

# Classification – making keys

Last week we thought about how sorting and grouping helps us to make sense of the complex information that we get from the world around us.



Classification is how all living things are sorted into groups based on their characteristics.

In the natural world, every living thing is sorted or classified into one of five main groups. The two that we are most familiar with are plants and animals, and then there are three others: fungi, prokaryotes (microscopic living things including bacteria) and protocists (which includes things like algae).

Today's lesson is all about something called *keys*, which are used in science for identifying an unknown or unidentified living thing. These are not to be confused with the keys you use to unlock a door or the sort of key that you might get on a map! In the second part of the lesson you will be making your own key to challenge someone else to identify some unidentified living things.

**Begin by watching this video:** <https://vimeo.com/420468214> (Password: North America)

In it, I explain what a key is, and show how we could begin to make a key.

After this, I would like you to collect some leaves – at least 5 different species and no more than 8 – or if you can't do that, then you can use the leaf pictures from the file. Real leaves are better though, especially if you know the name of the plant that they come from – but please don't pick from plants which are special to someone, and look out for prickles and stings.

Look really carefully at your leaves, and begin to describe their characteristics. Remember back to the work you did last week, looking carefully and describing leaves.

You could use this leaf fact file for each of your leaves to help you to organise your information.

**The next video** will help you with these questions if you are unsure what they mean:

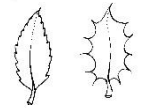
<https://vimeo.com/420478743> Password: North America

Look at your leaf and write the answer **yes** or **no** beside each question:

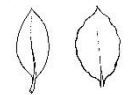
1. Is the leaf lobed?



2. Do the leaf edges have teeth or prickles?



3. Are the leaf edges smooth or slightly wavy?



4. Does the leaf have one main vein  
(running from the stalk to the leaf tip)?



5. Does the leaf have more than one main vein  
(running from the leaf stalk to the leaf edges)?



6. Do the side veins mostly come off the main veins in pairs?



7. Do the side veins all come off the main vein one at a time?



8. Is the leaf stalk longer than 1 cm?

(You will need a ruler to answer this question)



9. Does the leaf have small bumps on it? (These are glands)

10. Is the leaf stalk red?

11. Is there anything else interesting about your leaf?

.....

Now use the information about each of your leaves to help you fill in this table:

Tick in the box if your leaf has these characters.  
You can then use information from the leaf fact files from all the groups in the class to complete the table.

Character	Leaf name				
Leaf is lobed					
Leaf edge has teeth or prickles					
Leaf edge is smooth or slightly wavy					
Leaf has one main vein (running from stalk to leaf tip)					
Leaf has more than one main vein (running from the stalk to the leaf edges)					
Side veins mostly come off the main veins in pairs					
Side veins all come off the main vein one at a time					
Leaf stalk is longer than 1 cm					
Leaf has small bumps on it (these are glands)					
Leaf stalk is red					

Now you can start to make a key to identify your leaves.

**Watch this video to see me make an example:**

<https://vimeo.com/420483841> Password: North America

Now try your own, following the steps that I used in the video:

Step 1: look for a character which about **half** of your leaves have (and the other half don't).

This is the first thing you are going to use for the first question on your key, as it will allow you to divide your leaves into two roughly equal groups.

Step 2: take one of your two new groups of leaves, and now look for a character which some of them have and the others don't. This is the first question for this side of your key.

Step 3: staying on this side of the key, now formulate your next question to divide the leaves you have left.

Step 4: repeat for each of your groups of leaves.

Make sure you are drawing your steps as you sort the leaves. Remember you can use the same question more than once in different parts of your key if you want to.

You might find it easier to begin with post-it notes with the names of your leaves on, or to move the actual leaves around into their groups to help you make sure that you haven't missed any.

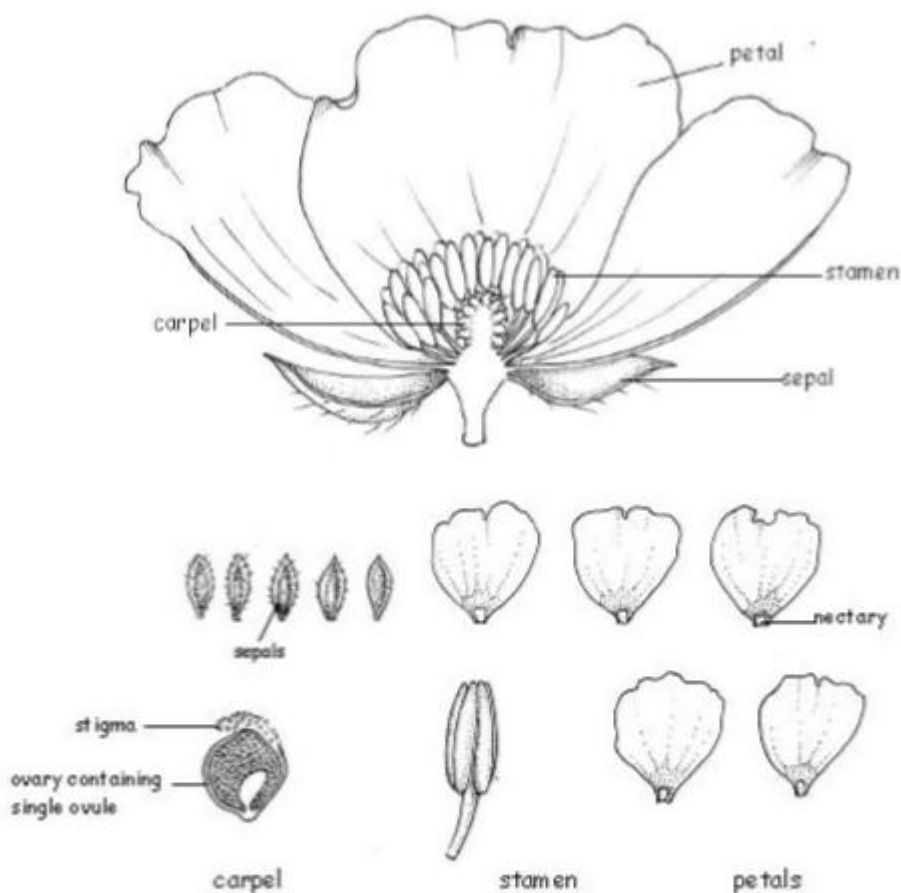
Once you think you have made your key accurately, take each leaf in turn and follow your key through to check it gets you to the correct identification.

Now challenge someone else to identify one of your leaves using the key you have made. Can they follow it all the way through and work out your mystery leaf?

Extension activity – using a key to identify buttercups.

Did you know that there are several different kinds of buttercups? Either in your garden, or when you are out for your daily walk, have a look for a buttercup. Then use the guide to help you fill in the buttercup fact file. Finally, use the key below to see if you can identify which one you have found. If you can, take a photo and label/caption which buttercup you think it is.

Parts of a flower (to remind you):



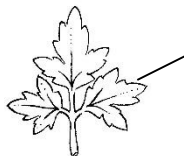
### *The structure of the flower*

<b>Sepals (5)</b>	These are often yellow in the open flower.
<b>Petals (5)</b>	Bright yellow with a small pocket-shaped nectary at the base
<b>Stamens (numerous)</b>	
<b>Carpels (numerous)</b>	The female part of the flower (the gynoecium) is made up of a large number of carpels which are not fused together. Each has its own stigma and ovary. The ovary contains a single ovule.

## Buttercup fact file

1. How many sepals are there?..... How many petals are there?.....

2. Are the leaf blades divided up  
into smaller leaflets or deeply lobed?



leaflet

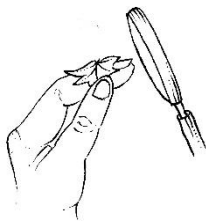
.....

3. Are the sepals turned back?



.....

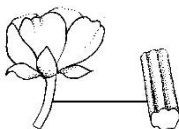
4. Are the leaves covered in tiny hairs?



wrap the leaf  
round your finger  
and use a  
magnifying glass  
to see the hairs

.....

5. Do the flower stalks have clear grooves  
running along their length?



.....

6. What sort of place was the plant growing in  
(e.g. a grassy field, a woodland, the edge of a pond)?.....

7. Is there anything else interesting that you have noticed about your plant?

.....

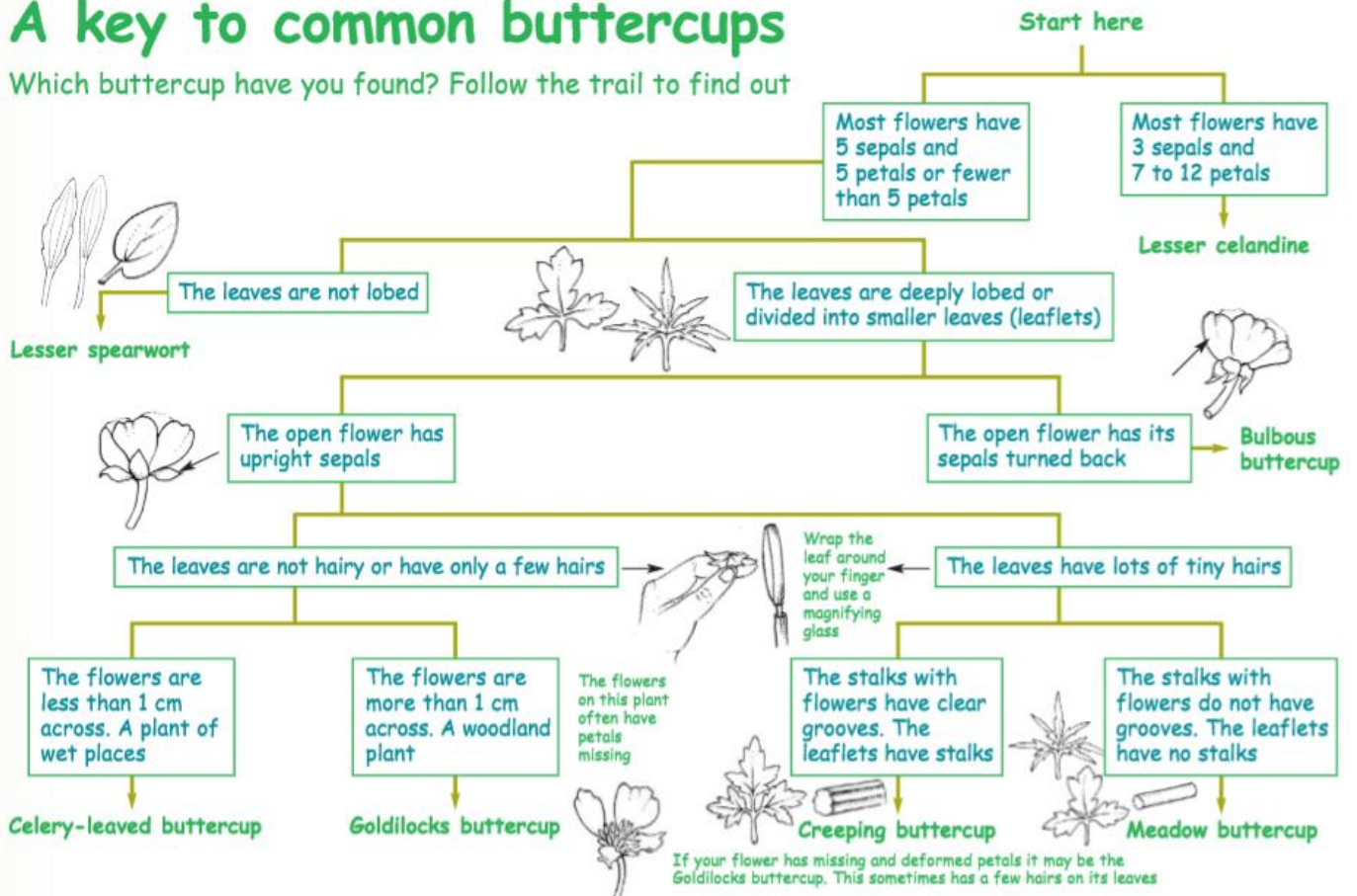
Draw a picture of the flower here

Draw a picture of the leaf here

Now use the key to find out the name of your 'buttercup'

# A key to common buttercups

Which buttercup have you found? Follow the trail to find out



If your flower has missing and deformed petals it may be the Goldilocks buttercup. This sometimes has a few hairs on its leaves