1.1 Comparing plant structures

This challenge task relates to 1.1 Plant organs from the Coursebook.

In this challenge task, you will practise writing clear, simple descriptions. You will then make a comparison between two plants.

1 Use your own words to outline the functions of:

leaves ........................................................................................................................................

flowers ........................................................................................................................................

roots .............................................................................................................................................

stems .............................................................................................................................................

For the next question, look at the diagrams of two plants.

A

flower

leaf

stem

root

B

flower

leaf

stem

root
Unit 1 Plants and humans as organisms

2 Construct a table to compare the structures of the two plants on the previous page. Try to include at least ten differences in your table.

Draw the table using a ruler and a pencil. Keep comparable points opposite one another. Draw horizontal lines between each set of points.
1.2 Choosing a question about bones to investigate

This challenge task relates to 1.3 The human skeleton from the Coursebook.

In this challenge task, you will choose a suitable question that can be answered by experiment, and then plan the experiment.

The diagram shows apparatus that can be used to answer this question:

Do long bones break more easily than short bones?

1 Here are some more questions about bones. Tick the two questions that could be investigated using the method shown in the diagram.

Are thick bones stronger than thin bones? ☐

Do people who eat plenty of calcium have stronger bones than people who do not? ☐

Do old bones break more easily than young bones? ☐

Do hollow bones break more easily than solid bones? ☐

2 Choose one of the questions that you have ticked in question 1.

Write the question here:

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Plan an experiment to try to answer your chosen question. Your experiment must use the method shown in the diagram.

a What will you change in your experiment?

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b What will you measure to collect your results?

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c What will you try to keep the same?

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8 1 Plants and humans as organisms
Unit 1 Plants and humans as organisms

**d** Describe clearly how you will carry out your experiment.

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**e** Draw a results chart that you could use. Include headings and units.

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**f** Predict what you expect to find in your experiment.

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1.3 Planning an experiment about muscles

This challenge task relates to 1.5 Muscles from the Coursebook.

This challenge task will help you to improve your skills in planning your own experiment.

The biceps is the strongest muscle in your arm. When the biceps contracts, the arm bends at the elbow.

When you lift a weight as shown in the diagram, your biceps muscle produces the force to lift the weight.

You can investigate how quickly your biceps muscle gets tired, by counting how many times you can lift a weight in one minute over a period of several consecutive minutes.

Plan an experiment to answer this question:

Does the biceps muscle get tired more quickly after a person has been jumping than after they have been sitting still?

Try to write your plan very clearly, so that someone else could follow it to do your experiment.

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Unit 1 Plants and humans as organisms

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