

## School Garden Dichotomous Key

**Grade:** 7

**GPS: S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.**

a. Demonstrate the process for the development of a dichotomous key.

**Essential Question:** How do we compare living organisms scientifically?

**Teacher Note:** Students will learn to identify common garden plants both by using and creating a dichotomous key.

**Interest Approach:** Post the following questions on the board and have students first answer silently, then discuss as a class.

1. Approximately how many different animal species do you think exist?
2. How many different mammals do you think exist?
3. How many birds do you think there are?
4. How many identified plant species do you think exist?

Answers:

1. over a million have been identified, and there are many more found each year
2. about 5,500
3. about 10,000
4. 320,000

Explain that because there are so many different species, not only is it essential to divide them into a system (biological classification), but also a way to tell the difference between similar species (dichotomous key).

**Lesson:** Explain to the class what a dichotomous key is using the example below. Then let students, as individuals or in pairs, use the School Garden Dichotomous Key to identify school-grown veggies. Have enough for each group to have a set of veggies, or display them on the board using an ELMO projector. I have provided an example below, but you can also create one more specific to your garden (note: make sure the varieties of vegetables you have match with the descriptions given if using example garden dichotomous key). Have students come to you to check that they have the correct answers before moving on to the learning activity.

**Learning Activity:** Students will create their own dichotomous key using at least six plants found in the school garden. It may be helpful to have a quick plant ID walk before beginning. After they have finished, the teacher will check for accuracy. If the dichotomous key is approved, they will exchange with another group. Be sure to go over rules and expectations for gathering plant samples. You may want to have some pre-cut samples, or designate specific areas that students can use for their keys. For example, one group may have to develop a dichotomous key for all the plants in one raised bed.

**Check for Understanding:** After checking student dichotomous keys, let groups exchange keys to practice using them.

## Example Dichotomous Key

Create a dichotomous key using the following list of specimens: pine tree, clam, rock, robin, tin can, deer, oak tree, mouse, dandelion, Paramecium, bicycle, ant

Here's an example in written form using these items:

1. a. Organism is living.....go to 4.
1. b. Organism is nonliving.....go to 2.
  
2. a. Object is metallic.....go to 3.
2. b. Object is nonmetallic.....ROCK.
  
3. a. Object has wheels.....BICYCLE.
3. b. Object does not have wheels.....TIN CAN.
  
4. a. Organism is microscopic.....PARAMECIUM.
4. b. Organism is macroscopic.....go to 5.
  
5. a. Organism is a plant.....go to 6.
5. b. Organism is an animal.....go to 8.
  
6. a. Plant has a woody stem.....go to 7.
6. b. Plant has a herbaceous stem.....DANDELION.
  
7. a. Tree has needle like leaves.....PINE TREE.
7. b. Tree has broad leaves.....OAK TREE.
  
8. a. Organism lives on land.....go to 9.
8. b. Organism lives in water.....CLAM.
  
9. a. Organism has 4 legs or fewer.....go to 10.
9. b. Organism has more than 4 legs.....ANT.
  
- 10 a. Organism has fur.....go to 11.
- 10 b. Organism has feathers.....ROBIN.
  
- 11 a. Organism has hooves.....DEER.
- 11 b. Organism has no hooves.....MOUSE.

[http://biology.wisc.edu/documents/dichotomous\\_key.pdf](http://biology.wisc.edu/documents/dichotomous_key.pdf)

## School Garden Dichotomous Key

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|-------|--|-------------|
| 1 a.  | Organism has broad, flat leaves with branching veins | go to 2     |
| 1 b.  | Organism has needle-like leaves with parallel veins  | go to 5     |
| 2 a.  | Organism has a tuber as part of the root system      | go to 3     |
| 2 b.  | Organism has a root systems without tubers           | go to 4     |
| 3 a.  | Organism has a round red tuber                       | RADISH      |
| 3 b.  | Organism has a long orange tuber                     | CARROT      |
| 4 a.  | Organism has green leaves with bright colored veins  | SWISS CHARD |
| 4 b.  | Organism has dark green leaves and veins             | SPINACH     |
| 5. a. | Organism has flat leaves                             | GARLIC      |
| 5 b.  | Organism has hollow leaves                           | ONION       |