

Using and Making Dichotomous Keys

Dichotomous Keys

Biologists use dichotomous keys to help them identify various organisms. As the name implies, *dichotomous* literally means “dividing in two.” A dichotomous key is a series of paired, contradictory statements. A user of the key goes through several pairs of statements and is asked to choose one from each pair that best describes a particular trait of an organism. By the process of elimination, the key guides the user to an end set of statements where the organism is finally identified.

Procedure – Part 1 - Using a Dichotomous Key

Use the Key below to identify the insects.

Always Start Here!

Insect Key

- 1a. Insect has wings Go to 2
- 1b. Insect has no wings Go to 7
- 2a. Fully transparent visible wings Go to 3
- 2b. Visible, but not fully transparent wings Go to 10
- 3a. One pair of wings; no hind wings **Housefly**
- 3b. Front and hind wings present Go to 4
- 4a. Hind wings similar in size to front wings **Dragonfly**
- 4b. Hind wings smaller than front wings Go to 5
- 5a. Two or three long slender tails **Mayfly**
- 5b. No long slender tails Go to 6
- 6a. Wings at rest held like roof over body **Cicada**
- 6b. Wings at rest not held like roof over body **Bee**
- 7a. Three long slender tails **Silverfish**
- 7b. No long slender tails Go to 8
- 8a. Head almost as wide as body **Termite**
- 8b. Head much narrower than body Go to 9
- 9a. Head attached to body by narrow neck **Louse**
- 9b. Neck not particularly narrow **Flea**
- 10a. Wings held against body when at rest Go to 11
- 10b. Wings not held against body when at rest **Butterfly**
- 11a. Large hind jumping legs **Grasshopper**
- 11b. Hind legs not enlarged for jumping Go to 12
- 12a. Front wings partly leathery; tip transparent **Stinkbug**
- 12b. Front wings completely shell-like **Potato Beetle**



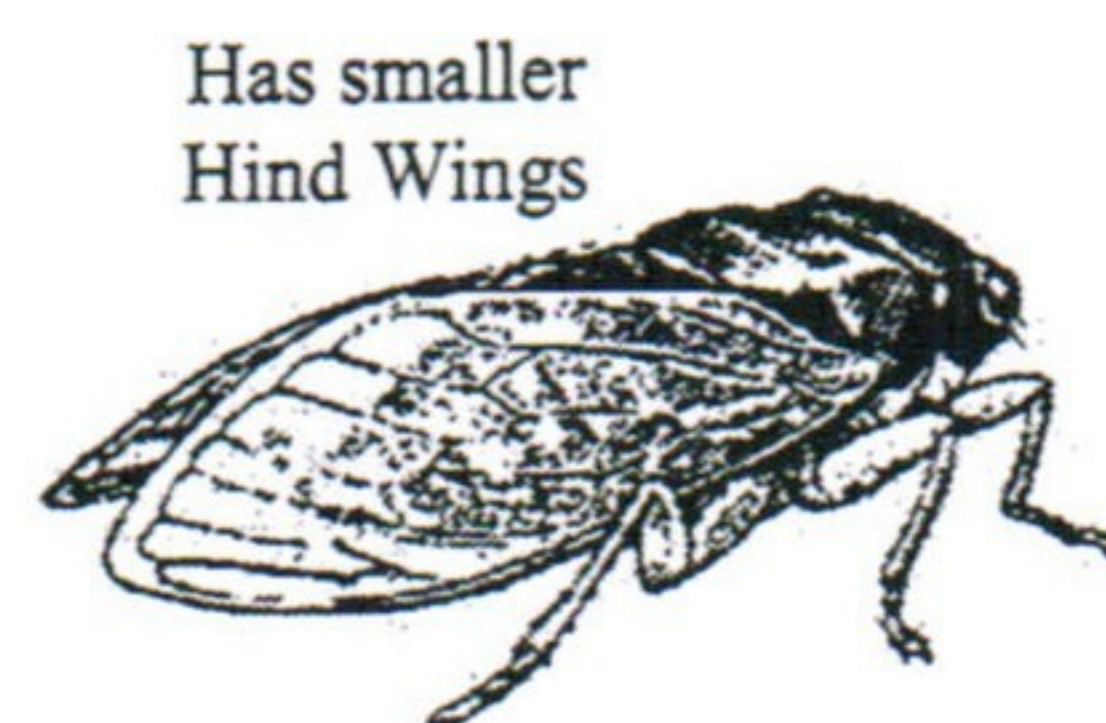
1. _____



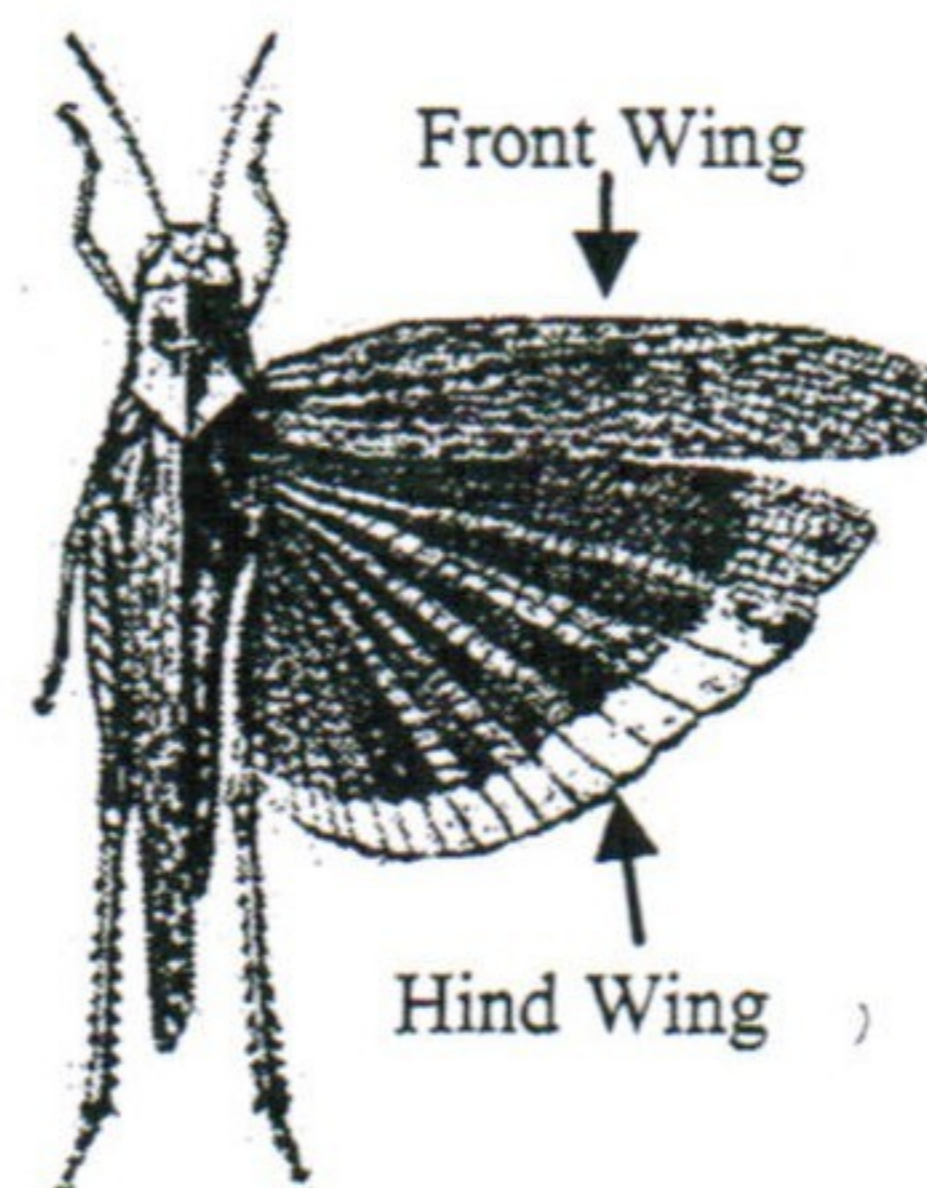
2. _____



3. _____



4. _____



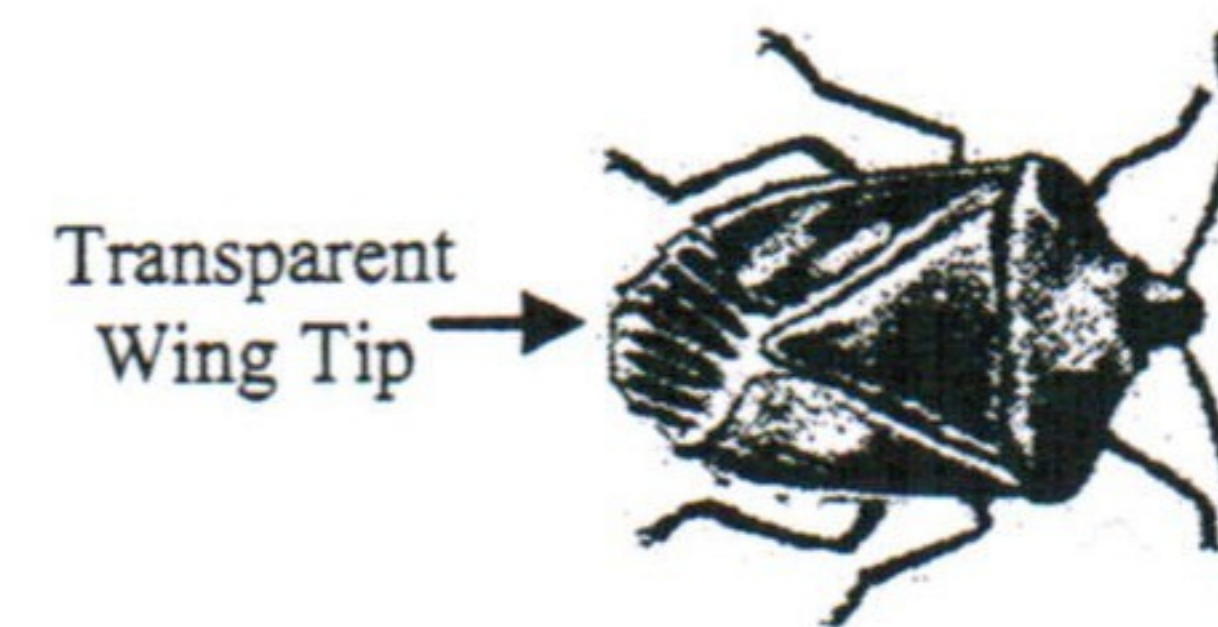
5. _____



6. _____



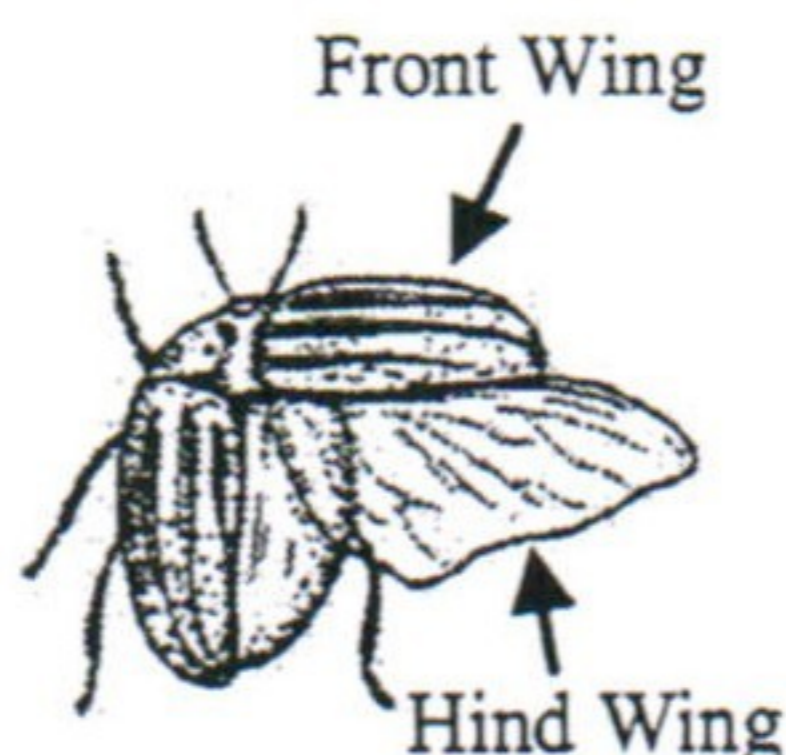
7. _____



8. _____



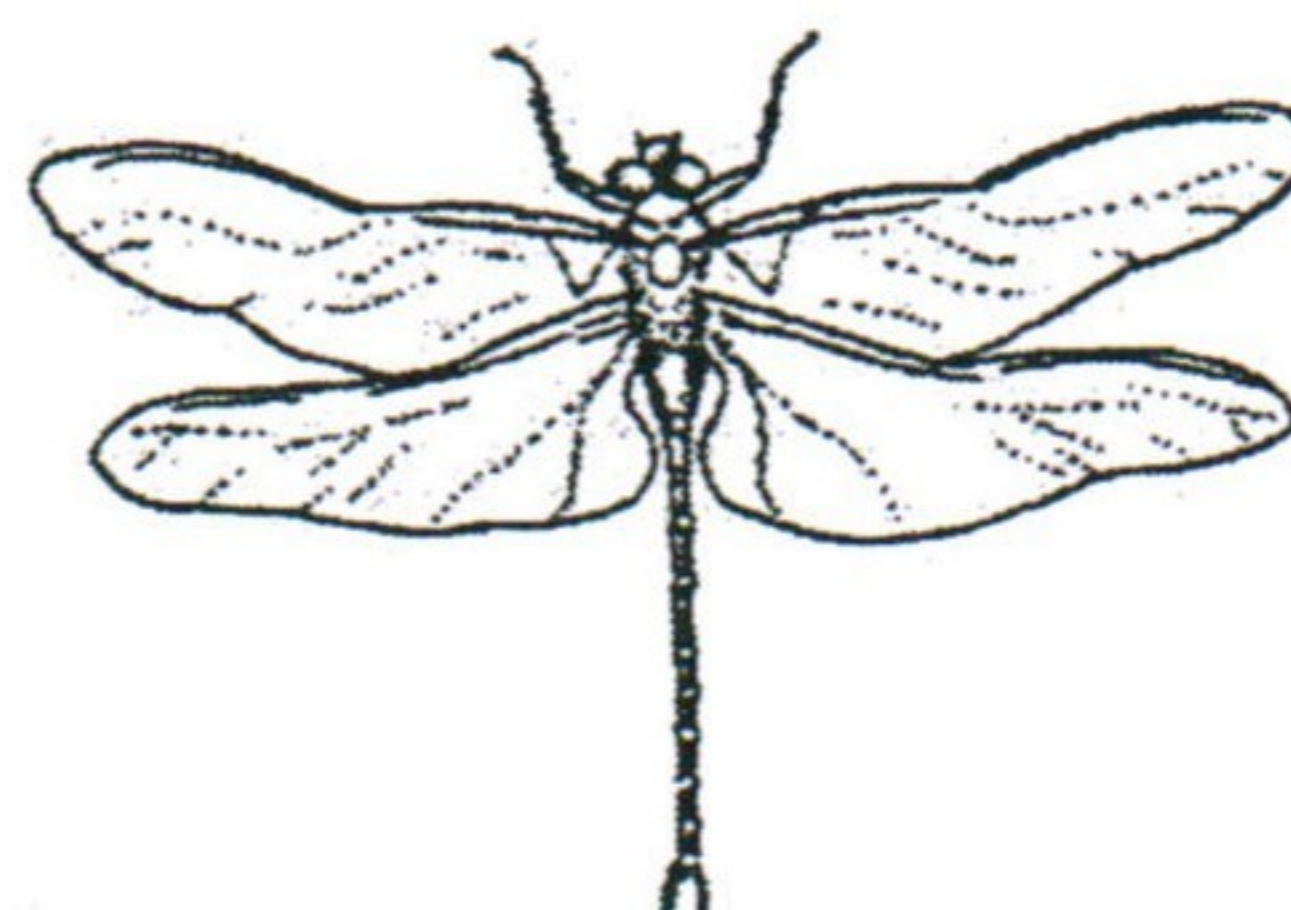
9. _____



10. _____



11. _____



12. _____



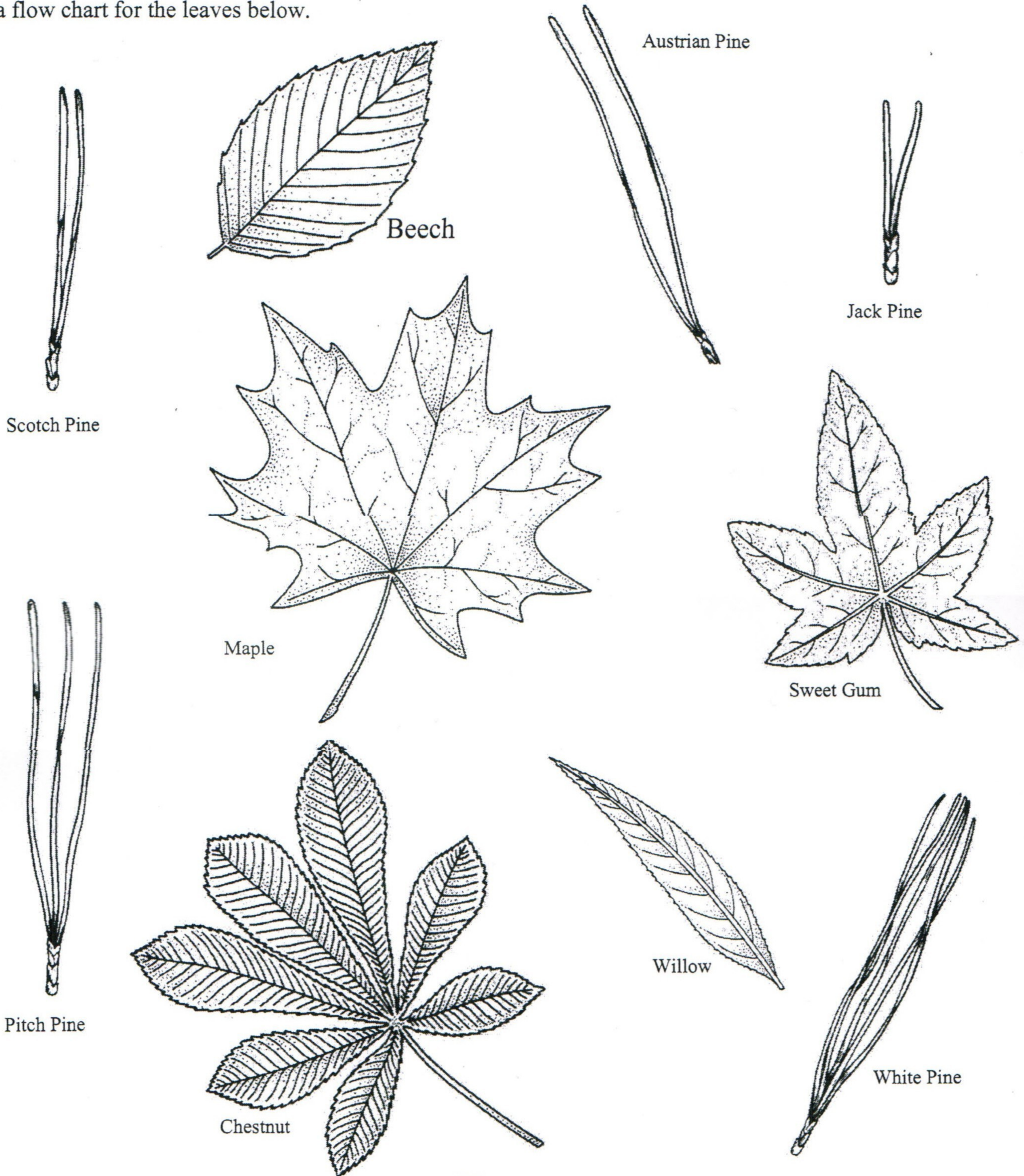
13. _____

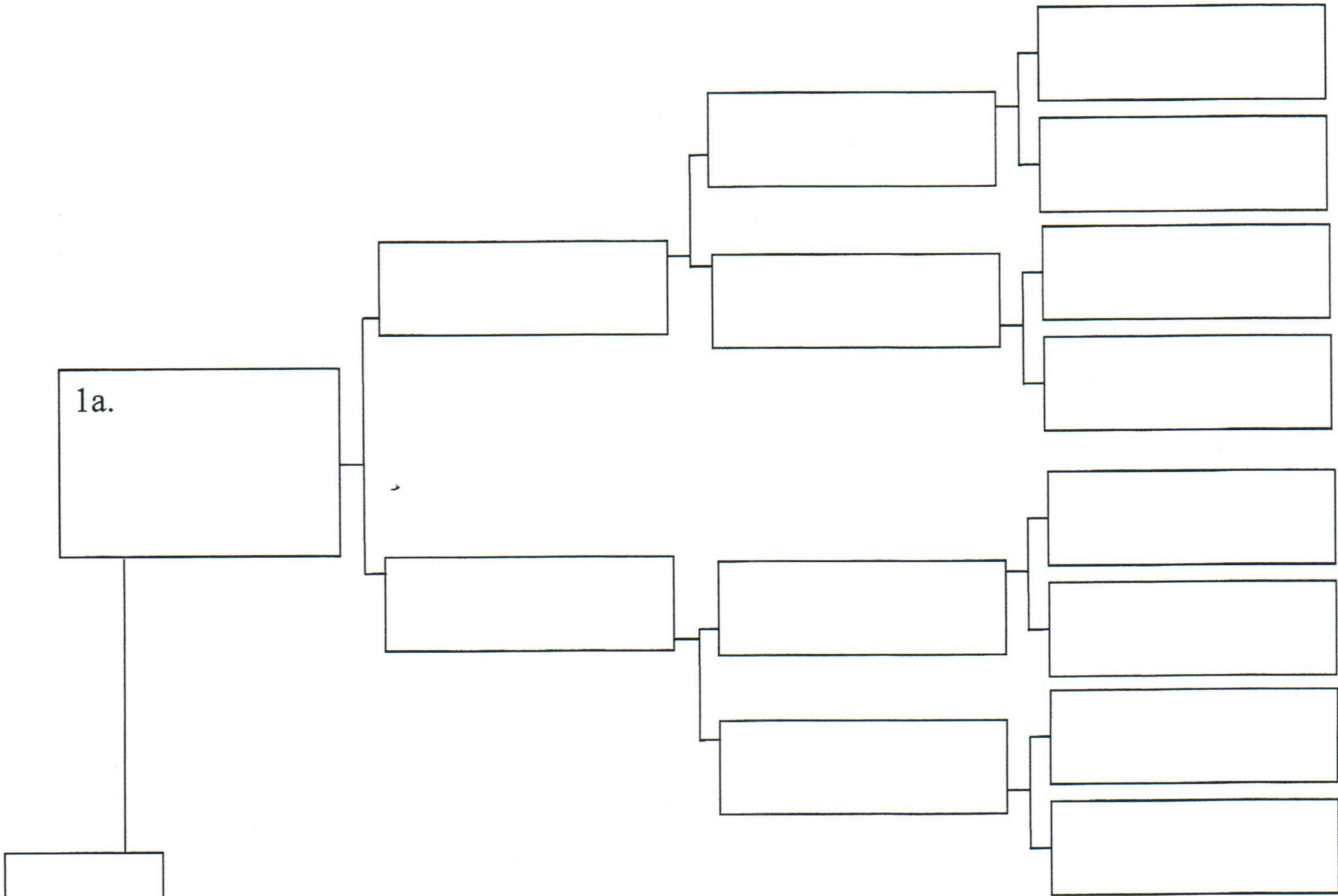
Procedure – Part 2 – Constructing a Dichotomous Key

A dichotomous key is constructed by first making a flow chart like the blank one on the next page. You will use this template to make a flow chart for the leaves below. You should follow several rules when you construct your chart. ↴

1. Choose characteristics that are easily observable.
2. Make the key so that the user is always choosing between two opposite statements.
3. Generally try to begin the statement with the name of the part you are observing, such as “**Wings** are transparent.”

Make a flow chart for the leaves below.





Note: You probably will not use all the boxes.



Using the flow chart you just made, construct a dichotomous key.

1.a _____
1.b _____
2.a _____
2.b _____
3.a _____
3.b _____
4.a _____
4.b _____
5.a _____
5.b _____
6.a _____
6.b _____
7.a _____
7.b _____
8.a _____
8.b _____
9.a _____
9.b _____
10.a _____
10.b _____
11.a _____
11.b _____
12.a _____
12.b _____
13.a _____
13.b _____

Final Analysis

1. What is the basic function of a dichotomous key?

2. Get together with a classmate and compare your dichotomous keys. How are they similar?

3. How do your keys differ? _____

4. Besides living organisms, what might be some other things that you could sort with a dichotomous key?
