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 groups organisms using evidence about relationships, including inherited traits and molecular data. A traditional hierarchy is kingdom, phylum, class, order, family, genus and **species** . The more specific levels sit within broader groups. **Binomial nomenclature** 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.

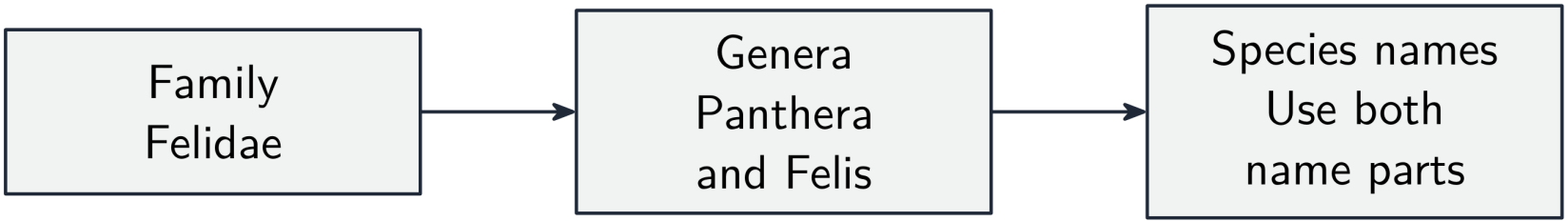
An independent fictional identification key for prepared plant cards first separates needle-like from broad leaves, then separates smooth from toothed margins among broad leaves. This classroom key identifies cards from visible traits; it does not establish their evolutionary history.

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.”