

1.2 Concept and uses of classification systems

Name: _____ Class: _____ Date: _____

Total: 9 marks

KEY WORDS species 物种 • scientific name 学名 • ancestor 祖先 • binomial system 双名法 • base sequence 碱基序

Objective

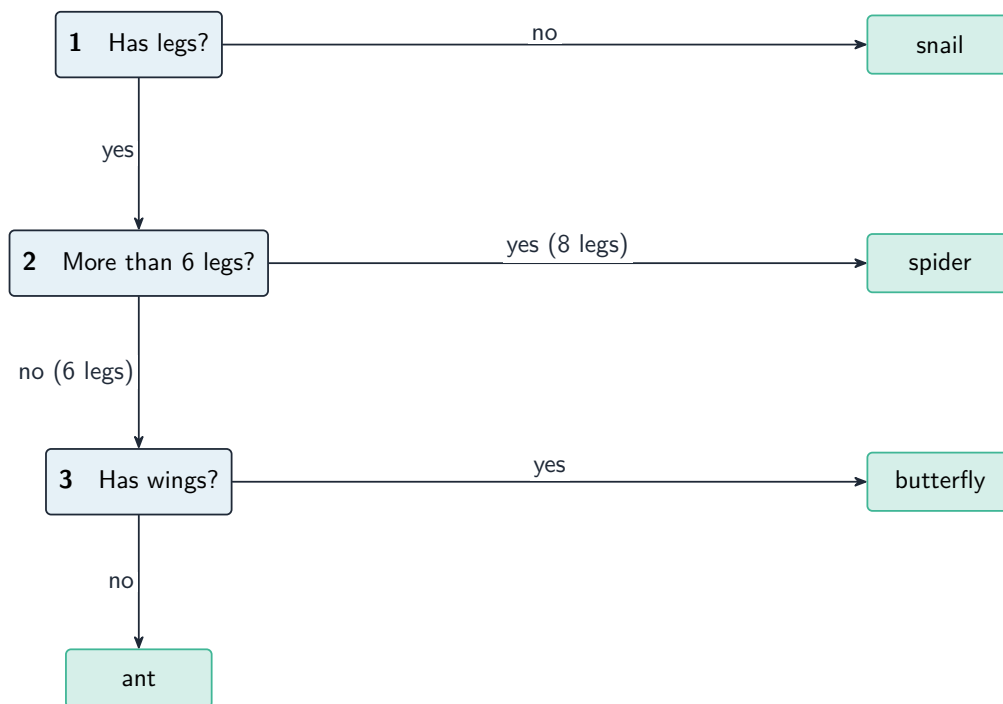
Build the skills to answer exam questions on **classification systems** 分类系统 — **species** 物种, the **binomial system** 双名法, **dichotomous keys** 二歧检索表, and DNA in classification.

You must be able to:

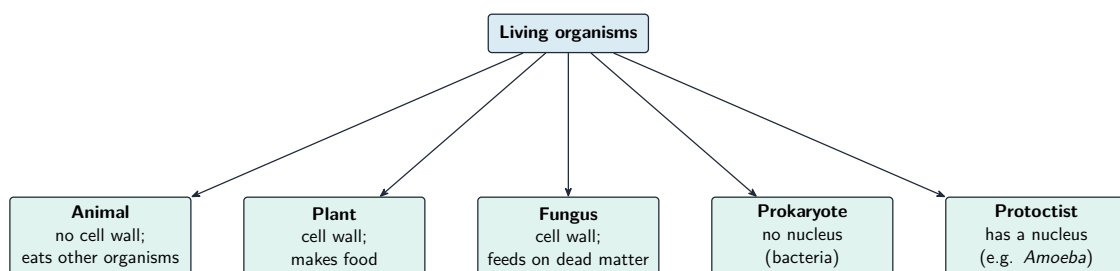
- define a species and use the binomial naming rules
- use and construct a dichotomous key
- explain how DNA base sequences show how closely related organisms are

1 Worked examples

■ Keys and naming



Each step of a key gives two choices until you reach the organism



A key sorts organisms into the five kingdoms

- **species:** a group that can reproduce to make fertile offspring.
- **binomial:** *Genus species* — Genus capital, species lower-case, both italic.
- more similar DNA base sequence → more closely related (more recent ancestor).

2 Practice

2.1 Define a species. [1]

2.2 In the name *Homo sapiens*, state which word is the genus. [1]

3 Exam-style questions

3.1 Two organisms with very similar DNA base sequences are: [1]

- **A** distantly related
 - **B** closely related
 - **C** the same individual
 - **D** not related
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3.2 A student writes a scientific name as “homo Sapiens”.

(a) State the two mistakes in this name. [2]

(b) State one feature you should use when building a dichotomous key, and one you should avoid. [2]

3.3 Explain how DNA base sequences can be used to find out how closely two species are related. [2]

Solutions

2.1 a group of organisms that can reproduce to make fertile offspring.

2.2 *Homo*.

3.1 B. Similar DNA base sequences mean closely related.

3.2 (a) the genus should have a capital letter (*Homo*); the species should be lower-case (*sapiens*).

(b) use a clear visible feature (e.g. has wings / no wings); avoid a feature that changes, such as size.

3.3 compare the base sequences of the two species; the more similar the sequences, the more closely related they are (they share a more recent ancestor).