Dichotomous Key

Wednesday, January 7th, 2014
Do Now

Homework

- Create your own Dichotomous key with at least 4 steps and 4 organisms with pictures

Do Now

- Identify as many structural characteristics as you can from the picture
Vanderbilt School for Science and Math

Students develop their laboratory skills and techniques through the classroom lessons at SSMV

Dr. Eeds looks on as SSMV students analyze gel electrophoresis results as a part of a gene sequencing project

SSMV students have the opportunity to use engineering concepts work on real-world problems

Sophomore group projects include collecting and studying bacteria from Mammoth Cave
Objectives

- SWBAT **classify** an unknown organism based on **structural** characteristics by using a **dichotomous key**.

Essential Question

- How do scientists classify organisms based on structural characteristics?
**Dichotomous Key**
- A key used to identify a plant or animal in which each stage presents descriptions of two distinguishing characteristics, with a direction of where to go next until the species is identified.
#1. Does the insect have wings?
Yes  Go to #2
No   Go to #6

#2. How many pairs of wings does the insect have?
One  Order *Diptera*
Two  Go to #3

#3. Does the insect have very short antennae?
Yes  Go to #4
No   Order *Odonata*

#4. Are there two or three long, slender, tail-like appendages at the tip of the abdomen?
Yes  Order *Ephemeroptera*
No   Go to 5

#5. Does the insect have five segments on each leg?
Yes  Order *Neuroptera*
No   Order *Isoptera*

#6. Is the insect ant-like with a narrow waist?
Yes  Order *Hymenoptera*
No   Go to 7

#7. Are the antennae long, and composed of many segments?
Yes  Order *Psocoptera*
No   Order *Mallophaga*
An organism and a classification key are shown below.

<table>
<thead>
<tr>
<th>Back</th>
<th>Front</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Back Image]</td>
<td>![Front Image]</td>
</tr>
</tbody>
</table>

1. Long segmented body ................................................... go to 2  
   Oval-shaped, segmented body ........................................ go to 4

2. No legs .............................................................................. earthworm  
   Many legs .......................................................................... go to 3

3. One pair of legs per segment ......................................... centipede  
   Two pairs of legs per segment .......................................... millipede

4. No tail ............................................................................... water penny  
   Tail .................................................................................. horseshoe crab
Using Dichotomous Keys

- Use the dichotomous keys to complete the worksheet
- If you finish early you can start the homework
- Please do this independently
- You can ask the people next to you or raise your hand if you don’t know a word
Follow up questions

1. What is a mammal?
2. Write 1 sentence explaining the difference between amphibians and reptiles.
3. Which pairs of animals on the back of the sheet are most similar (just list 1 pair)? More different (list 1 pair)? Explain your reasoning.
4. The Atrax infensus (4b) and the Hapalochlaena lanulata (9a) both have 8 limbs, don’t have an endoskeleton, and are predators. Which characteristics separate them?
Homework

- Create your own dichotomous key
- Does not need to be animals/plants
  - instruments
  - food
  - buildings
- Make it at least 4 steps long
- Include 4 “objects” with pictures
How do scientists classify organisms based on structural characteristics?
## Exit Ticket

1) what is the fish on the right?

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a) Lives on the land</td>
<td>go to 2</td>
</tr>
<tr>
<td>1b) Lives in the ocean</td>
<td>go to 5</td>
</tr>
<tr>
<td>2a) Walks on 2 legs</td>
<td>Homo sapien</td>
</tr>
<tr>
<td>2b) has more than 2 legs</td>
<td>Go to 3</td>
</tr>
<tr>
<td>3a) Has 4 legs</td>
<td>Panthera hernandesii</td>
</tr>
<tr>
<td>3b) Has 6 legs</td>
<td>go to 4</td>
</tr>
<tr>
<td>4a) Has wings</td>
<td>Sympetrum flaveolum</td>
</tr>
<tr>
<td>4b) Does not have wings</td>
<td>Gryllus assimilis</td>
</tr>
<tr>
<td>5a) Has fins</td>
<td>go to 6</td>
</tr>
<tr>
<td>5b) Does not have fins</td>
<td>Anguilla rostrata</td>
</tr>
<tr>
<td>6a) Is brightly colored</td>
<td>Go to 7</td>
</tr>
<tr>
<td>6b) Black or grey in color</td>
<td>Mugil cephalus</td>
</tr>
<tr>
<td>7a) Has a rounded tailfin</td>
<td>Amphiprion ocellaris</td>
</tr>
<tr>
<td>7b) Has a forked tailfin</td>
<td>Stegastes variabilis</td>
</tr>
</tbody>
</table>