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## Using a Dichotomous Key

Take a few minutes to sort through and group the insect cards by physical characteristics.

A **dichotomous key** is a tool that allows the user to determine the identity of an item based on physical traits. Keys have a series of two choices in each step that lead the user to the correct name of a given object. Keys are made following these basic rules:

- Observing the physical characteristics of objects to be identified by using the key.
- Identify the most general trait that can be used to divide the organisms into categories. For this activity, we are using wings. The number of legs would not be a good trait to use since all insects have six legs.
- Two choices are written for each number. One choice has a trait, and the other choice is NOT the trait. A different trait for a choice is not generally used. For example, since the trait we are using is wings, we should not use antenna as the other choice.
- Each step in the key should narrow down identification. Choices should not be confusing.
- There should be one less numbered step than the total number of objects to be identified.



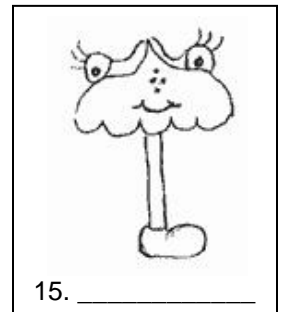
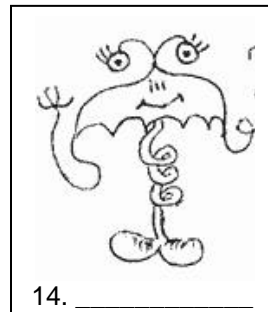
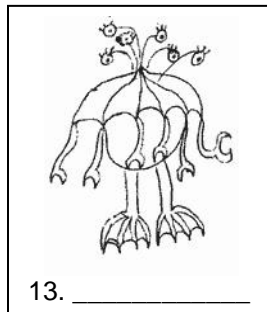
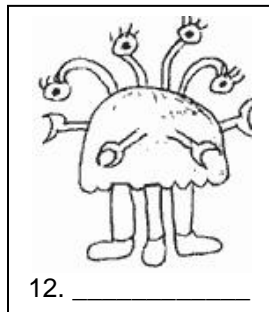
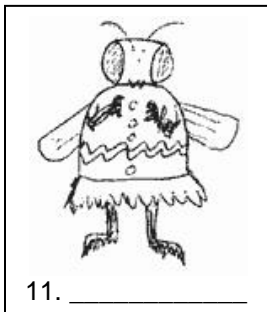
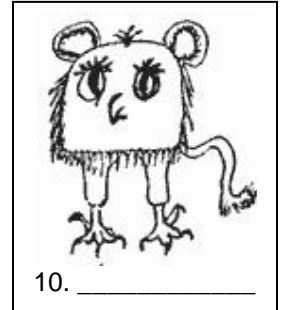
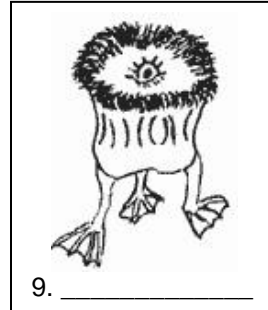
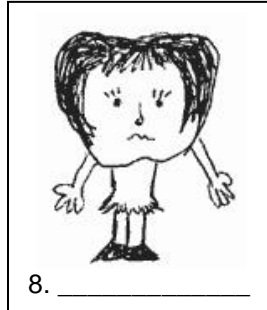
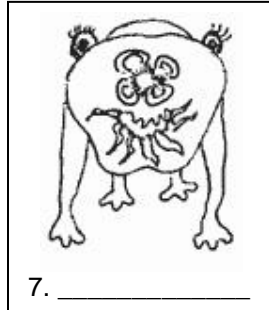
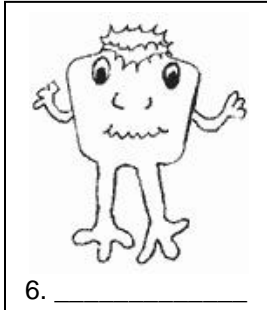
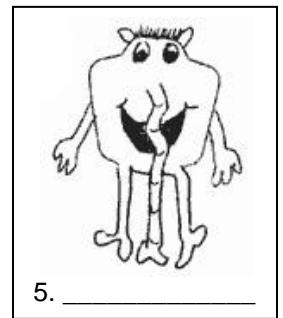
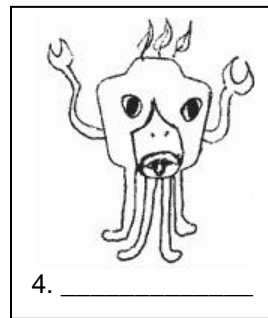
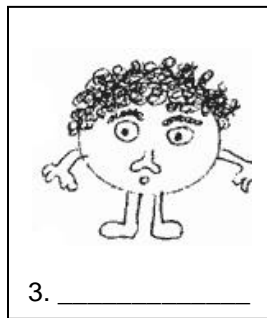
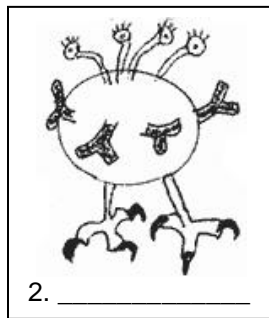
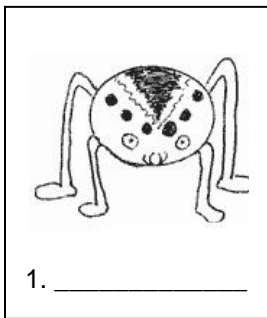
Follow the teacher instructions to complete the key. Be sure that you understand the process for using the key.

- 1. a) can see wings..... go to step 3  
b) can't see wings..... go to step 2
  
- 2. a) has exoskeleton covering wings..... go to step 4  
b) doesn't have exoskeleton covering wings (no wings) \_\_\_\_\_
  
- 3. a) holds wings straight out to sides ..... \_\_\_\_\_  
b) doesn't hold wings out to sides..... go to step 5
  
- 4. a) has rounded wing covers..... \_\_\_\_\_  
b) doesn't have rounded wing covers..... \_\_\_\_\_
  
- 5. a) folds wings together over back..... go to step 6  
b) doesn't fold wings together over back..... go to step 7
  
- 6. a) wings are transparent..... \_\_\_\_\_  
b) wings are not transparent..... \_\_\_\_\_
  
- 7. a) wings lay in a flat, triangular shape..... \_\_\_\_\_  
b) wings do not lay in a flat triangular shape..... \_\_\_\_\_

Now identify the “Wacky Person” using the dichotomous key on page 4.

## Wacky People Dichotomous Key

A dichotomous key gives clues in pairs of statements. With each character, start with the first pair of statements. Decide which description matches your character best and follow the line to the right. There will either be a name or a number. If it is a name, you have identified your character. Write its name in the blank under the character. If it is a number, go to the pair of steps with that number. Continue through the steps until each creature is named. There is only one creature per name, and no creature has two names.



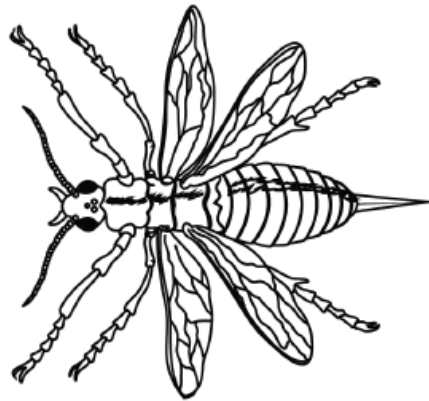
## Wacky People Dichotomous Key

1. Two legs..... go to 2  
Some other number of legs .....go to 3
2. Does not look like a human.....go to 4  
Looks a lot like a human.....go to 5
3. One leg.....go to 6  
Three or four legs.....go to 7
4. Fly-like.....*Mosk cara*  
Not fly-like.....go to 8
5. Seems to be a girl.....*Rita nita*  
Not a girl.....go to 9
6. Leg is curled, two feet.....*Ruela brella*  
Leg is straight, one foot.....*Giggles*
7. Three Legs.....go to 10  
Four legs.....go to 11
8. Has webbed feet.....*Hex oculate*  
Clawed feet.....go to 12
9. Curly hair, no toes.....*Lugio wirum*  
Wiggly looking mouth, three toes on feet...*Cee nile*
10. Very long nose, open mouth.....*Elle funk*  
Some other appearance.....go to 13
11. Has duck bill, two pinchers.....*Tri duct*  
No arms or pinchers.....go to 14
12. Has ears, tail and beak.....*Grif leon*  
Four eyes on stalks.....*Eggur ondy*
13. One eye, webbed feet.....*Cue kide*  
Four stalked eyes, four pinchers.....*Quadrumenox*
14. Three toed feet, nose like a flower.....*Tunia petalos*  
Spider like, has spots.....*Patterned mulywumpus*

USE THE FOLLOWING DICHOTOMOUS KEY FOR THE NEXT TWO QUESTIONS

**Dichotomous Key for Insect Classification**

- 1. a. One pair of wings.....go to 2
- b. Two pairs of wings.....go to 3
- 2. a. Hind wings reduced to tiny knobs.....Diptera
- b. Hind wings not reduced to tiny knobs.....go to 6
- 3. a. Front and hind wings have similar texture.....go to 4
- b. Front and hind wings do not have similar texture.....go to 6
- 4. a. Front and hind wings similar in size and shape.....go to 5
- b. Front and hind wings not similar in size and shape.....go to 7
- 5. a. Antennae are short and bristly.....Odonata
- b. Antennae not short and bristly.....Hymenoptera
- 6. a. Head visible from above.....Mantodea
- b. Head hidden from above by hooklike structure.....Blattaria



**16** Use the dichotomous key to determine the correct classification of the insect in the diagram.

- A Diptera
- B Odonata
- C Hymenoptera
- D Mantodea

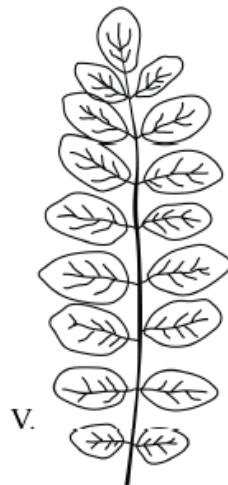
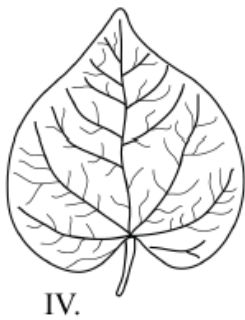
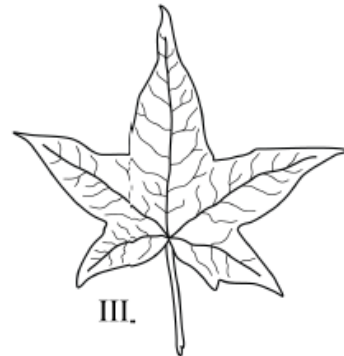
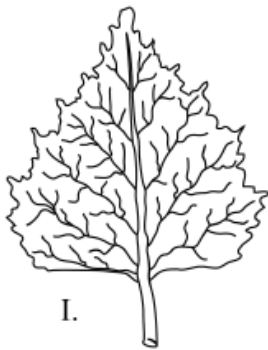
**17** What is one characteristic used to classify the insect in the diagram?

- A number of legs
- B presence of antennae
- C number of wings
- D formation of larvae

USE THE FOLLOWING DICHOTOMOUS KEY TO ANSWER THE NEXT FOUR QUESTIONS.

**Dichotomous Key for Leaf Classification**

1. a. Compound leaf.....go to 2  
    b. Simple leaf.....go to 4
2. a. Palmate arrangement of leaflets.....Aesculus  
    b. Pinnate arrangement of leaflets.....go to 3
3. a. Leaflets taper to pointed tips.....Carya  
    b. Oval leaflets with rounded tips.....Robinia
4. a. Leaf veins branch out from one central point.....go to 5  
    b. Leaf veins branch off of main vein in the middle of the leaf.....go to 6
5. a. Leaf is heart-shaped.....Cercis  
    b. Leaf is star-shaped.....Liquidambar
6. a. Leaf has jagged (toothed) margin.....Betula  
    b. Leaf has smooth (untoothed) margin.....Magnolia



**18** Which type of leaf margin does leaf “VI” have?

- A** smooth
- B** serrated
- C** undulated
- D** lobate

**19** Use the dichotomous key to determine the correct classification of leaf “V”.

- A** Carya
- B** Aesculus
- C** Liquidambar
- D** Robinia

**20** Observe the leaves in the diagram. Identify which leaf has the genus classification of Betula.

- A** I
- B** II
- C** IV
- D** V

**21** Of the following pieces of laboratory equipment, which would best facilitate the external observation of a living leaf?

- A** collecting net
- B** electron microscope
- C** hand lens
- D** microscope

