Observable features of organisms and dichotomous keys

Dichotomous key

In order to classify organisms, it is important to identify features that they share with other organisms and also which are unique. Scientists use a tool called a dichotomous key to help identify organisms. A dichotomous key is a branching diagram that uses the presence or absence of characters to make a simple decision of 'yes' an organism has this feature, or 'no' it does not have this feature. This makes finding the name and description of an organism much easier.


Peacock mantis.   *Hermit crab.*   *Spiny lobster.*   *Green crab.*

Using the pictures

1. Draw a table listing all four species as column headings.
2. In groups of three, look at the first picture carefully and identify features of that organism. List all these in row headings and place a dot in each box in that row. Example headings may be 'Exoskeleton' or 'Antennae' if you see these features.
3. Once the group has listed all the features that are visible, they should look at the second picture. If the second organism has one of the characters listed, then a dot can be placed in the column of the second picture in the row of this feature. If a character is observed that wasn't on the first organism, a new row heading should be made for that feature and a dot placed in the row for the second organism.
4. Complete this for all four pictures.
5. Look at the completed table and rank the columns from highest number of dots to the lowest.
6. The numbered columns will now be used to produce a tree diagram or dichotomous key. Draw a circle on a page with the words 'all organisms' in the centre. Now go to the column where all but one organism have the same feature and use this to draw two branches from the centre circle. For example:
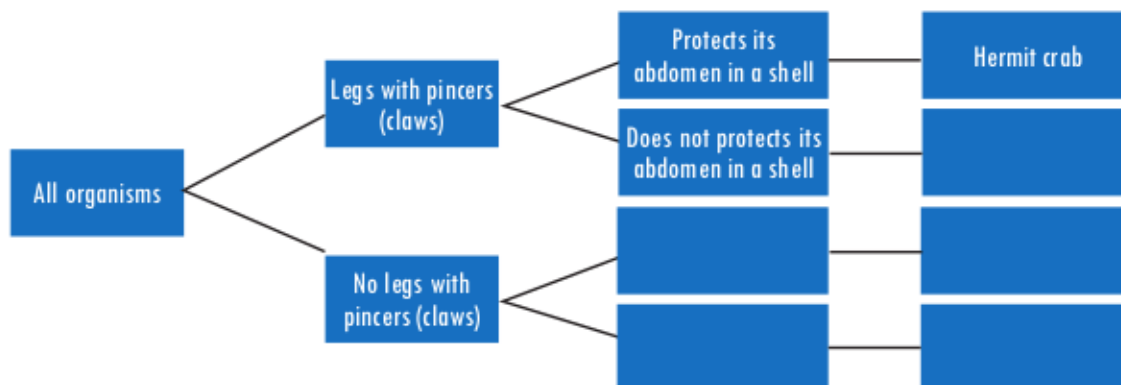
7. Write the name of the single organism that is identified in a new circle. Move to the column with the next highest rank and continue with the branching until all organisms species names are written in circles.
8. Discuss in a group whether this method could be used to identify all organisms on earth? Run each of the organisms through the key that you have just developed as a group to see if this system works.