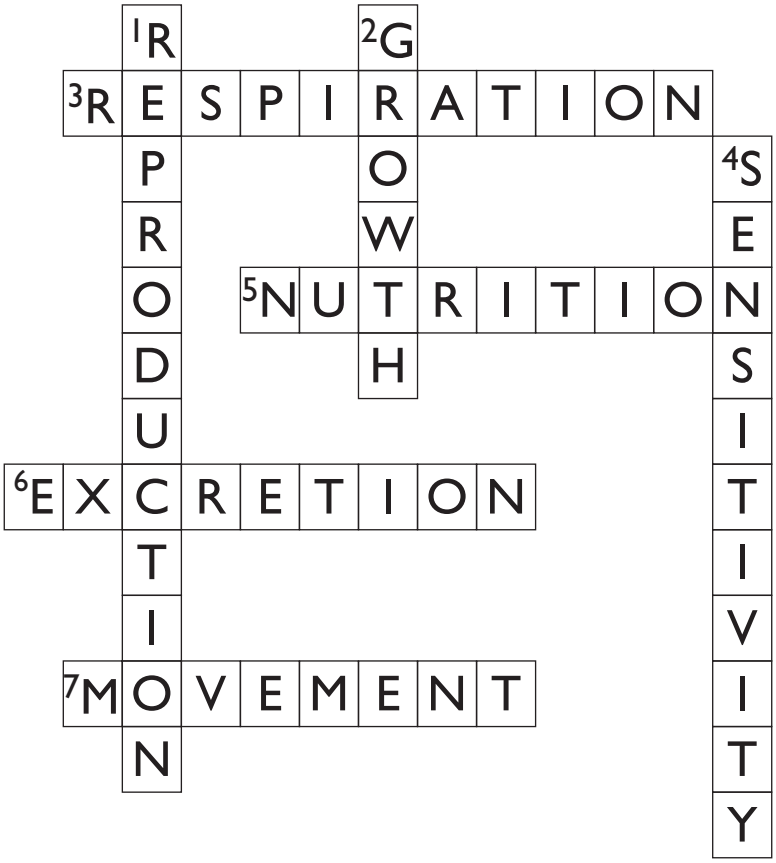
Worksheet 1.1

Characteristics of living organisms

Write clues for this crossword.



Across

3 .....

5 .....

6 .....

7 .....

Down

1 .....

2 .....

4 .....

Worksheet 1.2

Characteristics of vertebrates

Complete the table for each specimen or picture provided.

Each one is a vertebrate and belongs to one of these classes:

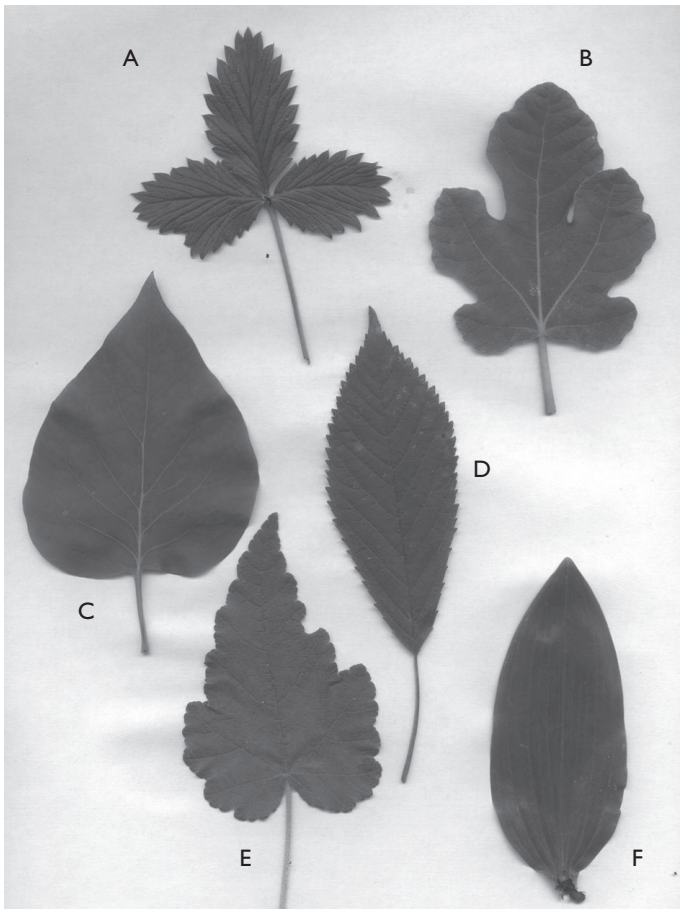
fish **amphibian** **reptile** **bird** **mammal**

Specimen	Which class of vertebrates?	How many legs?	What is its skin covered with?	Does it have a tail?	Any other features that help you to classify it?

Worksheet 1.3

Writing a key

The picture shows six leaves.



Construct a key that would enable someone to identify each of these six leaves.

Remember that, when a person is identifying a leaf, they will not have the other four to compare it with.

Spaces are provided for six pairs of choices, but you may be able to complete your key with four or five pairs.

1 a ....

b ....

2 a ....

b ....

3 a ....

b ....

4 a ....

b ....

5 a ....

b ....

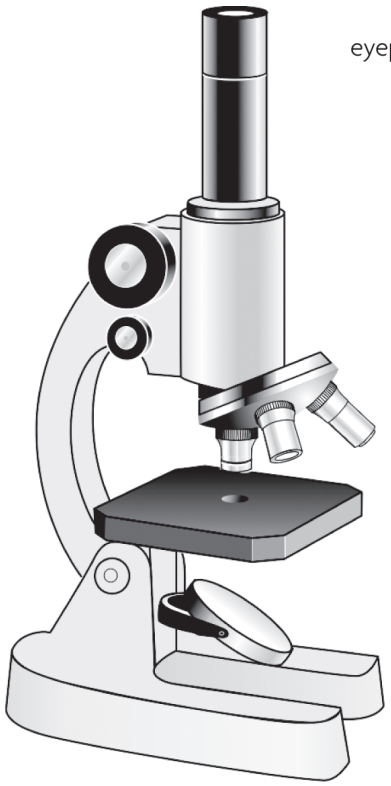
6 a ....

b ....

Worksheet 2.1

The parts of a microscope

Draw lines from each label to the correct part of the microscope.



eyepiece

coarse focusing knob

fine focusing knob

high-power objective lens

medium-power objective lens

low-power objective lens

microscope stage

mirror

Worksheet 2.2

Cell structure

The lists below show seven parts of cells and seven descriptions.

Draw a line from each part to its description. Then shade in (perhaps using green) each box that names or describes a structure found only in plant cells.

Part of cell	Description
cell membrane	a jelly-like substance, mostly water, in which metabolic reactions take place
chloroplast	a part of the cell surrounded by a membrane, in which chromosomes made of DNA are found
ribosome	a structure in which energy is released from glucose by aerobic respiration
cytoplasm	a fully permeable structure, made of cellulose, that surrounds and supports a plant cell
mitochondrion	a structure containing chlorophyll, where photosynthesis takes place
cell wall	a thin layer of protein and fat that surrounds every cell; it is partially permeable
nucleus	a tiny structure where amino acids are assembled to make protein molecules

Worksheet 2.3

Magnification calculations

Useful information:

- magnification = $\frac{\text{size of image}}{\text{actual size of object}}$
- There are 1000 mm in 1 m.
- There are 1000 µm in 1 mm.

1 An ant is 9 mm long. A drawing of the ant is 36 mm long. Calculate the magnification of the drawing. (Remember to show your working.)

.....

2 A photograph shows a beetle 80 mm long. The magnification of the photograph is ×4. Calculate the real size of the beetle. (Remember to include the unit with your answer.)

.....

3 A butterfly has a wingspan of 62 mm. Charlie is asked to draw the butterfly with a magnification of ×5. What should the wingspan be on Charlie's drawing?

.....

4 A cell is 100 µm long. A drawing of the cell is 45 mm long. Calculate the magnification of the drawing. (Remember to change mm to µm first, and then use µm throughout your calculation.)

.....

5 A photograph of a chloroplast shows it with a length of 15 mm. The magnification of the photograph is given as ×1500. Calculate the actual length of the chloroplast.

.....

6 A bacterium is 0.9 µm in diameter. An electron micrograph of the bacterium shows it as 72 mm in diameter. What is the magnification of the electron micrograph?

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