**Drawing in Science**

In the electronic age there is still a place for scientific drawing. Just as with our language and writing style, drawing in science is different to drawing in everyday life.

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| **Artistic drawing** | **Scientific drawing** |
| We draw to catch an impression of something | We draw to record and communicate information, not make art. |
| Sometimes we do not worry too much if it is not an exact replica, people get the idea – an impression. We use shade and colour | The drawing has crisp, clear lines and is intended to be a good replica. We tend not to use shade or colour. |
| Not all of us are good at making art like this. | We don’t have to be an artist to create a successful scientific sketch. |
| May have a title and artist name. | Has title and sometimes scale or magnification. Often includes labels (names) or annotations (descriptions & explanations). |

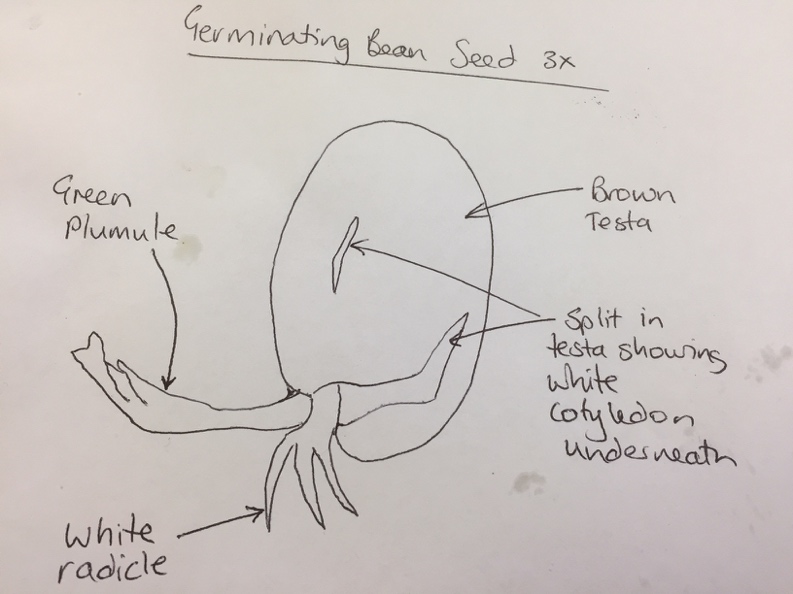
What makes a good scientific drawing? We can use the mnemonic ABCDE:

Accurate – with respect to size, shape, texture. Clean, even, continuous lines - needs sharp pencil

Big – large enough to see details

Colourful – when needed, coloured pencil is better than felt pens as the lines are crisper

Detailed – not just any kauri leaf, but the kauri leaf you are drawing. See activity below.

Explained – labels, annotations, questions

An indication of scale is useful.

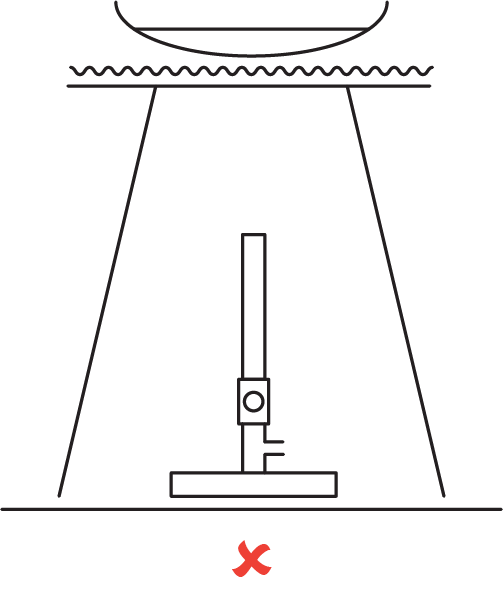
To calculate scale:

Height of diagram ÷ Actual height

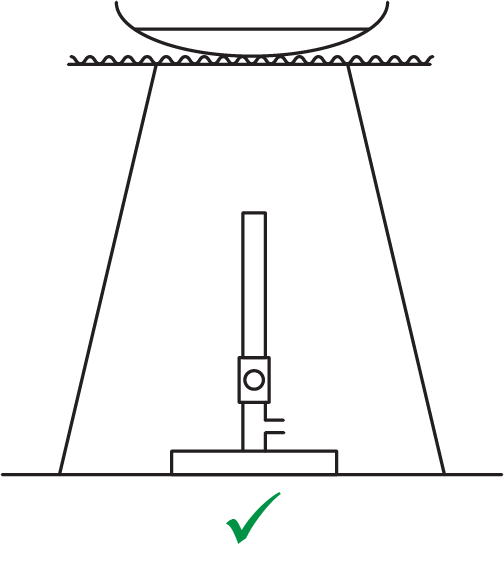
e.g. magnification of 3X means diagram is 3 times bigger than its subject.

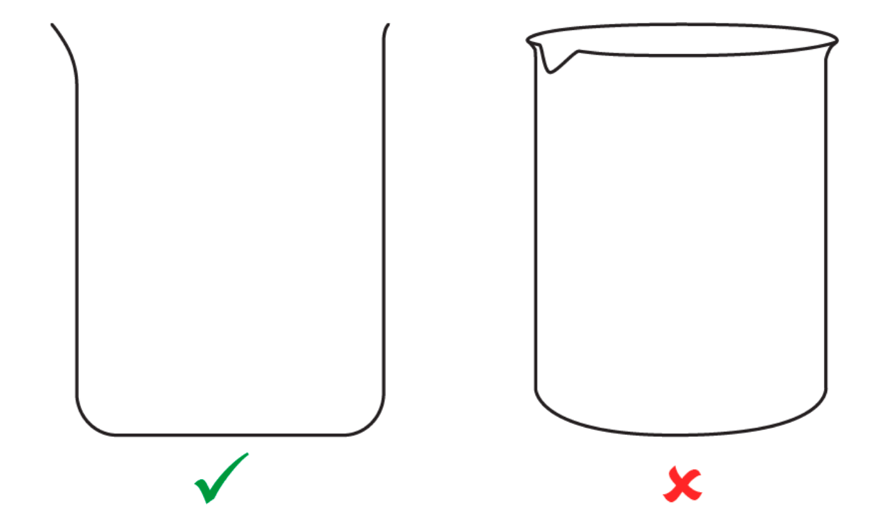
Activity

* Give each student a leaf of the same type but with individual differences.
* They will need pencil & paper.
* Ask them to draw and label their leaf. Allow plenty of time, 10-15 minutes.
* In groups place the leaves in the middle and the drawings around the outside. Ask students not to put their drawing next to their leaf
* Ask students to match a drawing and leaf that is not their own. Artist says if right or wrong.
* As a group, then as a class discuss:
  + What helped you make a match?’
  + What do you notice about the different drawings?
  + Did you notice any other differences between drawing as an artist and drawing as a scientist?

**Drawing equipment**

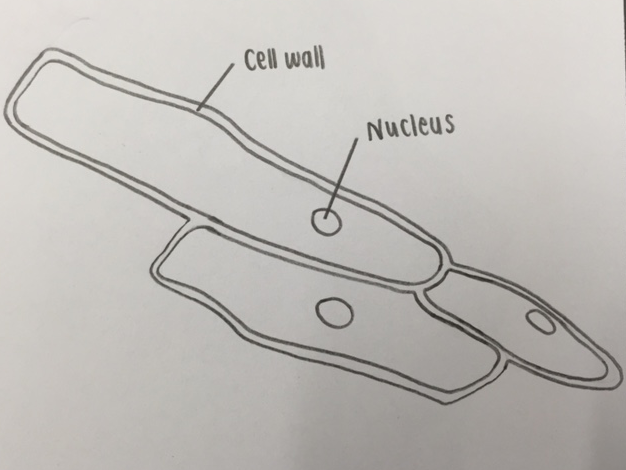
Again we need to remember we are recording and communicating information, not making art. We want to represent scientific equipment and experiments in a simple and clear manner. Remember ABCDE, also

* + - Use a sharp lead pencil.
    - Draw objects in two dimensions (as below)
    - Draw clean, single lines.
    - Don’t close off openings of glassware (as below)
    - Use a ruler to draw straight lines.
    - Don’t shade or colour in.
    - Don’t ‘float’ objects (as alongside)
    - Label objects with simple straight lines, when needed



**Drawing Cells**

Remembering ABCDE, also: Onion cells with Iodine stain, 100X

* Draw what you see, not what you expect to see
* Do not draw air bubbles
* Draw as simply as possible with clean cut (not “hairy”) lines
* Draw a few representative cells, not the whole field of view
* Carefully draw cells touching, if that is what you see.
* Indicate thickness of walls, membranes
* Label with ruled lines
* Include a title with name of organism, name of any stain used and magnification

**References**

<https://www.calacademy.org/educators/lesson-plans/introduction-to-scientific-sketching>

<https://www.goodscience.com.au/year-7-chemistry/scientific-diagrams/>