

WORKSHEET: Why Cladistics?
by Gaffney, Dingus, and Smith, Natural History Magazine, 6/95, pp.33-35

DIRECTIONS: Read the article, and answer all questions on separate sheet, in ink

1. Why is cladistics so popular right now?
2. What IS cladistics?
3. What two kinds of problems does cladistics help us to solve?
4. In what way does cladistics differ from older methods?
5. What would a "hierarchy of nested groups" look like?
6. What's one of the shared derived characters which places the "dinosaur" group in the larger "vertebrate" group?
7. What is each group in an evolutionary tree called? _____; By what is it defined?
8. If cladistics is not a perfect method, why is it used?
9. If we relied on relative geological age, what relationship between dromaeosaurs and birds would be indicated?
10. What would cladistic analysis indicate regarding that relationship (#8)?
11. If cladistics does not specify ancestors and descendants, what does it do?
12. If geological age by itself is not a reliable basis for indicating relationships, what IS it used for?
13. Which features do we use to determine the evolutionary relationships between living animals?
14. Which features do we use to determine the evolutionary relationships between fossil animals?
15. What is wrong with using "armor" as an indicator of relationships in dinosaurs?
16. What is wrong with using "four limbs" as an indicator of relationships in dinosaurs?
17. How many shared derived characters are usually used, in real studies, to show evolutionary relationships?
18. What is done if patterns of character distribution conflict with each other?
19. What is the graphic depiction of the evolutionary relationships called?
20. Which cladogram version is considered the "best" (out of several which could be made for a particular group)?
21. Once the "best" cladogram is determined, what happens to it?
22. What are "primitive" features? Why?
23. What are "derived" or "advanced" features? Why?
24. The character "hole-in-hip-socket" is found only in what vertebrate groups?
25. Within what group is that feature (hole-in-hip-socket) a derived feature? Why"?
26. Within what group is that feature (hole-in-hip-socket) a primitive feature? Why"?
27. Based on the information in this article, build a Venn Diagram, then build a simplified cladogram (similar to the one done in the "Making Cladograms" lesson).