

Exercise walk-through

## 2.2

# The Classification of Living Things

---

GAC Science

Method — Key knowledge: classification organises evidence while a name follows a precise convention

**Classification** 分类 groups organisms using evidence about relationships, including inherited traits and molecular data. A traditional hierarchy is kingdom, phylum, class, order, family, genus and **species** 物种. The more specific levels sit within broader groups. **Binomial nomenclature** 双名法 uses a genus name and a specific epithet: capitalise the genus, use lower case for the epithet, and italicise both in print. Sharing a genus does not make two organisms the same species.

## Method — Source A: text or task brief

Simplified supplied classification table for this task: lion, family Felidae, genus Panthera, species name Panthera leo; tiger, family Felidae, genus Panthera, species name Panthera tigris; domestic cat, family Felidae, genus Felis, species name Felis catus. Names checked 2 October 2026 against the ITIS taxonomic record list. This small table does not contain every rank or a complete evolutionary tree.

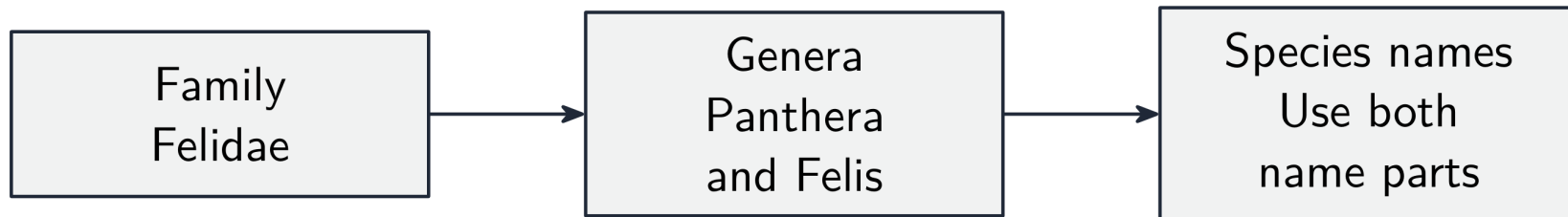
An independent fictional identification key for prepared plant cards first separates needle-like from broad leaves, then separates smooth from toothed margins among broad leaves. This classroom key identifies cards from visible traits; it does not establish their evolutionary history.

## Method — Source B: response or review record

Student record: “The lion and tiger are the same species because their first name matches. Write the lion’s name as panthera Leo with neither word italicised. The domestic cat has a different genus, so it cannot belong to the same family. Any striped animal must be closer to a tiger than an unstriped one. The plant-card key proves the order in which plants evolved.”

## Method — Worked example: move between broad and specific levels correctly

Known: the supplied table puts all three cats in one family, with *Panthera* and *Felis* as two genera. Why distinguish the levels? A family can contain several genera, and a genus can contain several species. Correctly print the lion's name as *Panthera leo*. The epithet alone does not supply the full binomial name. One appearance trait or identification branch does not prove ancestry.



## Exercises 2.1-2.3

---

**2.1** Write the lion's scientific name using the stated printed convention. [2]

---

**2.2** State the shared family and identify the two organisms sharing a genus. [2]

---

**2.3** Explain why a matching genus name does not establish the same species. [3]

## Exercises 2.1-2.3

---

**2.1** Write the lion's scientific name using the stated printed convention. [2]

**2.1**

: *Panthera leo*, with genus capitalised and epithet lower case.: both words italicised; accept appropriate handwritten underlining when answering by hand.

---

**2.2** State the shared family and identify the two organisms sharing a genus. [2]

**2.2**

: Felidae.: lion and tiger share *Panthera*.

---

**2.3** Explain why a matching genus name does not establish the same species. [3]

**2.3**

: genus is a broader classification level.: it can contain multiple species.: the supplied *Panthera leo* and *Panthera tigris* are different binomial species names.

## Exercises 2.4·3.1

---

**2.4** Place family, genus and species in broad-to-specific order and explain one containment relationship. [3]

---

**3.1** Evaluate the appearance and identification claims in the record using six points. [6]

## Exercises 2.4·3.1

---

**2.4** Place family, genus and species in broad-to-specific order and explain one containment relationship. [3]

### 2.4

: family before genus.: genus before species.: a family contains genera or a genus contains species; use the supplied cats as an example.

---

**3.1** Evaluate the appearance and identification claims in the record using six points. [6]

### 3.1

each: a different genus can occur within the shared Felidae family; one visible trait does not establish complete relatedness; similar appearance can have more than one explanation; classification can use multiple inherited and molecular features; a card key separates supplied visible traits for identification; those branches do not prove evolutionary order.

## Exercise 3.2

---

**3.2** Write an 80–110-word correction of the record using the table and the limits of the key. [8]

## Exercise 3.2

---

**3.2** Write an 80–110-word correction of the record using the table and the limits of the key. [8]

### 3.2

Local analytic rubric, 8 ×: state shared family; identify *Panthera* grouping; identify different species; correct lion name case; include italic convention; retain *Felis* within family; reject one-trait ancestry proof; distinguish identification key from evolutionary history; coherent truthful 80–110 word response. Example: “The supplied table places lions, tigers and domestic cats in the family Felidae. Lions and tigers share the genus *Panthera* but have different species names: *Panthera leo* and *Panthera tigris*. The lion’s name needs a capitalised genus, lower-case epithet and italics for both words in print. A domestic cat belongs to the genus *Felis* within the same family. One visible feature, such as stripes, does not by itself establish which animals are most closely related. The separate plant-card key helps identify supplied traits; its branch order is not evidence of the order of evolution.”