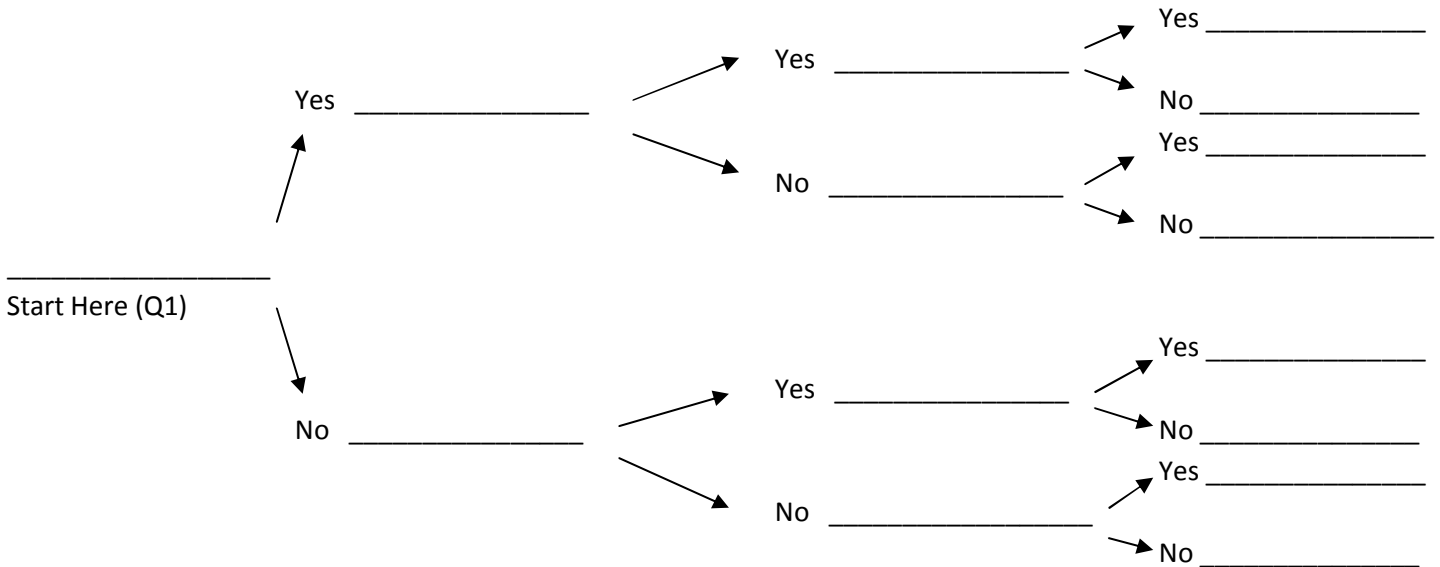


How to make a dichotomous key

Part 1: Direct Instruction

First, create a blank flow chart on the board, overhead transparency or copy and paste this into a word processor document. It should look like this:



Provide one set of the fruit and vegetable pictures to each student or small group. Make a list of them on the board and have a whole class discussion listing their various characteristics. Then have students cut their pictures apart. Ask your students to describe any similarities among them such as size, color, shape or taste.

First, have your students separate them into two separate piles based on one characteristic. For example, all green vegetables and all NOT green vegetables. There does not have to be the same number in each group. Then, write their first question. (Q1) Is the part you eat green?

The group should be divided up into two piles depending on your first question:

Yes – green:

bell pepper
cucumber
lettuce
broccoli

No – not green:

potato
pumpkin
corn
carrot

Next choose one set and repeat. Divide it into two subgroups like you did with the first 8 vegetables. In this case I'm starting with the "green" vegetables. Since the bell pepper and the lettuce are mostly

round, I'm going to choose that for this demonstration. You could choose any of a number of possibilities, such as: are there seeds inside? Or is it similar to a tree in shape? My second question is, "Is it round?" Each division's questions can only have two possibilities because it is a **di**chotomous key, di means "2". We can call it a dicot key for short.

Green Fruits/Vegetables
Is it round?

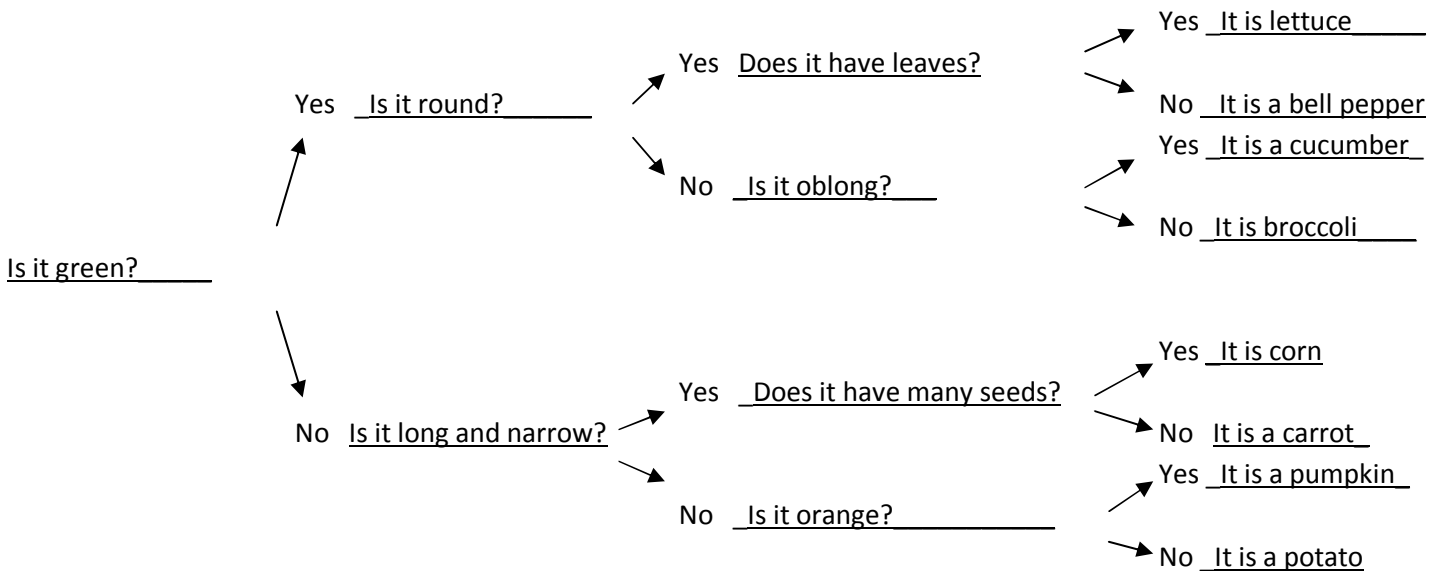
Yes (or round)

No (or not round)

bell pepper
lettuce

cucumber
broccoli

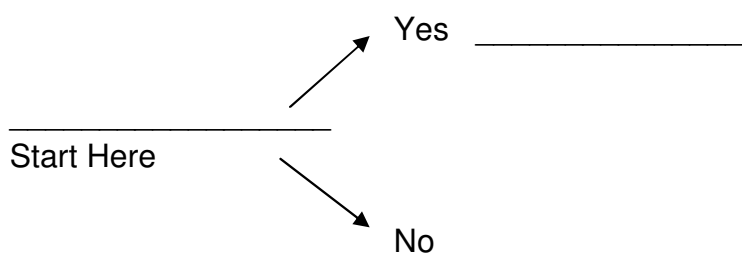
Again we choose one subgroup and divide it up into two subgroups. Let your students make the decision on how to split it. Some possibilities are: Does it have seeds? or, Does it have leaves? Once you have each item isolated in a group you name it. Now go back to the original split/question and do the same thing for the other answer, in this case, the NOT green group. See the flow chart. As you diagram it on the board it might not look exactly like mine.



Part II: Guided Instruction

Students are to add the two extra vegetable pictures to their original group. They should now have ten pictures.

Draw the following on the board to get them started:



In their small groups they are to choose a secretary to write and draw their dicot key. With all ten pictures, they are to create a dicot key similar to the one created as a class. However, do not let them use the first question or division that you used in the class one. It is OK for them to use the other ones. In the case above, the first question/divisions was, “Is it green?”, so they are not allowed to use that one for their first question/division. They can use, “Does it have seeds?” though.

For special ed, low ability students or younger middle grades (5th or 6th), you might allow them to use the first one or two questions/divisions to get them started. You’ll have to make that decision as their teacher.

For advanced students or upper grades (8th or 9th), do not let them use any question at any time from the first demonstration.

Since this is a Guided Instructional level, be sure to give plenty of help to your students in their small groups.

Part III: Individual Practice (can be used as a home assignment)

Make a dicot key for the following items:

House	car	tent	boat
Apartment	bike	train	mobile home

You might want to have manipulatives to solve this. If so, fold a sheet of paper three times. Then, unfold the sheet of paper, there should be 8 rectangles. Draw a picture of one of the above listed items in each rectangle. Cut the rectangles apart and create a dicot key on another sheet of paper, but use the picture cards to help you sort them.

Part IV Review (the next day or later)

Have 8 students volunteer to give up one shoe for this demonstration. Try to get a good variety. Place them on a table or somewhere everyone can see them. As a class decide how (based on what characteristics) they can be split into two groups. If the class can't think of anything, make the suggestion of "laces or no laces". Create a dicot key on the board to identify the type of shoe (or the person it belongs to).

Part V Assessment

Create a dicot key for the following types of clothing:



Child's T-shirt



Pullover



Vest

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Leather jacket

Girl's T-shirt

blouse

Options for any of the above:

For kinesthetic learners use different flavored jelly beans or, bring in a bunch of different tools and have them create a dicot key.

Provide each student or group with a set of the following fruits and vegetables.

