

CONCEPT: LIFE'S ORGANIZATIONAL HIERARCHY

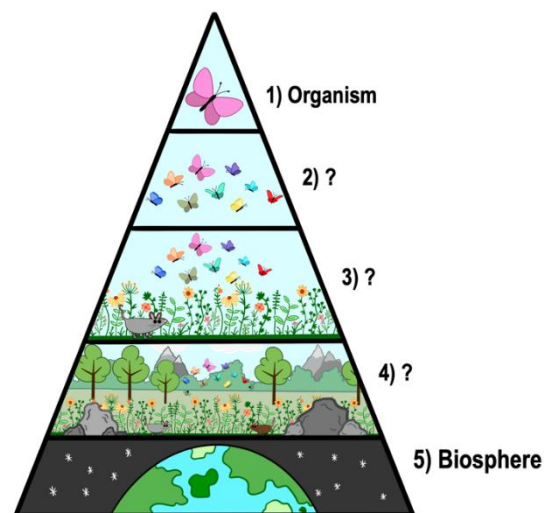
- Life consists of multiple parts organized into a hierarchal pattern.

□ At the *smallest* scale, all life is composed of _____; and at the *largest* scale is the _____.

Small	Atom	Smallest particle of an element.	
	_____	A combination of atoms.	
	Organelles	Specialized _____ within cells.	
	_____	The smallest unit of life.	
	Tissues	Group of _____ performing a specific function.	
	_____	Group of _____ that perform a specific function.	
	Organ System	Group of _____ working together to perform a specific function.	
	_____	An individual form of life composed of many cells.	
	Population	All organisms of the _____ species living in the same area.	
	_____	Multiple populations of _____ species living in the same area.	
	Ecosystem	Living community (biotic) & the _____ surroundings (abiotic) in the same area.	
Large	_____	All of the different ecosystems on Earth that support life.	

EXAMPLE: The image below represents the hierarchy of life. Which of the following shows the correct order for 2-4?

- 2) Ecosystem; 3) Community; 4) Population.
- 2) Community; 3) Population; 4) Ecosystem.
- 2) Population; 3) Community; 4) Ecosystem.
- 2) Population; 3) Ecosystem; 4) Community.
- 2) Ecosystem; 3) Population; 4) Community.



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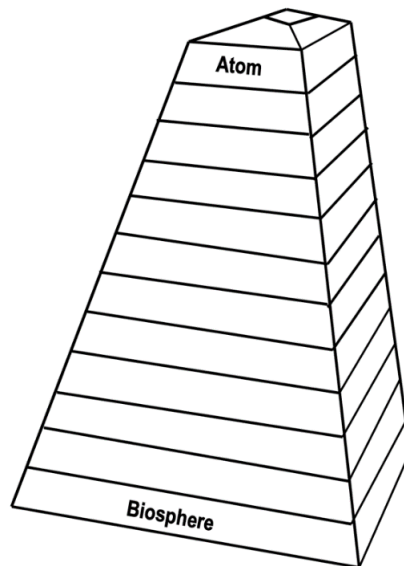
PRACTICE: Which of the following options has the correct order in terms of the hierarchy of the organization?

- a) Ecosystem → Biosphere → Population → Community → Organism.
- b) Biosphere → Ecosystem → Population → Community → Organism.
- c) Ecosystem → Community → Biosphere → Population → Organism.
- d) Biosphere → Ecosystem → Community → Population → Organism.

PRACTICE: Use the word bank to complete the pyramid of life's organizational hierarchy below.

Word Bank:

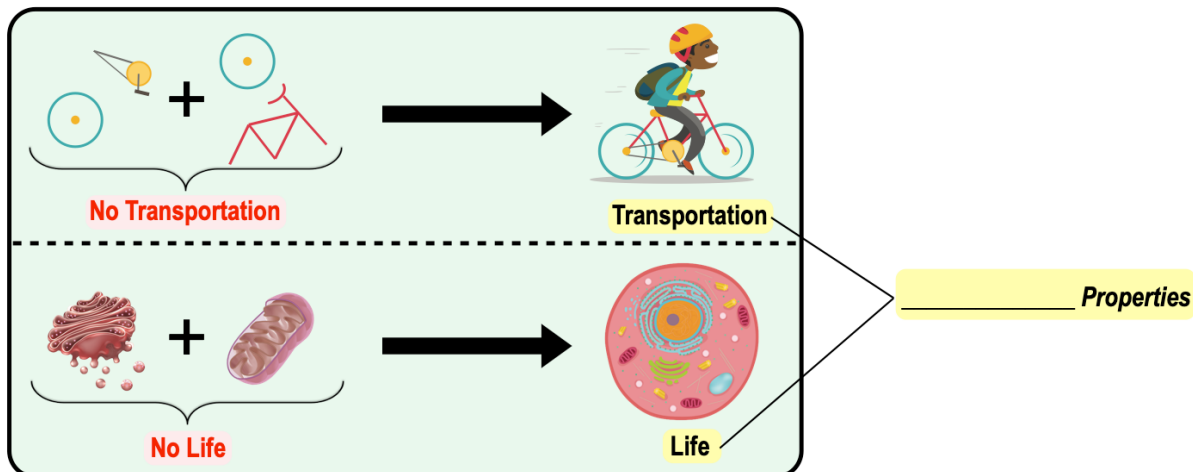
Population
Organelles
Organ System
Cell
Tissues
Ecosystem
Organ
Community
Molecules
Multicellular Organism



Emergent Properties

- *Emergent properties:* properties that _____ upon combining smaller parts (but the individual parts do not display).

☐ At each new level of the hierarchy, the *whole* is _____ than the sum of its parts.



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PRACTICE: Which of the following is the best example of an emergent property?

- a) Cells are the basic unit of life and all organisms are composed of one or more cells.
- b) Neurons can control which ions they keep inside and outside their membranes.
- c) Cells are made of simple molecules, but when organized together, these molecules can perform living functions.
- d) Molecules can form large chains by joining together multiple atoms.

PRACTICE: At which point of the organizational hierarchy does life emerge?

- a) The molecular level.
- b) The population level.
- c) The multicellular organism level.
- d) The cellular level.
- e) The atomic level.