

Biology
In class

Name _____ Hour _____

Use the nine species below and their taxonomic classifications

	<u>Great horsetail</u>	<u>Peat moss</u>	<u>Japanese Pine</u>
Kingdom	Plant	Plant	Plant
Infrakingdom	Tracheophyta	Bryophyta	Tracheophyta
Superphylum	Monilophytes	Bryophyta	Spermatophyte
Phylum	Pteridophyta	Bryophyta	Pinophyta
Class	Polypodiopsida	Sphagnopsida	Pinopsida
Order	Equisetales	Sphagnales	Pinales
Family	Equisetaceae	Sphagnaceae	Pinaceae
Genus	Equisetum	Sphagnum	Pinus
Species	<i>E. telmateia</i>	<i>S. affine</i>	<i>P. densiflora</i>
	<u>Tropical water clover</u>	<u>Philadelphia lily</u>	<u>Ginko tree</u>
Kingdom	Plant	Plant	Plant
Infrakingdom	Tracheophyta	Tracheophyta	Tracheophyta
Superphylum	Monilophytes	Spermatophyte	Spermatophyte
Phylum	Pteridophyte	Angiosperm	Ginkgophyta
Class	Polypodiopsida	Monocot	Ginkgoopsida
Order	Salviniales	Liliales	Ginkgoales
Family	Marsileaceae	Liliaceae	Ginkgoaceae
Genus	Marsilea	Lilium	Ginko
Species	<i>M. ancylopoda</i>	<i>L. philadelphicum</i>	<i>G. biloba</i>
	<u>Barrel cactus</u>	<u>Carnation</u>	<u>Coconut palm</u>
Kingdom	Plant	Plant	Plant
Infrakingdom	Tracheophyta	Tracheophyta	Tracheophyta
Superphylum	Spermatophyte	Spermatophyte	Spermatophyte
Phylum	Angiosperm	Angiosperm	Angiosperm
Class	Eudicot	Eudicot	Monocot
Order	Caryophyllales	Caryophyllales	Arecales
Family	Cactaceae	Caryophyllaceae	Areaceae
Genus	Ferocactus	Dianthus	Cocos
Species	<i>F. glaucescens</i>	<i>D. caryophyllus</i>	<i>C. nucifera</i>

Step 2. Use the characteristics described below to determine where each trait evolved.

	<u>Great horsetail</u>	<u>Peat Moss</u>	<u>Japanese Pine</u>
Vascular:	Yes	No	Yes
Seed:	No	No	Yes
Flowering:	N/A	N/A	No
Enclosed seeds:	N/A	N/A	No
Number of embryonic leaves per seed	N/A	N/A	1

	<u>Tropical water clover</u>	<u>Philidelphia lily</u>	<u>Ginko tree</u>
Vascular	Yes	Yes	Yes
Seed	No	Yes	Yes
Flowering	N/A	Yes	No
Enclosed seeds	N/A	Yes	No
Number of embryonic leaves per seed	N/A	1	1

	<u>Barrel cactus</u>	<u>Carnation</u>	<u>Coconut palm</u>
Vascular	Yes	Yes	Yes
Seed	Yes	Yes	Yes
Flowering	Yes	Yes	Yes
Enclosed seeds	Yes	Yes	Yes
Number of embryonic leaves per seed	2	2	1

Questions (email your responses to amutsaers@aznsa.com)

- 1) At which level (Kingdom, Infrakingdom, etc.) did the vascular distinction come into play?
- 2) Describe the levels where seeds, flowering and enclosed seeds became distinct.
- 3) Which organism from above would be at the bottom of the phylogenetic tree based on their traits? Why?
- 4) Pick two species that you believe are the most closely related. Why are they closely related (give at least two pieces of evidence).