

OP: Relationships in Classification





























(Outcomes 11, 12 & 13)

Biology 11

Name: _____

1. What are the 7 taxa in order from largest to smallest?

2. Using the chart found below showing Linnaeus's classification system answer the questions that follow:

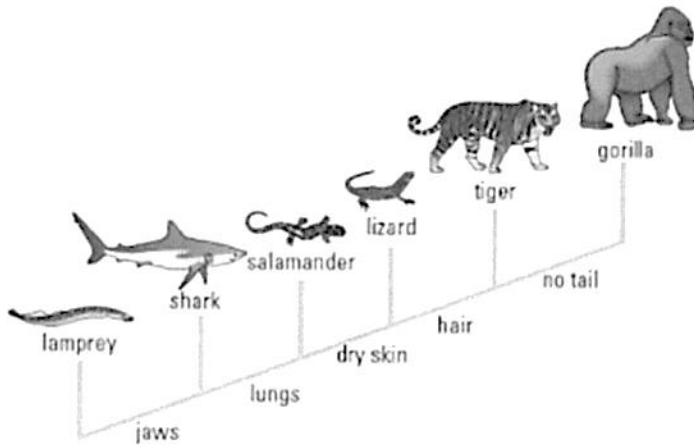
| Butterfly | fish | elephant | lion | fox | wolf | dog |
|--|---|---|---|---|---|--|
|  |  |  |  |  |  |  |
| KINGDOM Animalia |  |  |  |  |  |  |
| | PHYLUM Chordata |  |  |  |  |  |
| | | CLASS Mammalia |  |  |  |  |
| | | | ORDER Carnivora |  |  |  |
| | | | | FAMILY Canidae |  |  |
| | | | | | GENUS Canis |  |
| | | | | | | SPECIES familiaris |

a) Is the lion more related to the elephant or the wolf?

b) Justify your answer.

3. Explain the difference between Linnaeus's classification system and today's current day classification system. Why did we change this?

4. Using the cladogram below answer the questions that follow:



a) Is the shark more closely related to the salamander or the tiger?

b) Justify your answer above.

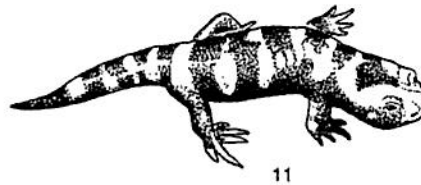
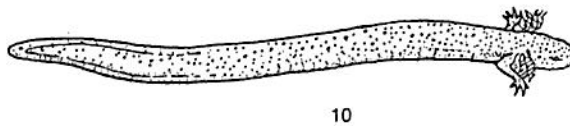
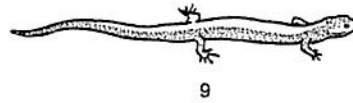
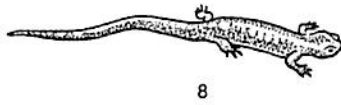
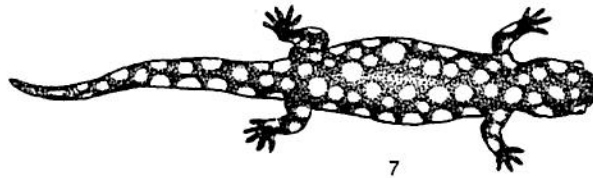
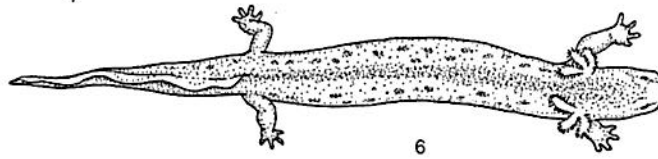
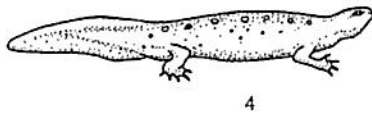
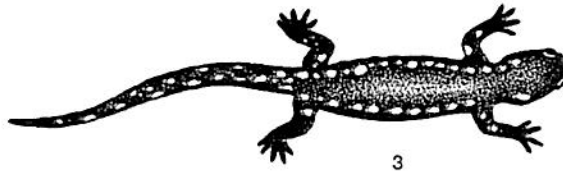
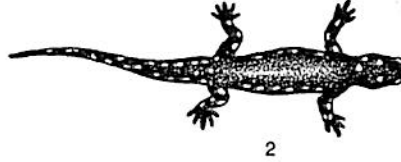
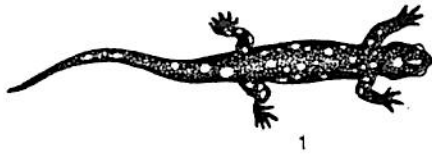
c) What derived characteristics do the lizard and gorilla share?

d) Which two organisms on the cladogram are most unrelated? Why?

5. Using the pictures and dichotomous key on the back, identify what the **scientific name** is for each of the 11 salamanders are.

| | |
|----|-----|
| 1. | 7. |
| 2. | 8. |
| 3. | 9. |
| 4. | 10. |
| 5. | 11. |
| 6. | |

Salamander Dichotomous Key



| | | |
|----|--|--|
| 1 | a Hind limbs absent | <i>Siren intermedia</i> , siren |
| | b Hind limbs present | Go to 2 |
| 2 | a External gills present in adults | <i>Necturus maculosus</i> , mud puppy |
| | b External gills absent in adults | Go to 3 |
| 3 | a Large size (over 7 cm long in Figure 1) | Go to 4 |
| | b Small size (under 7 cm long in Figure 1) | Go to 5 |
| 4 | a Body background black, large white spots irregular in size and shape completely covering body and tail | <i>Ambystoma tigrinum</i> , tiger salamander |
| | b Body background black, small round white spots in a row along each side from eye to tip of tail | <i>Ambystoma maculatum</i> , spotted salamander |
| 5 | a Body background black with white spots | Go to 6 |
| | b Body background light color with dark spots and/or lines on body | Go to 7 |
| 6 | a Small white spots on a black background in a row along each side from head to tip of tail | <i>Ambystoma jeffersonianum</i> , Jefferson salamander |
| | b Small white spots scattered throughout a black background from head to tip of tail | <i>Plethodon glutinosus</i> , slimy salamander |
| 7 | a Large irregular black spots on a light background extending from head to tip of tail | <i>Ambystoma opacum</i> , marbled salamander |
| | b No large irregular black spots on a light background | Go to 8 |
| 8 | a Round spots scattered along back and sides of body, tail flattened like a tadpole | <i>Triturus viridescens</i> , newt |
| | b Without round spots and tail not flattened like a tadpole | Go to 9 |
| 9 | a Two dark lines bordering a broad light middorsal stripe with a narrow median dark line extending from the head onto the tail | <i>Eurycea bislineata</i> , two-lined salamander |
| | b Without two dark lines running the length of the body | Go to 10 |
| 10 | a A light stripe running the length of the body and bordered by dark pigment extending downward on the sides | <i>Plethodon cinereus</i> , red-backed salamander |
| | b A light stripe extending the length of the body, a marked constriction at the base of the tail | <i>Hemidactylium scutatum</i> , four-toed salamander |