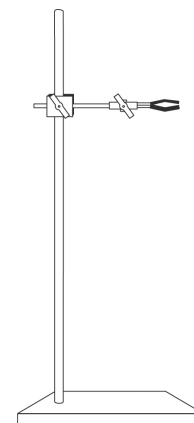


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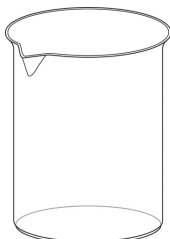


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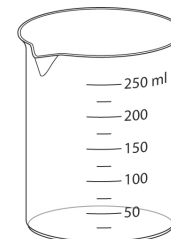


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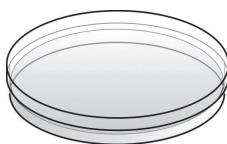


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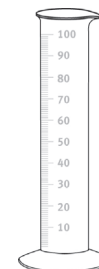


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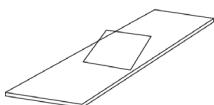


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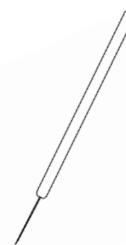


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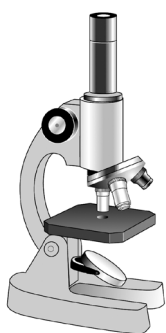


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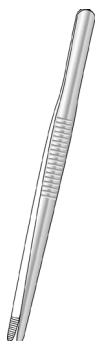


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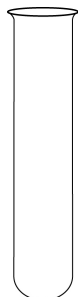


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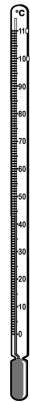
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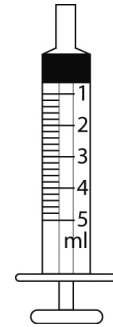


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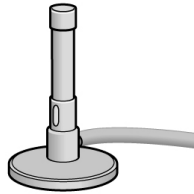


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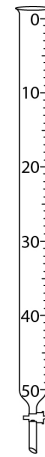


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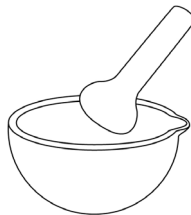


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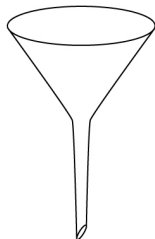


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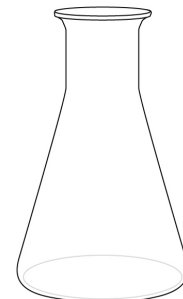


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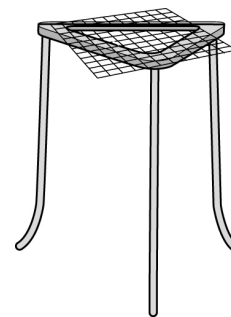


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Useful words

absorb soak up

Plant leaves **absorb** energy from sunlight.

Porous rocks can **absorb** water.

conclusion a simple statement summarising what the results of an experiment tell you

Jovanka did an experiment to investigate whether metals and non-metals conduct electricity.

Her **conclusion** was that metals conduct electricity, but most non-metals do not conduct electricity.

describe say what happens, or what you can see, or what your results are

Shane **described** what happened when he added some acid to some alkali. He said that the indicator changed colour from the UI colour at pH 10 to the UI colour at pH 7.

explain say why something happens

Shane **explained** what happened when he added some acid to some alkali. He said that the pH changed from pH 10 to pH 7, because the acid neutralised the alkali.

fair test an experiment where all the variables are kept the same, except the one whose effect we are investigating

Sonali is doing an experiment to investigate how temperature affects the rate at which a fungus grows on bread.

She makes it a **fair test** by making sure that the only variable that changes is the temperature.

function job, use or purpose

One **function** of a plant's roots is to absorb water.

The **function** of a forcemeter is to measure a force.



particle a very small piece

Sometimes, we use the word ‘particle’ to mean the very smallest piece of something that can exist – so small that we cannot see it even with a microscope.

In a solid, the **particles** are tightly packed in a regular arrangement, vibrating on the spot.

Sometimes, we use the word ‘particle’ to mean a bigger piece – something that we can easily see with our eyes.

In a clay soil, the soil **particles** are small with only tiny air spaces between them.

property the way that something behaves

One **property** of metals is that they can conduct electricity.

A **property** of liquids is that they can flow.

unit a standard quantity that we use for measuring something

The **unit** for measuring length is the metre.

The **unit** for measuring mass is the kilogram.

variable something that can change, especially in an experiment

Sonali is doing an experiment to investigate how temperature affects the rate at which a fungi grows on bread.

The **variable** she changes is the temperature.

The **variable** she measures is the growth of the fungus.

Three of the **variables** she keeps the same are the kind of bread, the size of the bread and the amount of water he adds to the bread.



Unit 1 Plants and humans as organisms

Exercise 1.1 Comparing leaves

This exercise will help you to practise observing carefully. You will also think about how to record your observations in a table.

- 1 Find two leaves from two different plants. Decide which one will be Leaf **A** and which will be Leaf **B**.
- 2 Look very carefully at the two leaves. Make a list of **three** features that are the **same** in both leaves.

first feature

.....
.....

second feature

.....
.....

third feature

.....
.....

Unit 1 Plants and humans as organisms



3 Now look for **differences** between the leaves. Write descriptions of the differences in the table. You can add more rows to the table if you like.

Feature	Leaf A	Leaf B
length		
shape		
colour		
surface		
edge		
pattern of veins		



Unit 1 Plants and humans as organisms

Exercise 1.2 Human organ systems

This exercise will help you to remember what you have learnt about four organ systems in the human body.

For each of the functions listed, write the name of the organ system that has this function. Choose from:

- respiratory system**
- nervous system**
- circulatory system**
- digestive system**

Then list at least **two** organs that are part of each organ system.

Function	Organ system	Some organs in the system
transporting substances round the body		
breaking down food and absorbing it into the blood		
taking oxygen into the body and getting rid of carbon dioxide		
helping different parts of the body to communicate		

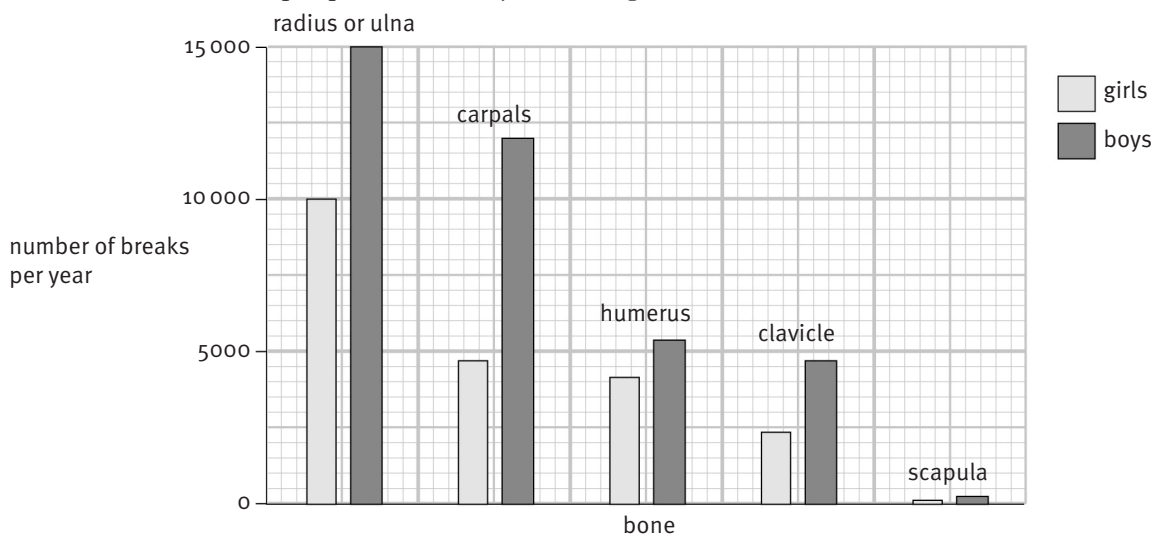


Exercise 1.3 Breaking bones

This exercise will help you to practise reading information from a bar chart.

Most of our bones are very strong. They do not break easily. But very strong forces on a bone can make it snap.

The bar chart below shows information about the bones broken in a country in Europe in one year. It shows which bones in the arms and shoulders were broken most often in people under 18 years of age.



Use the bar chart to answer these questions.

1 Which bones were broken most often?

.....

2 For boys, how many times was a humerus broken during the year?

.....

3 How many more times did a boy break his radius or ulna than his humerus?
Show how you worked out your answer.

.....

.....

4 How many times did girls break a bone in a part of the arm below the elbow?
Show how you worked out your answer.

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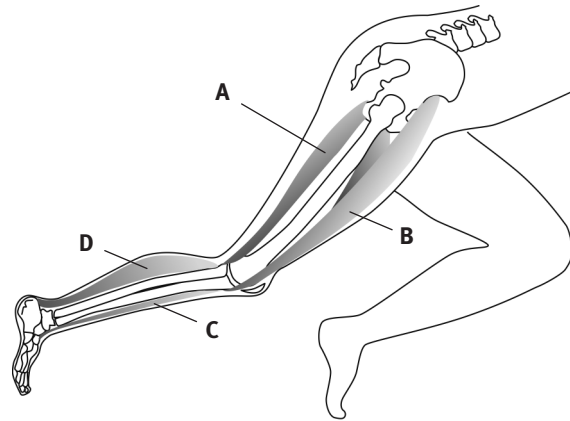
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Unit 1 Plants and humans as organisms

Exercise 1.5 Antagonistic muscles in the leg

In this exercise, you will be using what you have learnt about the muscles in the arm to predict how the muscles in the leg work. It's important not to get worried when you see something new that you think you have not learned about. Just think about what you have learnt, and use it to help you in this unfamiliar situation.



This diagram shows the muscles in a person's leg.

1 On the diagram, label these bones:

the femur the pelvis the tibia

2 What kind of joint is the knee joint?

.....

3 On the diagram, label a ball-and-socket joint.

4 Look carefully at the diagram. What will happen at the knee joint when muscle **A** contracts?

.....

5 What will happen at the knee joint when muscle **B** contracts?

.....

6 Which of these pairs of muscles are antagonistic pairs? Underline the **two** correct answers.

A and B A and D B and C C and D C and A

Unit 2 Cells and organisms



Exercise 2.1 Characteristics of living organisms

Doing this word search will help you to learn and remember the seven characteristics of living things, and how to spell them.

Find the words with each of these meanings.

- a Being able to sense and respond to stimuli.
- b A chemical reaction that takes place in all living cells, releasing energy from food.
- c Changing the position or shape of part of the body.
- d Getting rid of waste products from the chemical reactions taking place inside body cells.
- e Taking in nutrients that are needed to keep the organism alive.
- f Making new living organisms.
- g A permanent increase in size.

z	q	x	u	e	e	b	c	y	s	t	n	p	r
r	a	c	h	p	x	e	l	h	t	w	o	r	g
e	m	q	u	a	l	w	h	t	r	e	i	n	e
s	j	u	z	c	k	e	m	n	i	x	t	f	s
p	g	n	w	y	a	o	o	m	t	c	c	x	e
i	m	p	c	b	l	i	v	k	d	r	u	s	t
r	h	c	t	i	t	o	e	c	e	e	d	r	l
a	u	p	b	i	e	i	m	o	u	t	o	w	t
t	e	r	r	v	s	c	e	p	s	i	r	r	e
i	n	t	r	e	s	k	n	f	f	o	p	e	r
o	u	y	t	i	v	i	t	i	s	n	e	s	g
n	h	i	j	t	u	f	v	j	e	a	r	d	e