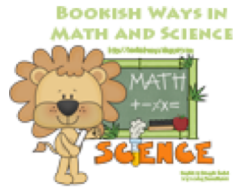


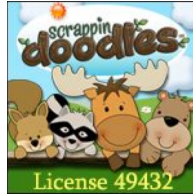
# Using a Dichotomous Key



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## This file contains:

1. Reading passage on classification and dichotomous keys
2. Directions on using a dichotomous key
3. Student worksheet on using a dichotomous key
4. Directions on making a dichotomous key
5. Student worksheet on making a dichotomous key

## Helpful Resources

The lesson Creepy Critters has a set of reproducibles with 24 different images of alien creatures. These are great for sorting/classification activities.

<http://archives.microbeworld.org/resources/experiment/pgs1-6.pdf>

The Natural History Museum in London has an informative, short video on Linnaeus.

[http://www.youtube.com/watch?v=Gb\\_IO-SzLgk](http://www.youtube.com/watch?v=Gb_IO-SzLgk)

The Teaching Channel has a great video of kids in multi-age classroom (grades 2 and 3) using dichotomous keys.

<https://www.teachingchannel.org/videos/dichotomous-key>

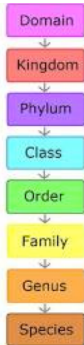
The Wonders of Our World web site has a simple hands-on lesson for making a dichotomous key using buttons.

<https://wow.osu.edu/experiments/Plants/Classification:%20How%20to%20Make%20Your%20Own%20Dichotomous%20Key>

# Classification and the Dichotomous Key

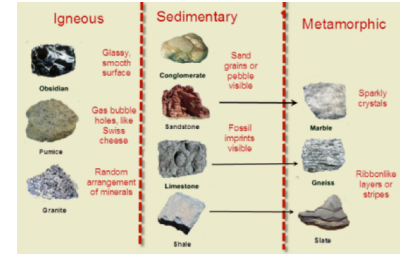
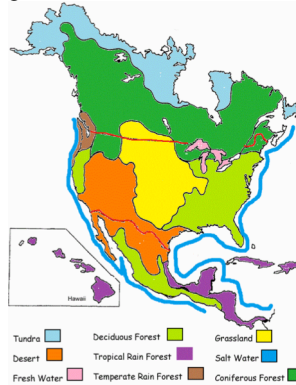
## Introduction

**Classification** is a system used by scientists to group and sort living and non-living things based on characteristics they share. Sorting things in this way helps us better understand the world we live in. Here are a few of the many ways scientists classify things.



Periodic Table of the Elements

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac	Unq	Unp	Unh	Une	Uno	Une	Unh								



## Taxonomy

**Taxonomy** is the branch of science concerned with classification. Carolus Linnaeus, a scientist born in 1707, is known as the Father of Taxonomy. He divided all things into either plant or animal groups called kingdoms. He then divided these kingdoms into smaller and smaller groups, eventually giving us kingdom, phylum, class, order, family, genus, and species. Scientists still use these ideas today, though our current classification system contains 8 levels, with domain coming above kingdom.

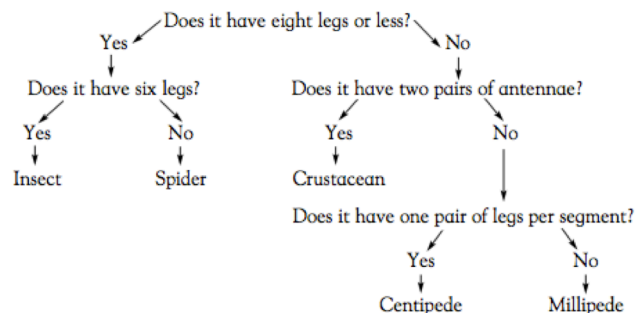
Linnaeus also developed the system of giving organisms a scientific name in Latin. These two names form the genus and species of the organism. For example, the scientific name of a lion is *Panthera leo*, while the scientific name of a gray wolf is *Canis lupus*. This system of giving organisms two names is called **binomial nomenclature**.

## Dichotomous Key

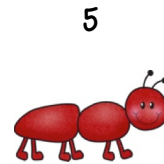
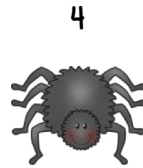
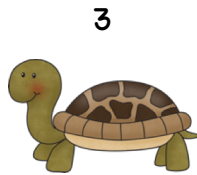
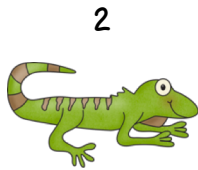
Dichotomous keys are tools that help users identify living and non-living things. The word **dichotomous** comes from two Greek words that together mean, "divided in two parts". In each step of a dichotomous key two choices are given with directions for what to do next. Each choice leads either to another choice or the identity of the object or organism. Some dichotomous keys are lists of questions, while some look more like charts. Here are two examples.

### Key to Writing Implements

- Writes with ink.....go to 2
- Writes with graphite.....go to 4
- Writing tip is metal.....go to 3
- Writing tip is felt.....marker
- Writing tip contains a ball.....ball point pen
- Writing tip does not contain a ball...calligraphy pen
- Body is made of wood.....regular pencil
- Body is not made of wood.....mechanical



# How to Use a Dichotomous Key



- 1 a. Backbone . . . . . go to 2  
b. No backbone . . . . . go to 5

- 2 a. Wings . . . . . bat  
b. No wings . . . . . go to 3

- 3 a. Legs . . . . . go to 4  
b. No legs . . . . . snake

- 4 a. Shell . . . . . tortoise  
b. No shell . . . . . lizard

- 5 a. Antenna . . . . . ant  
b. No antenna . . . . . spider

## DIRECTIONS

- Choose one creature to start.
- Read steps 1a and 1b.
- Decide which statement is true and follow the directions.
- The directions will lead you to a new pair of choices.
- Keep doing this until you come to a step that gives you the creature's name.
- Choose a new creature and repeat these steps.
- Do this until you identify every creature.

## EXAMPLE



- 1 a. Backbone . . . . . go to 2  
b. No backbone . . . . . go to 5

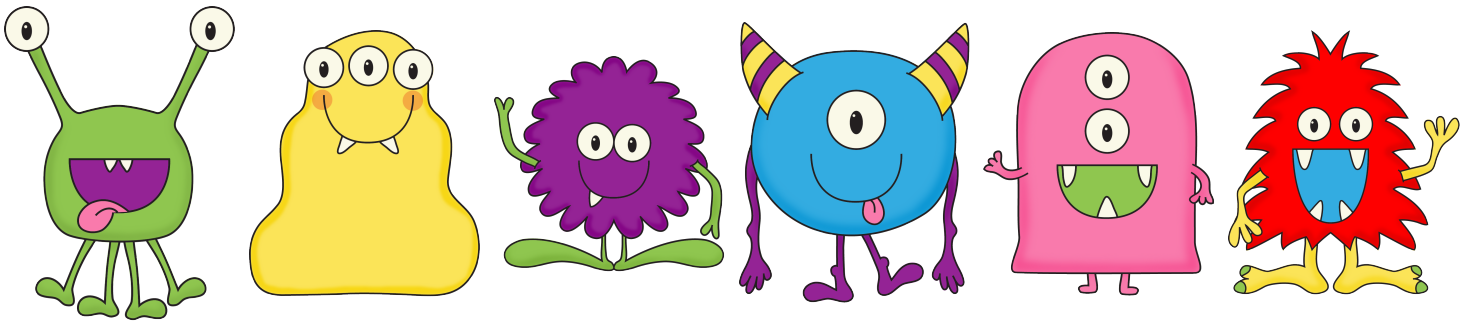
- 2 a. Wings . . . . . bat  
b. No wings . . . . . go to 3

- 3 a. Legs . . . . . go to 4  
b. No legs . . . . . snake

- 4 a. Shell . . . . . tortoise  
b. No shell . . . . . lizard

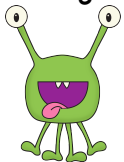
# Identifying Aliens with a Dichotomous Key

Look carefully at the aliens pictured below. Use the dichotomous key to find the scientific name for each one.



- 1
  - a. Mouth open . . . . . go to 2
  - b. Mouth not open . . . . . go to 4
  
- 2
  - a. Arms . . . . . go to 3
  - b. No Arms . . . . . *Alienus quadlegicus*
  
- 3
  - a. Hairy . . . . . *Alienus hairicus*
  - b. Not hairy . . . . . *Alienus tritoothicus*
  
- 4
  - a. No horns . . . . . go to 5
  - b. Horns . . . . . *Alienus stripicus*
  
- 5
  - a. No legs . . . . . *Alienus blobicus*
  - b. Legs . . . . . *Alienus fuzzicus*

Write your answers below.




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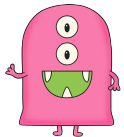

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Each of these aliens belongs to the same genus. What is their genus? \_\_\_\_\_

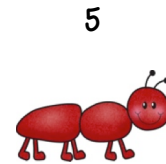
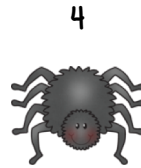
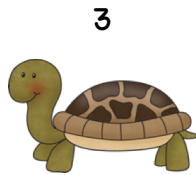
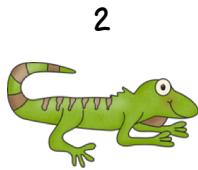
Look at the species name for each alien. How do you think these names were chosen?

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# How to Make a Dichotomous Key



## DIRECTIONS

- Carefully observe the traits of each animal.
- Make a list of the traits you can use to sort the animals into groups.
- For the animals above your list might look like this.

Number of legs

Body covering (scales or hair)

Exoskeleton

Backbone

Classification (reptile, mammal, etc.)

Shell

Tail

Antenna

Wings

- Pick one of the traits from the list to divide the animals into two groups.
- For example, you could start with body covering.

Step 1      a. Scales . . . . . go to 2  
              b. No scales

- Now look at all the animals with scales and choose another trait from the list to further separate them. Your next choice might be legs. In this step the first animal is named.

Step 2      a. Legs . . . . . go to 3  
              b. No legs . . . . . snake

- Continue these steps until all animals from the first group (scales) have been named.
- Repeat these steps with the second group of animals until each animal is identified.
- Here's what a completed key might look like.

Step 1      a. Scales . . . . . go to 2  
              b. No scales . . . . . go to 4

Step 2      a. Legs . . . . . go to 3  
              b. No legs . . . . . snake

Step 3      a. Shell . . . . . tortoise  
              b. No shell . . . . . lizard

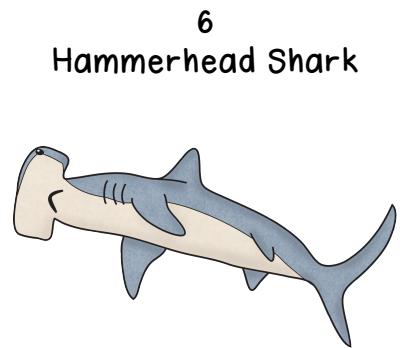
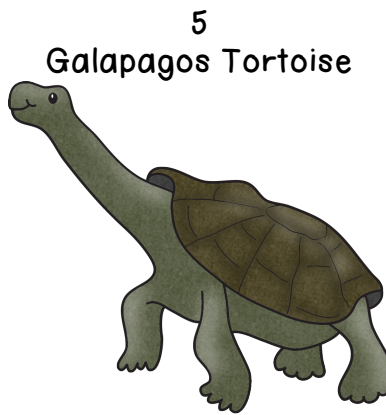
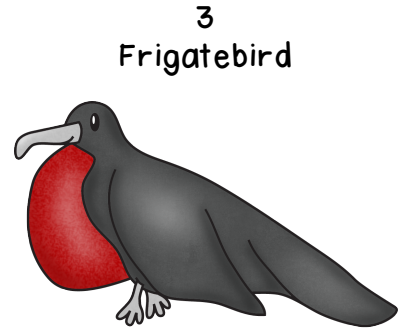
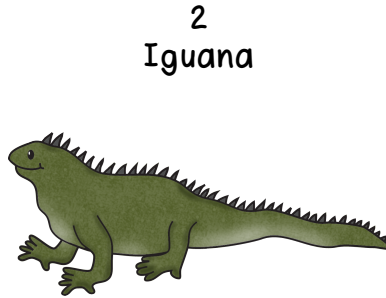
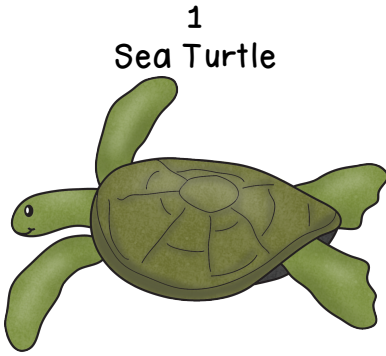
Step 4      a. Backbone . . . . . bat  
              b. No backbone . . . . . go to 5

Step 5      a. 8 legs . . . . . spider  
              b. 6 legs . . . . . ant

- Since there are many traits to use to group these animals, there is more than one way to make a key. This means that there is more than one correct answer!

# Make Your Own Dichotomous Key

Create a dichotomous key for the animals pictured below.



Step 1    a. \_\_\_\_\_  
            b. \_\_\_\_\_

Step 2    a. \_\_\_\_\_  
            b. \_\_\_\_\_

Step 3    a. \_\_\_\_\_  
            b. \_\_\_\_\_

Step 4    a. \_\_\_\_\_  
            b. \_\_\_\_\_

Step 5    a. \_\_\_\_\_  
            b. \_\_\_\_\_

Step 6    a. \_\_\_\_\_  
            b. \_\_\_\_\_