Name: _____ **Date:** _____

Answer Key: Taxonomy Tycoon: 5th Grade Kingdom Classification Challenge

Apply biological logic to 10 advanced scenarios featuring weird organisms like the Axolotl and Wollemia nobilis to solve real-world taxonomic puzzles.

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1. The 'living fossil' Wollemia nobilis has needle-like leaves, produces seeds in cones, and is made of many cells with rigid walls. Which kingdom must it belong to?

Answer: B) Kingdom Plantae

Kingdom Plantae is defined by multicellular organisms that are autotrophic (make their own food) and have cell walls made of cellulose.

2. True or False: An organism found living in a boiling volcanic vent that lacks a nucleus and lacks peptidoglycan is likely a member of Kingdom Bacteria.

Answer: B) False

Extremophiles without peptidoglycan in their cell walls are classified as Archaea, not Bacteria.

3. Scientists discover a new organism. It is multicellular, heterotrophic, and its cells do not have cell walls. In the hierarchy of life, what is the most likely Kingdom for this specimen?

Answer: C) Kingdom Animalia

Kingdom Animalia is the only group consisting of multicellular eukaryotes that completely lack cell walls and must ingest other organisms for food.

4. Two organisms belong to the same 'Class' but different 'Orders.' Which of the following statements about their relationship must be true?

Answer: A) They belong to the same Phylum.

In the taxonomic hierarchy, if organisms share a lower (more specific) level like Class, they must also share all higher (broader) levels like Phylum, Kingdom, and Domain.

5. The Axolotl (Ambystoma mexicanum) is a salamander. If you were creating a cladogram, which characteristic would separate it from a Giant Kelp (a multicellular Protist)?

Answer: C) Being a heterotroph

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While both are eukaryotes and multicellular, the Axolotl is a heterotroph (eats food), whereas Kelp is an autotroph (photosynthesizes).

6. True or False: If two organisms are in the same Genus, they are more closely related than two organisms that are only in the same Family.

Answer: A) True

Genus is a more specific taxonomic level than Family; the further down the hierarchy you go, the more traits the organisms share.

7. A biologist finds a 'Slime Mold.' It looks like a fungus but can move and lacks chitin in its cell walls. Which 'catch-all' Kingdom is this organism usually placed in?

Answer: D) Kingdom Protista

Kingdom Protista acts as a diverse group for eukaryotes that do not fit perfectly into the Plant, Animal, or Fungi kingdoms.

8. You are organizing a museum. You have a Lion (Panthera leo) and a Tiger (Panthera tigris). At which level of classification do they finally differ?

Answer: C) Species

Both belong to the genus Panthera, but 'leo' and 'tigris' are different specific epithets, meaning they differ at the Species level.

9. The Blue Oyster Mushroom (Pleurotus ostreatus) grows on decaying logs and absorbs nutrients through thread-like hyphae. This role as a decomposer places it in Kingdom _____.

Answer: B) Fungi

Fungi are defined by absorbing nutrients from organic matter (decomposing) and having cell walls made of chitin.

10. Why did scientists decide to split the old 'Monera' kingdom into Bacteria and Archaea?

Answer: B) They had significant chemical differences in their cell walls and DNA.

Genetic analysis showed that Archaea and Bacteria are as different from each other as they are from humans, particularly in their membrane chemistry.