How to be Brilliant at Living Things

Colin Hughes and
Winnie Wade

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Contents

Introduction

How to be Brilliant at Living Things contains 36 photocopiable sheets for use with children working at levels 2–5 of the revised National Curriculum (2000) and Scottish levels C–E. The activities are designed to help children develop scientific understanding of the fascinating topics associated with living things. They can be used whenever the need arises for particular activities to support and supplement your existing schemes of work for science. The activities provide learning experiences which can be tailored to meet individual children's needs.

The activities are addressed directly to the children. They are self-contained and many children will be able to work with little additional help from you. You may have some pupils, however, who have the necessary scientific skills and concepts but require your help in reading the sheets.

The children should be encouraged to use the sheets for all aspects of communicating their work. Those activities which require more than a pen or pencil may be completed with basic classroom science resources. These are listed under the **What you need** heading on the sheets. Some of the sheets require the use of an additional resource sheet. Where this is the case, it has been indicated in the text along with the page number.

Links to the National Curriculum

How to be Brilliant at Living Things relates directly to themes 1, 2, 3, 4 and 5 of the Key Stage 2 programme of study for Life Processes and Living Things. The contents page indexes each activity directly to the programme of study, while pages 5 and 6 give details of the programme of study covered in the book.

Links to the National Curriculum

How to be Brilliant at Living Things supports the following elements of the Key Stage 2 Sc 2 Life Processes and Living Things programme of study.

Pupils should be taught:

1 Life processes

a that the life processes common to humans and other animals include nutrition, movement, growth and reproduction
b that the life processes common to plants include growth, nutrition and reproduction
c to make links between life processes in familiar animals and plants and the environments in which they are found.

2 Humans and other animals

Nutrition
a about the functions and care of teeth
b about the need for food for activity and growth, and about the importance of an adequate and varied diet for health

Circulation
c that the heart acts as a pump to circulate the blood through vessels around the body, including through the lungs
d about the effect of exercise and rest on pulse rate

Movement
e that humans and some other animals have skeletons and muscles to support and protect their bodies and to help them to move

Growth and reproduction
f about the main stages of the human life cycle

Health
g about the effects on the human body of tobacco, alcohol and other drugs, and how these relate to their personal health
h about the importance of exercise for good health.

3 Green plants

Growth and nutrition
a the effect of light, air, water and temperature on plant growth
b the role of the leaf in producing new material for growth
c that the root anchors the plant, and that water and minerals are taken in through the root and transported through the stem to other parts of the plant

Reproduction
d about the parts of the flower (for example, stigma, stamen, petal, sepal) and their role in the life cycle of flowering plants, including pollination, seed formation, seed dispersal and germination.

4 Variation and classification

a to make and use keys
b how locally occurring animals and plants can be identified and assigned to groups
c that the variety of plants and animals makes it important to identify them and assign them to groups.

5 Living things in their environment

a about ways in which living things and the environment need protection

Adaptation
b about the different plants and animals found in different habitats
c how animals and plants in two different habitats are suited to their environment

Feeding relationships
d to use food chains to show feeding relationships in a habitat
e about how nearly all food chains start with a green plant

Micro-organisms
f that micro-organisms are living organisms that are often too small to be seen, and that they may be beneficial (for example, in the breakdown of waste, in making bread) or harmful (for example, in causing disease, in causing food to go mouldy).

In addition ***How to be Brilliant at Living Things*** supports the following elements of the Key Stage 2 Sc 1 Scientific Enquiry programme of study.

Pupils should be taught:

1 Ideas and evidence in science

a that science is about thinking creatively to try to explain how living and non-living things work, and to establish links between causes and effects (for example, Jenner's vaccination work)
b that it is important to test ideas using evidence from observation and measurement

2 Investigative skills

Planning
a ask questions that can be investigated scientifically and decide how to find answers
b consider what sources of information, including first-hand experience and a range of other sources, they will use to answer questions
c think about what might happen or try things out when deciding what to do, what kind of evidence to collect, and what equipment and materials to use
d make a fair test or comparisons by changing one factor and observing or measuring the effect while keeping other factors the same

Obtaining and presenting evidence
e use simple equipment and materials appropriately and take action to control risks
f make systematic observations and measurements, including the use of ICT for datalogging
g check observations and measurements by repeating them where appropriate
h use a wide range of methods, including diagrams, drawings, tables, bar charts, line graphs and ICT, to communicate data in an appropriate and systematic manner

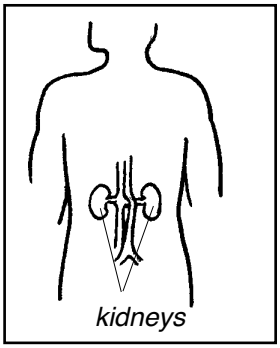
Considering evidence and evaluating
i make comparisons and identify simple patterns or associations in their own observations and measurements or other data
j use observations, measurements or other data to draw conclusions
k decide whether these conclusions agree with any prediction made and/or whether they enable further predictions to be made
l use their scientific knowledge and understanding to explain observations, measurements or other data or conclusions
m review their work and the work of others and describe its significance and limitations.

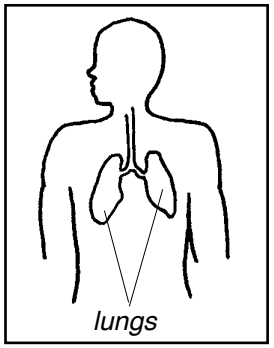
Life processes we carry out

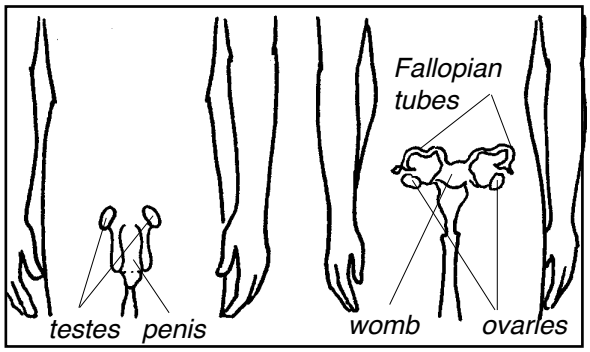
All living things, whether they are **plants** or **animals**, are able to carry out **life processes**. Living things, including humans can carry out seven life processes.

Listed below are the names of the seven processes that humans carry out. Also below are seven diagrams showing these processes.

■ Draw a line from the diagrams to the names to match them up correctly.







reproduction

nutrition and feeding

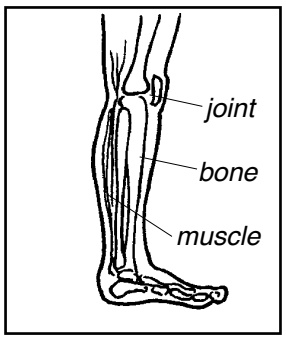
excretion

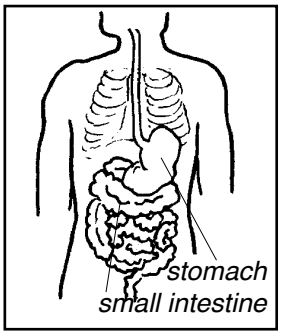
breathing and respiration

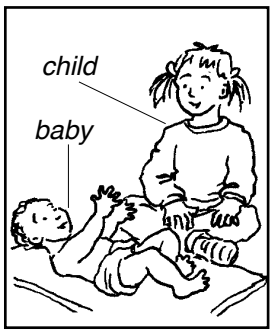
sensitivity

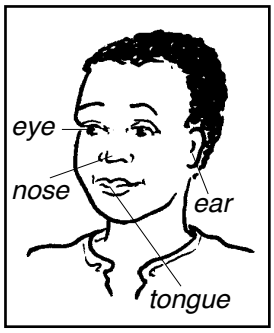
growth

movement







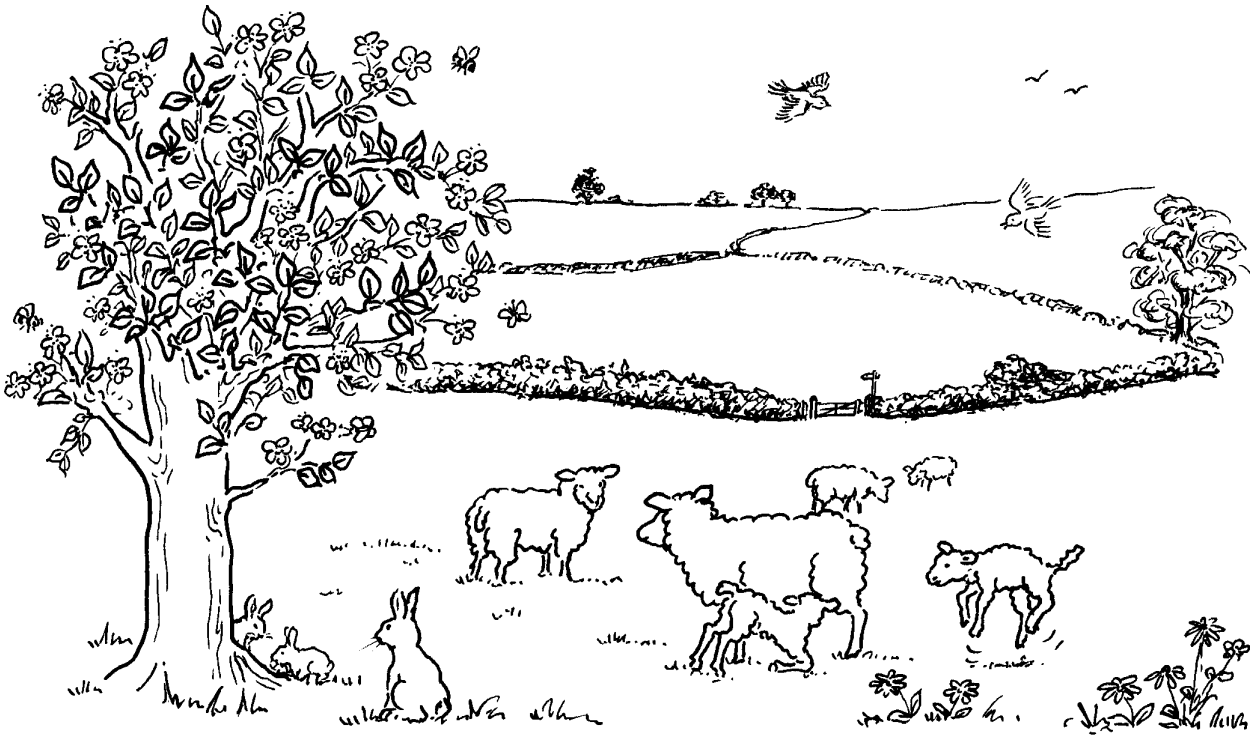


EXTRA!

Draw a table which shows the life process in one column and the organs in the body which carry out the process in the other.

Living things do these!

All living things can do a number of activities or life processes. Living things are also called **organisms**.



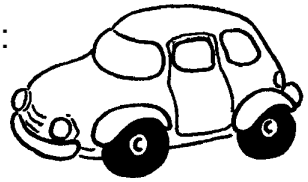
- Tick the four boxes which show the main things which **all animals do**.

feed	☐	grow	☐	hear	☐	hunt	☐
make a sound	☐	move	☐	reproduce	☐	walk	☐

- **Plants** make their **own food**. Which **two** other life processes do **all** plants do? Tick them.

make food	☑	grow	☐	hear	☐	hunt	☐
make a sound	☐	move	☐	reproduce	☐	walk	☐

- Using the above information, finish these sentences:



A car is not living because ...

A dried flower is not living because ...

EXTRA!

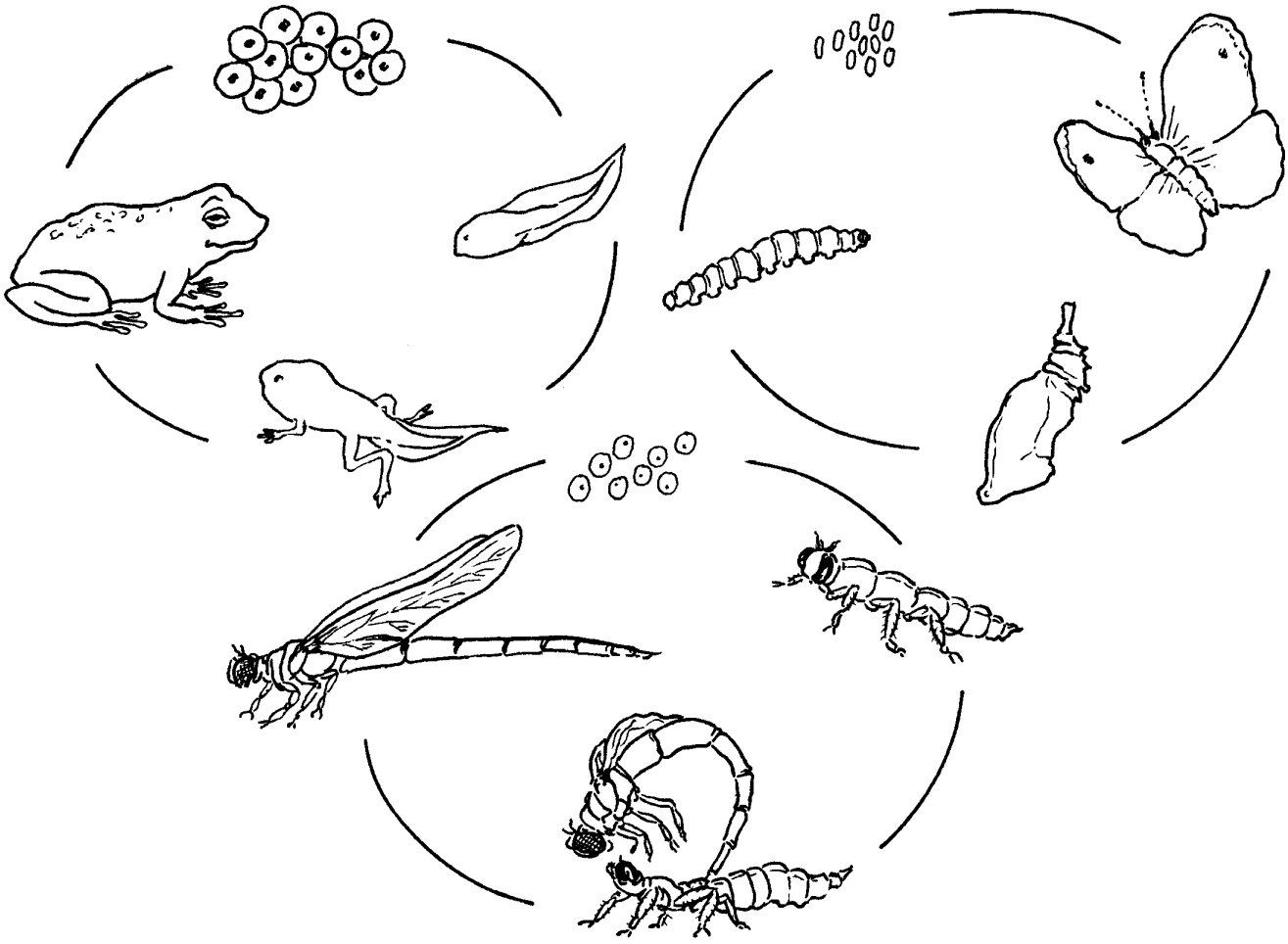
There are a few more life processes that animals and plants can do. Can you think of them? If not, find out in a book or CD-ROM.

Life cycles and growth

A cycle is something which goes around. A life cycle shows how an animal or plant reproduces and grows and reproduces again. Some animals change greatly in appearance as they grow. Frogs do and so do butterflies. Another example is dragonflies which are found close to water.

■ Label the diagrams below using these words:

dragonfly emerging	frog	dragonfly nymph
eggs	tadpole	larva (caterpillar)
butterfly	dragonfly	pupa
tadpole with legs	eggs (frogspawn)	eggs



■ Complete the arrows on the three life cycles to show the direction of the cycle.

■ How is the life cycle and growth of humans different from the three animals, above?

EXTRA!

Find out what is meant by the word *metamorphosis.*