

Automobile Phylogenetic Tree

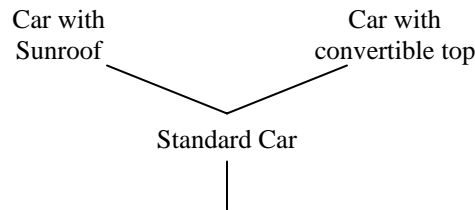


Purpose:

Carefully look at the list of cars and trucks below. In this activity, you are going to consider these vehicles to be organisms that are all related in an evolutionary way. Actually, there has been an evolutionary process in automotive design that is similar to biological evolution. As you study the list of vehicles, think about the characteristics that can be used to show relationships. The number of wheels and doors are two possibilities for classification. Using the characteristics you identify, construct a phylogenetic tree to show how this group evolved over time.

Instructions:

1. Using a pencil, draw a branched phylogenetic tree, starting at the bottom of a sheet of paper. Start with what you think is the most primitive vehicle. Carefully consider the characteristics for each branch with regard to what seems the most primitive.
2. From the first item, draw another branch to indicate what “species” has most likely evolved next.
3. Continue to draw branches off of the first line to indicate logical evolutionary relationships. A branch in the tree indicates that there has been some kind of adaptation or change in the species. For instance, a standard car may evolve into one with a sunroof or a convertible top. If this happened, you would draw a branch with each style at the end of the branch.



Vehicle Types:

- car with three wheels and one seat (nearly extinct in the U.S.)
- car with four wheels, four doors , front and back seat
- car with four wheels, two doors, front seat only
- car with four wheels, two doors, front and back seat, no top
- truck with four wheels, two doors, one seat and a short bed
- truck with four wheels, two doors, one seat and a long bed
- truck with six wheels, two doors and only one seat
- truck with six wheels, four doors, front and back seat

Alternative:

You can choose another item to “evolve” for you phylogenetic tree, however, you must have a minimum of eight steps in the tree.

Poster Specifications:

- You must present your tree on a large sheet of paper or poster board.
- Each step must be accompanied by a picture of the item described.
- Use artistic lettering or type each caption.

Questions:

1. What characteristics are you going to consider? List below.
2. Explain several of the branching points on your tree.
3. Which vehicle seems to be the most primitive? Justify your answer.
4. Which vehicles seem to be the most advanced? Justify your answer.
5. What is the value of a phylogenetic tree to biologists?