



Classification of Organisms

Using a Digital Dichotomous Key

Pre-Questions

1. After watching the video and reading, what is a dichotomous key and why is it useful for scientists who study organisms.
2. Why do scientists classify organisms? How does this help with research?

PART 1: Sorting Organisms by One Characteristic

3. Organisms are classified by shared characteristics. Is it possible for something to be eukaryotic and prokaryotic at the same time? Why might this kind of trait be helpful for scientists?
4. How many different organisms in our list of 75 have wings? Are they all similar? Are “wings” a good characteristic to use for classification?
5. Which characteristic gave you the largest category? Which gave you the smallest? Why might this be the case?

PART 2: Sorting Organisms by Many Characteristics

6. Set the list to the characteristics of a cow. What are some other organisms that are sorted this way? What new traits would make the cow the only result?
7. How would the list of characteristics differ between a whale and dolphin?
8. A zoologist is exploring the jungle when she spots a small, hairy animal. As she follows the animal she sees it eat nuts from a tree and some insects off the ground. She also observes that even though it appears to have wings, it seems to prefer to move along the ground. According to your key, what organism is it most similar to, how do the observed characteristics differ from what you know about this animal?

PART 3: Scientific Classification of Organisms

9. Are all organisms in the same kingdom classified in the same phylum?
10. If organisms are in the same order (like rodentia), describe how their kingdom, phylum, and classes compare. Explain.

PART 4: Unstructured Coding

11. What are two examples of organisms in kingdom plantae?
12. What are two examples of organisms in kingdom fungi?
13. Find a few poisonous animals by changing the conditional statements.

CODING INSTRUCTIONS

PART 1: Sorting Organisms by One Characteristic

Change the highlighted box shown below to any of the index items to find the answers to questions 3, 4, and 5.

```
key[(key['eukaryotic'] == 'yes')]
```

Example:

```
Index(['organism', 'eukaryotic', 'prokaryotic', 'kingdom', 'phylum', 'class',  
      'order', 'vertebrate', 'fur', 'feathers', 'scales', 'wings', 'fins',  
      'marine', 'terrestrial', 'carnivore', 'herbivore', 'omnivore'])
```

```
key[(key['wings'] == 'yes')]
```

PART 2: Sorting Organisms by Many Characteristics

Change the ‘no’ or ‘yes’ as needed to answer questions 6, 7, and 8.

```
key[  
    #physical characteristics  
    (key['fur'] == 'no') & \  
    (key['feathers'] == 'no') & \  
    (key['poisonous'] == 'no') & \  
    (key['scales'] == 'no') & \  
    (key['multicellular'] == 'no') & \  
    (key['fins'] == 'no') & \  
    (key['wings'] == 'no') & \  
    (key['vertebrate'] == 'no') & \  
  
    #environmental characteristics  
    (key['marine'] == 'no') & \  
    (key['terrestrial'] == 'no') & \
```

PART 3: Sorting Organisms by Many Characteristics

The levels of classification from broadest to most specific are:

domain → kingdom → phylum → class → order → family → genus → species

Begin by running the code as is to see all of the animals from the list of 75 organisms. This will show you all the organism’s kingdom, phylum, class, and order classifications. You can change your what you are searching for by changing the highlighted information as shown below to get answers for questions 9 and 10.

```
key2[(key2['kingdom'] == 'animalia')]
```

```
key2[(key2['order'] == 'carnivora')]
```