Classifying

1. **The following is a list of scientific disciplines given in no particular order. Turn it into a classification by ordering the disciplines into groups. Be prepared to explain why you grouped them as you did.**

    biology, molecular biology, genetics, statistics, anthropology, physics, quantum chemistry, physical chemistry, quantum mechanics, vacuum physics, botany, geology, , petrology, palaeontology, geography, geomorphology, cartography, economic geography, nuclear chemistry, stereochemistry, chemistry, quantum electronics, plasma physics, experimental geochemistry, sedimentology, meteorology, mathematics, mathematical economics, geometry, discrete mathematics, complex analysis, quantum physics, biochemistry, mineralogy, hydrology, zoology

2. **What where you doing with these items?**

3. **What is classification? Can you define this?**

4. **What general criteria can be used in classification?**
    When we classify data and ideas we divide all the information into categories.

    The **logical ordering** we choose depends on our **purpose** in making the classification.

    - *from general to specific (general to particular hierarchy):* focusing on the large or high-level category and talking about its parts, that is from general to specific, the following expressions can be used:

        is, can be divided into, is of, has, is made up of , is composed of, comprises, consists of

    - *from specific to general*: what the smaller (or lower-level) components make when they are put together. This kind of classification uses the following expressions:

        make up, form, constitute, may be, can be, are classified as

        specific-to-general classification will have plural verbs, because two or more lower-level categories are the focus of classification.

    - *time order* (oldest to newest)
        scale (examples of scales are:
            -*importance* (most important to least important)
            -_size_ (largest to smallest)
            -*familiarity* (best known to least known)

PART B

1. Birds
   a   **Scan the text on Birds and underline the expressions indicating classification.**
   b   **Complete the diagram (pyramid).**
   c   **Write a brief general description of the classification of birds based upon the information contained in the pyramid.**

2. Listening comprehension: "Classification of species"
   http://www.bbc.co.uk/radio4/science/homeplanet_20030715.shtml (timing 9.16)

3. Classification systems
   a   **Why do we classify organisms?**

   b   **Go through the text and try to complete the gaps**

Classification systems attempt to solve the problem of providing meaningful groupings of organisms. The Swedish scientist, Carolus von Linnaeus, is credited with introducing binomial **.....................** and hierarchical classification as an organized way of naming and describing organisms and their **.....................** to one another. **.....................** nomenclature refers to the use of a two-part name for each species (one name **.....................** genus and one designating species). Linnaeus described a **.....................** classification system using seven taxonomic categories, or **.....................** (Kingdom, Phylum, Class, Order, Family, Genus, Species). Beginning with species, each category becomes progressively more comprehensive. For example, while the leopard, tiger and domestic cat all belong to different **.....................**, they are grouped together in the same **.....................**. Taxonomy is the science of classification. When taxonomic systems include hypothesized evolutionary relationships among groups, the field generally is referred to as systematics. Systematics can be thought of as the study of biological diversity and how that diversity evolved.

4. How do we classify living organisms? How many domains and kingdoms are used in the current classification system? Check against
   http://w3.dwm.ks.edu.tw/bio/activelearner/22/ch22intro.html (Interactive diagram)

5. Draw the phylogenetic tree and designate domains and kingdoms.
   If necessary, use the categories that occur at the bottom of this handout. However, the items are listed at random.

6. Match the categories to their definitions.
   Animalia (Animals)
   Fungi
   Archaebacteria (Archae)
   Plantae (Plants)
   Eukarya (Eukaryotes)
   Eubacteria
   Protista (Protists)

Unicellular organisms with cell walls made of peptydoglycan. They are prokaryotic, which means they lack a nucleus and other organelles.
Have both bacteria-like and eukaryote-like genes and appear more closely related to Eukarya than to the Eubacteria.
Organisms with a complex cell or cells, in which the genetic material is organized into a membrane-bound nucleus or nuclei. They comprise animals, plants, and fungi—which are mostly multicellular—as well as various other groups that are collectively classified as protists (many of which are unicellular).
Multicellular herbivores, carnivores and detritivores.
Multicellular heterotrophs, decomposers.
Multicellular photosynthesizers.
Simple eukaryotes, often unicellular.

7. **Listen to the recording and check your phylogenetic tree.**
   http://www.bioedonline.org/presentations/, Biological Classification, Kingdoms and Domains

8. **Listen again and complete the table:**

	Number of kingdoms
18th century	
1969	
now	

9. **Primates**
   Study the Primates and group them according to *general classification, status, locomotion, food, special feature*.
   Draw a diagram and explain it to your colleagues.

10. **Discovery**
    Your scientific team have discovered an unknown species, animal or plant. Describe that species, draw it and give it a Latin name. Then write a short report on your team's work. Be ready to present your findings in a public forum.

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Notes:
   a) *The passive form is used frequently in sentences of classification and in all scientific writing because the emphasis in science is usually on the action, not on the person performing the action.*

   b) *The present simple tense is the most commonly used tense in scientific writing because it expresses universals (e.g. Water freezes at 0ºC).*

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Ad 5) Animalia, Archaeabacteria, Protista, Plantae, Fungi, Eukarya, Eubacteria