

Making observations

Teacher Guidance

As part of a scientific enquiry, children are often asked to observe, then record their observations before drawing any conclusions from the events or situation they have observed. The activities in this section give emphasis to making careful observations (in this case on leaves), then finding ways to describe or record them accurately. As they do this, children begin to develop appropriate vocabulary and realise that this becomes essential in making accurate descriptions that can be passed on to and understood by other people. Children usually enjoy the two drawing activities (the game 'Copycats' and with leaves), yet they bring home to children some important aspects of making observations that are good and representative of the features (or objects) being considered.

Activity 1: Observing leaves and learning how to describe them

In this activity, children are encouraged to look closely at a leaf and its different features. It provides an opportunity to develop appropriate vocabulary in trying to describe the leaves and is a useful introduction to later activities in this booklet aimed at making or using a key for identification. The activity is suitable for older children, and helps them become aware of differences between leaves as well as features that are common to a range of leaves.

As a start, find out what the children already know. Almost certainly they are likely to say that leaves are green and know that they have different shapes. They may also give some other descriptions. The introductory part of the activity then helps children look closely at a selection of leaves and note obvious features. The main part of the activity gives opportunities for the children to use their listening and speaking skills as well as observations that they make and build up descriptions as a class activity. The children should be able to do reasonably accurate drawings of a leaf, perhaps using a hand lens to help with their observations. Some children may need a bit of help to get started.

Resources

For the introductory activity

- a class set of leaves without any particularly striking characteristics. All the children have a leaf of the same species. Useful examples include: hazel, fuchsia, privet, apple, pear, lilac (but there are plenty of others you could use).

For the main activity

- a selection of leaves to give a different species of leaf to each child. These should not be too difficult for the children to draw. Useful examples include: oak, maple, dandelion, daisy, beech, lime, apple
- hand lenses – one per pair of children
- rulers
- pencils, coloured pencils (you will need plenty of greens and browns)

Images of some leaves are provided on page 11, in case you have difficulty in finding suitable leaves. You will also find a wider range of leaves on the SAPS website.

The activity

For the **introductory activity**, give each child a leaf (they must all have a leaf from the same species of plant). Let them think about how to describe it accurately. Encourage them to consider the following:

- colour • shape • size • veins • leaf edge • surface • leaf tip • leaf stalk • comparison of upper and lower sides of leaf.

Figure 2 gives you a guide to the features they can describe.

You may need 15 to 20 minutes for this stage. Then show the children images of a good range of leaves with very different features – or you may find it helpful to use the images given on page 11. In their discussion of the features of the leaves, let the children develop a list of words to build up into a word bank, using the correct vocabulary and encourage them to use it when describing their leaves. A list of possible words children may use when discussing leaf characters is given in the table on page 10.

What colour is your leaf?

What is the shape of the leaf?

What size is the leaf?

What is the surface of the leaf like?

Measure:
a - the widest point of the leaf
b - the length of the leaf

Is the lower side different from the upper side?

Figure 2. Describing a leaf - the lower side of a Privet leaf showing some of the things to consider when describing it.

For the **main activity**, divide the class into groups of three. Send one child from the group into a part of the room where the others can't see what they are doing. This child looks carefully at a leaf (say an oak leaf), then returns to the other two in the group and describes the leaf. The two who have not seen the leaf must listen and ask questions and then try to draw the leaf from the spoken description. They can refer to the word bank as they do this. The child who saw the original leaf can return as often as necessary, but it is important to have a time limit. Allow no more than about 10 minutes, then show them the leaf to see how well they managed.

Repeat with the other two children in the group, and each describes a different leaf. Encourage the children to use a hand lens for detailed observation and to use correct language in their descriptions.

The activity involves speaking, listening and measuring skills as well as giving an opportunity for the children to become familiar with appropriate vocabulary for describing leaves and you may wish to spend some time on it.

Possible words to use in the word bank

As the children talk about their leaves, they use different words to try and describe the leaf characters. Their ideas and vocabulary develop as they do this. Some of the children's words are probably not standard botanical terms (e.g. 'fluffy', 'furry'), but are the children's words and represent their attempt to make descriptions that mean something to them. The list below includes ideas that the children may suggest and that could be incorporated into a word bank for your class. It is not intended to be used as a list to be learnt and children may not need to use all of the words listed here.

Colour	green, brown, yellow, red
Leaf edge	smooth, toothed, wavy, prickly
Leaf surface	smooth, rough, wrinkly dull, glossy hairy, furry, not hairy
Leaf tip	pointed, rounded
Leaf stalk	present, absent
Veins	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;">  </div> <div> <p>one main vein with branches</p> </div> </div> <div style="margin-top: 10px;"> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;">  </div> <div> <p>several veins starting from the bottom of the leaf and coming together again at the tip</p> </div> </div> <div style="margin-top: 10px;"> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;">  </div> <div> <p>several main veins spreading out from the bottom of the leaf</p> </div> </div> </div></div>

Curriculum links

National Curriculum (Sc2)

QCA guidelines – Scheme of work

Scottish ISE 5-14 framework/attainment targets

KS1: 3b. KS2: 4c

Unit 1B; Unit 4B

LT-A3.1; B2.4; C2.4

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➔ Pupil Sheet

Describing leaves

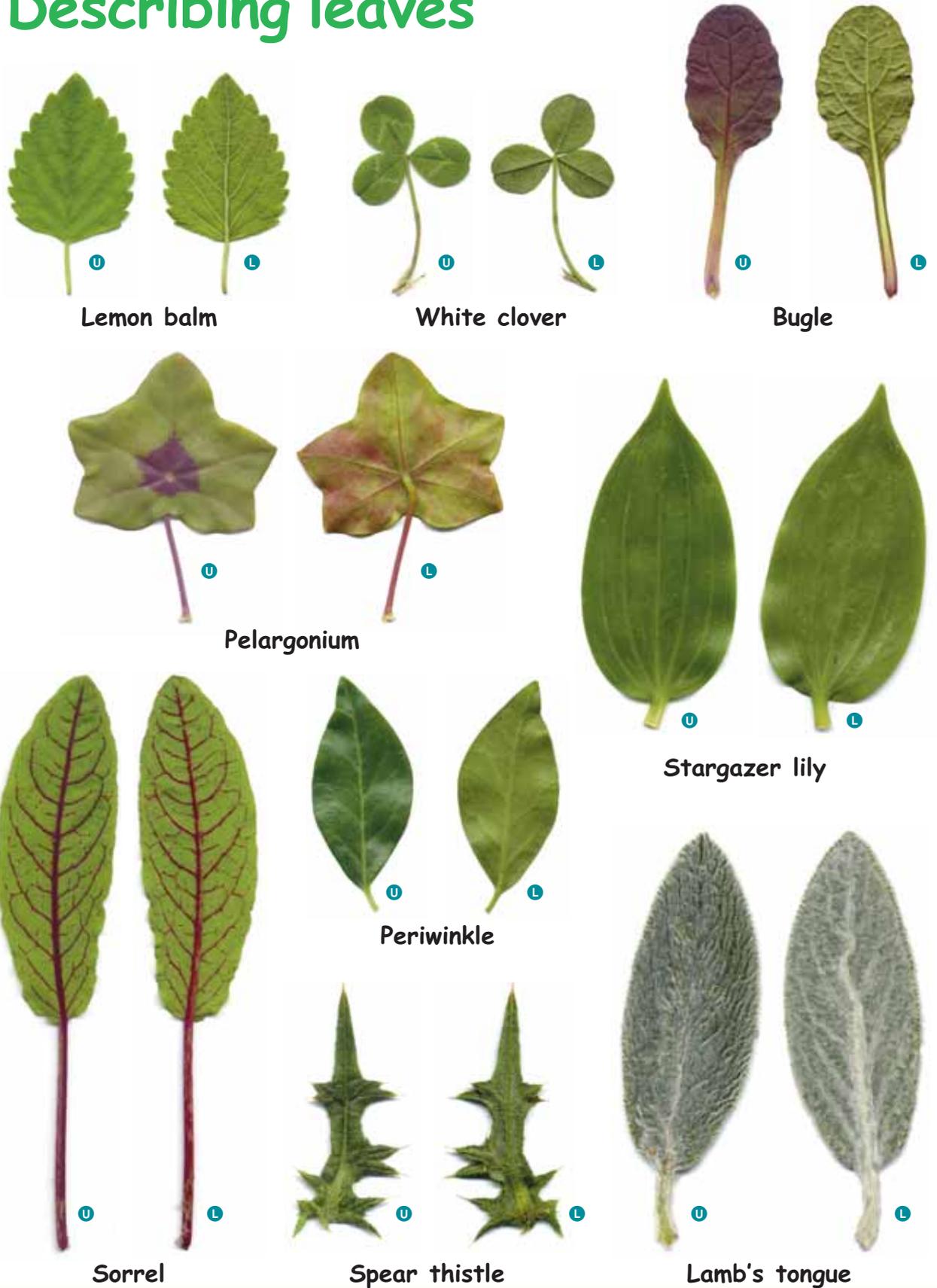


Figure 3. Images of leaves showing different features. The leaves were scanned (U upper side and L lower side) and are shown here at approximately two thirds life-size.

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➔ Teacher Guidance

Activity 2: Copycats - a game

This activity provides an enjoyable way of reinforcing the importance of accurate observation and recording. It encourages the children to understand why, when doing science work, they should draw what they see and not add anything or leave something out. The activity also helps to make the point that even though drawing living plants or animals is difficult, if you copy other people's work, you copy any mistakes they have made. If an illustration is copied several times, mistakes add up!

The game is based on 'Chinese whispers', but in 'Copycats' an original drawing is copied by one child, then the different children, each in turn, copy the previous child's drawing without seeing the original. It is more fun if you don't explain the point of the activity beforehand. Make sure they only look at the drawing done by the child just before, but don't let them see the earlier drawings (until the end of the activity).

The game can be played with as few as ten children, but the more children that copy the drawings made the more the copies are likely to change from the original. It is often a good idea to use this activity while the children are occupied on another task, such as drawing a living plant.

Resources and preparation for the activity

- the picture to be copied, printed onto a piece of card
- similar-sized blank cards, enough for each child in the class. Number these on the back, starting at number 1
- some sharp pencils

The activity

Explain to the children that you are going to give them a drawing, and you want them to copy it as accurately as they can within a time limit (we suggest two minutes).

- In a quiet corner of the room, give the first child the original drawing and the card numbered 1 (and give the child a sharp pencil). After two minutes, ask the child to stop and return to what they were doing with the rest of the class.
- Call another child into the corner. Give them the blank card number 2 and the drawing on card number 1 to copy.
- Continue in this way until all the children in turn have copied the preceding child's drawing.
- Display the drawings in sequence, placing a copy of the original drawing at the beginning and end of the series.

The children can then see what has happened to the drawing as it has been copied, and you can discuss with them and emphasise the value of making careful observations on living material and recording these observations accurately.

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KS1: 3b. KS2: 4c

Unit 1B; Unit 4B

LT-A3.1; B2.4; C2.4

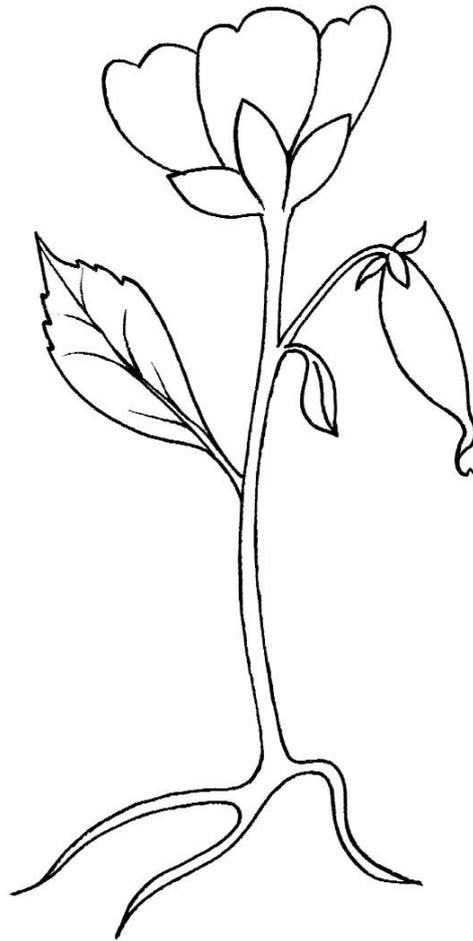


Figure 4.
Copycats - original picture of a flower for the first child to draw. The rest of the children copy, in turn, the drawing done by the previous child.

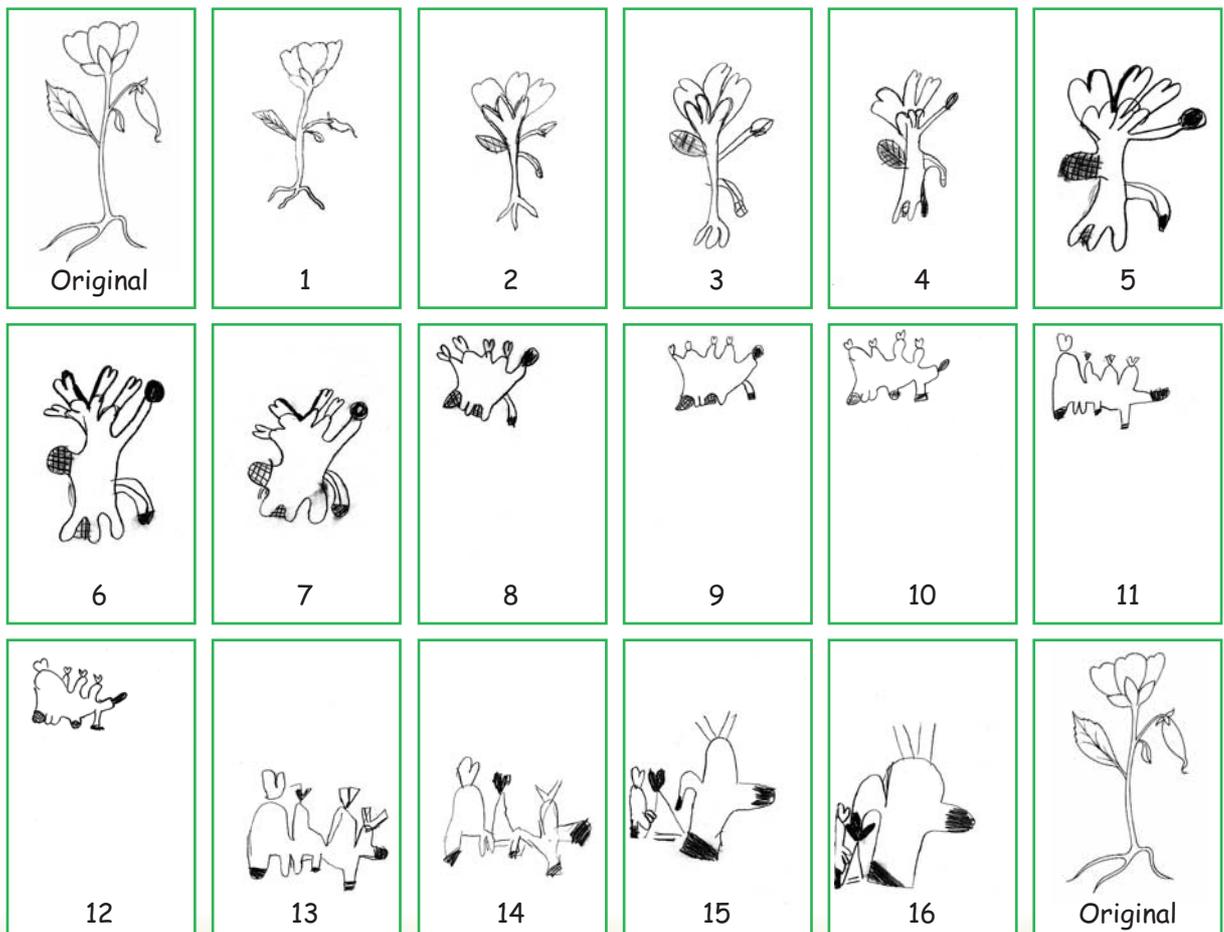


Figure 5. A series of 'Copycat' drawings done by children (in Year 4 at The Cavendish School, in 2007). This helps to show how mistakes add up and how features in the original picture are scarcely recognisable in the final drawing.

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Activity 3: Observing leaves and learning about their shapes

- What can you turn your leaf into?

In this activity, children are encouraged to look closely at a leaf and think carefully about its shape. The activity is particularly useful for young children as a way of helping them to make observations. It can also be used with older children to give them a chance to have some fun.

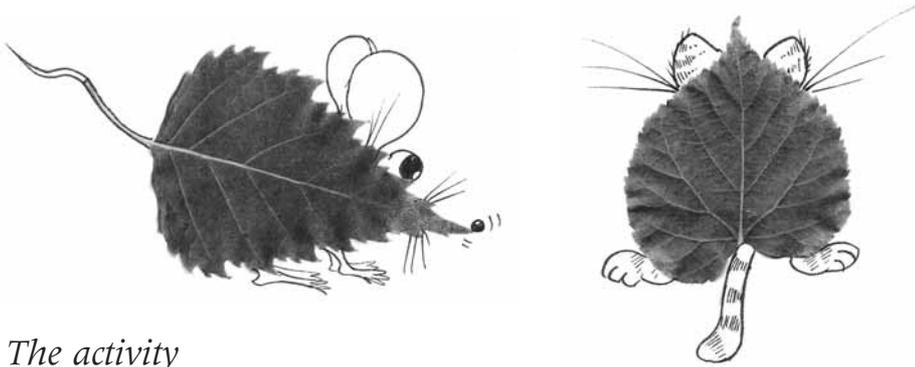


Figure 6.
What can you turn your leaf into? ... a mouse? ... a cat? Some ideas of animals created from leaves - but these are for inspiration (not to be copied!).

The activity

Let the children choose a leaf. You can bring some into the classroom or they may find some leaves in the school grounds or wherever is convenient. It doesn't matter whether the leaves are all the same or different. Get the children to do a wax rubbing of the leaf or the teacher can do a photocopy or scan of each child's leaf.

Show the children a leaf that you have collected. Discuss its shape with them and how you might turn it into an animal. Then ask them to do a drawing that turns their leaf shape into an animal or whatever they may choose to do! As they do the drawing encourage the children to talk about the different features of the leaf so that they become more familiar with appropriate vocabulary.

Some 'leaf animals', drawn by Year 4 children, are given in Figure 7 and there are more examples on the SAPS website. Let the children use their observations to develop their own ideas, but encourage them to draw from their leaf rather than copy a picture that someone else has done. Get them to do more than one if you can. These leaf rubbings can make delightful greeting cards.

Help the children to learn the names of some of the leaves and if possible, take them out of the classroom and see if they can recognise 'their leaves' on the plants.



Figure 7. Some 'leaf animals' created by children (in Year 4 at The Cavendish School, in 2007).