



PROJECT *OCEANOLOGY*



Tree of Life Student Handout

Part 1. Carefully observe the organisms in the bins, taking notes on each organism. How are the organisms similar, and how are they different? How does each organism move? How/what does it eat? What senses does it use? What is the color/texture? How do you think it protects itself?

Organism 1:

Organism 2:

Organism 3:

Organism 4:

Organism 5:

Organism 6:

Organism 7:



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Part III. Build your phylogenetic tree! A phylogenetic tree is a visual hypothesis about evolutionary relationships.

1. Mentally divide the organisms into two groups according to Character A. Categorize the outgroup according to Character A and write it in the space provided. Next, write the categories for Character A in the spaces below. It doesn't matter which is Category 1 and which is Category 2.
1. Move over one column, and repeat step 1 for Character B.
2. Move over one column, and repeat step 1 for Character C.
3. Fill in the organism names at the ends of the tree branches. Cross out any 'empty branches'.



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Part IV. Answer the questions:

1. Give an example of two organisms from your phylogeny that are closely related. What do they have in common? How does your tree show their relationship?
2. Give an example of two organisms from your phylogeny that are distantly related. How do they differ? Do they have anything in common? How does your tree show their relationship?
3. The numbered nodes on the tree represent common ancestors. In the space below, write the number for a node that represents a common ancestor of the two similar organisms you identified in Question 1.
4. In the space below, write the number for a node that represents a common ancestor of the two different organisms you identified in Question 2.
5. Which node represents a common ancestor of ALL the organisms in your tree, including the outgroup? What traits do you think that organism had?
6. Pick a trait that probably was NOT present in the common ancestor. When do you think it might have appeared?