Fantastic Beasts & How to Classify Them
-Using Dichotomous Keys-

Purpose: To construct a dichotomous key for the classification of organisms.

Background Information:

When one comes upon an unknown creature, it is helpful to use a dichotomous key in order to determine to what species it belongs. Species are still discovered today and are named through binomial nomenclature, a universal naming system revolutionized by 18th Century biologist Linnaeus. To name a newly discovered species, however, one must research to be sure it has not already been discovered and named. For this, we use dichotomous keys which focus on physical characteristics that are used to separate these species into subgroups. For example, if one comes upon a werewolf and is unsure of its species identity, a key could be used by observing its physical traits.

However, if one does come upon a werewolf, the last thing on one's mind is the use of a dichotomous key…

The word dichotomy is from the ancient Greek dichotomia which means "divided." In Greek, dich- refers to "two" and tomia- means splitting or cutting. Dichotomous keys divide species into two subgroups at each step until each stands alone and is identified as that species. Dichotomous keys provide paired statements that split the species into distinct groups based on traits they possess or do not possess. As one moves through the steps, the search for the identity of the unknown species becomes more and more narrowed.

You should always begin at Step 1 and move down the series, following the directions at each step. If the choice of characteristics in the body of the key leads to a number, then you skip down to that number and make your next choice. When the choice leads you to a name instead of a number, you have successfully found the name of the organism for which you are searching. If your journey through the key becomes confusing, remember the words of Dumbledore…

"When in doubt, I find retracing my steps to be a wise place to begin."

A Sample Dichotomous Key

STEPS	CHARACTERISTICS (CHARACTERS)	GO TO STEP/ID
1a	The creature is humanoid (human head and arms).	2
1b	The creature is not humanoid.	3
2a	The creature has a horse-like body.	Centaur
2b	The creature does not have a horse-like body.	4
3a	The creature has legs.	5
3b	The creature does not have legs.	6
4a	The creature has a fish-like body.	Merperson
4b	The creature does not have a fish-like body.	Dementor
5a	The creature possesses the head of a horse.	7
5b	The creature does not possess a horse-like head.	8
6a	The creature has red eyes.	Ashwinder
6b	The creature has yellow eyes.	Basilisk
7a	The creature has wings.	9
7b	The creature does not have wings.	10
8a	The creature has wings.	11
8b	The creature does not have wings.	Werewolf
9a	The creature possesses feathers.	Abraxan
9b	The creature does not possess feathers.	Thestral
10a	The creature has a horn projecting from its head.	Unicorn
10b	The creature does not have a horn projecting from its head.	Hippocampus
11a	The creature possesses a spiked tail.	Hungarian horntail
11b	The creature does not possess a spiked tail.	Hippogriff

You will turn in this form. Please write your name here: _____

Materials:

Fantastic Beasts Images (some are simply too dangerous to have in the classroom)

These images can be found at www.harrypotterbiology.com. Simply click Enter, and then click on the O.W.L. – Level Outstanding.

Quill & Ink (though a muggle pencil will suffice)

Procedure:

1) *Examine the Fantastic Beasts representations provided by your instructor and choose 24 different organisms.*

2) *You will create your own dichotomous key using traits that are visible in each drawing. You may use traits listed in the key already provided or others in order to separate them into groups. Be sure to use clearly observable traits that will mean the same thing to any reader.*

3) *You should be able to key the 24 organisms in 24 steps or less.*

On the next page of parchment is a form on which you can structure your own dichotomous key. Create a dichotomous key using ONLY 12 of the organisms provided. Remember, only 2 choices, an 'a' and a 'b,' are allowed for each step!

Analysis Questions: Answer the following questions after you have created your dichotomous key on the next page.

1) *With what kind of characteristics must you start when creating or using a dichotomous key, general or specific? Why must you start with these?*

2) *Why should descriptors like "long," "tall," or "short" be avoided in a dichotomous key?*

3) *Why is it important for dichotomous keys to use physical traits and not descriptors like diet or habitat?*

4) *In some keys, characteristics like talons or claws are used. Why should the length of these structures not be used to classify an organism?*

STEPS	CHARACTERISTICS (CHARACTERS)	GO TO/ID
1a		
1b		
2a		
2b		
3a		
3b		
STEPS	CHARACTERISTICS (CHARACTERS)	GO TO/ID