

## Practice Questions #1

- Place these ranks in order from the rank that includes the most species to the rank that includes the fewest species:  
Class, Domain, Family, Genus
- What is wrong with the scientific name of the black bear, *ursus Americanus*?
- Which organism is more closely related to the Canada goose, *Branta Canadensis*: *Branta sandvicensis* (Hawaiian goose) or *Chen caerulescens* (snow goose)? How do you know?
- What ranks do human beings share with the Canada goose?

Eukarya	Animalia	Chordata	Aves	Anseriformes	Anatidae	<i>Branta</i>	<i>canadensis</i>
Eukarya	Animalia	Chordata	Mammalia	Primate	Hominidae	<i>Homo</i>	<i>sapiens</i>

- Three new species are discovered. State which domain each species is in and how you know.
  - Species A is multicellular
  - Species B is unicellular, has no membrane around its nucleus and has a cell wall composed of peptidoglycan.
  - Species C is unicellular and has no membrane around its nucleus. Although Species C doesn't have a cell wall, most representatives of its domain have a cell wall that is not composed of peptidoglycan.
- What is a dichotomous key used for?
- This is part of a dichotomous key for species of birch trees.

<b>1a.</b> twigs are fragrant go to 2	<b>1b.</b> twigs are not fragrant go to 3
<b>2a.</b> leaves widest near the middle <i>Betula alleghaniensis</i>	<b>2b.</b> leaves widest near the base <i>Betula lenta</i>
<b>3a.</b> mature bark is dark brown go to 4 or gray	<b>3b.</b> mature bark is white go to 5
<b>4a.</b> Leaves yellowish green and shiny <i>Betula occidentalis</i>	<b>4b.</b> leaves dark green and hairy <i>Betula kenaica</i>

You found a birch tree and want to identify it.

- What is the first thing you need to do?
- The twigs of the birch tree are not fragrant and the bark is dark brown. What is the next decision you need to make and what will that tell you about the tree?

8. How can genetic diversity in a stand of Jack Pine (*Pinus banksiana*) help a population survive when a winter is much colder than normal?
9. How can species diversity help a marine ecosystem provide food and other ecosystem services for whales?

10. Complete the following table.

Domain	Eukarya			
Kingdom		Protista		
Cell type				
Nutrition				autotrophs
Cell wall material	No cell wall		Not peptidoglycan; occasionally no cell wall	

11. What characteristic supports the idea that viruses are living organisms?
12. Why are viruses not classified in any kingdom of living organisms?
13. How is the lytic cycle of viral replication different from the lysogenic cycle?
14. How is the lysogenic cycle similar to the lytic cycle?
15. Compare and contrast representative organisms from the Archaea and Bacteria domains in terms of shape, reproduction, habitat and sources of metabolic energy.