

## CONCEPT: LIFE'S ORGANIZATIONAL HIERARCHY

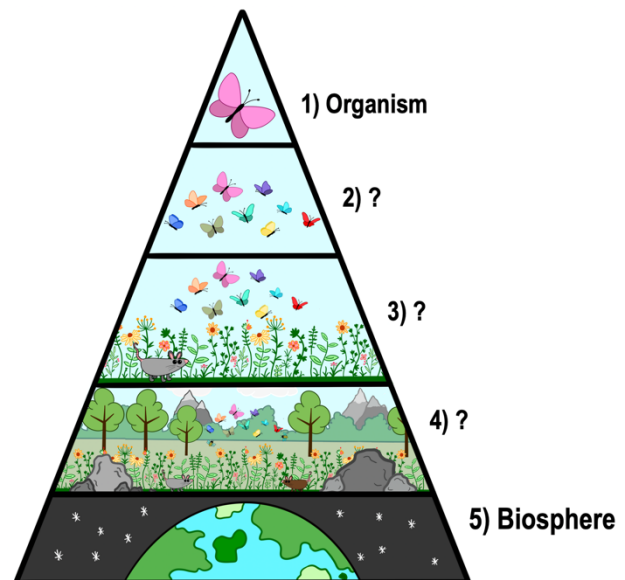
● Life consists of multiple parts organized into a hierarchical pattern:

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

<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> <p>Small</p> <p>Large</p> </div>	<b>Atom</b>	Smallest particle of an element.	
	_____	A combination of atoms.	
	<b>Organelles</b>	Specialized _____ within cells.	
	_____	The smallest unit of life.	
	<b>Tissues</b>	Group of _____ performing a specific function.	
	_____	Group of _____ that perform a specific function.	
	<b>Organ System</b>	Group of _____ working together to perform a specific function.	
	_____	An individual form of life composed of many cells.	
	<b>Population</b>	All organisms of the _____ species living in the same area.	
	_____	Multiple populations of _____ species living in the same area.	
	<b>Ecosystem</b>	Living community (biotic) & the _____ surroundings (abiotic) in the same area.	
	_____	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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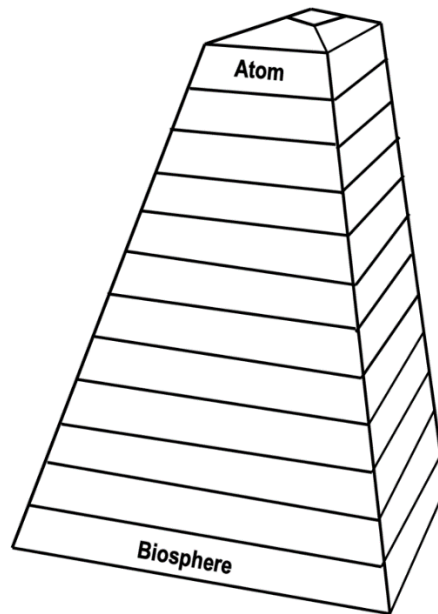
**PRACTICE:** Which of the following options has the correct order in terms of the hierarchy of the organization?

- 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:

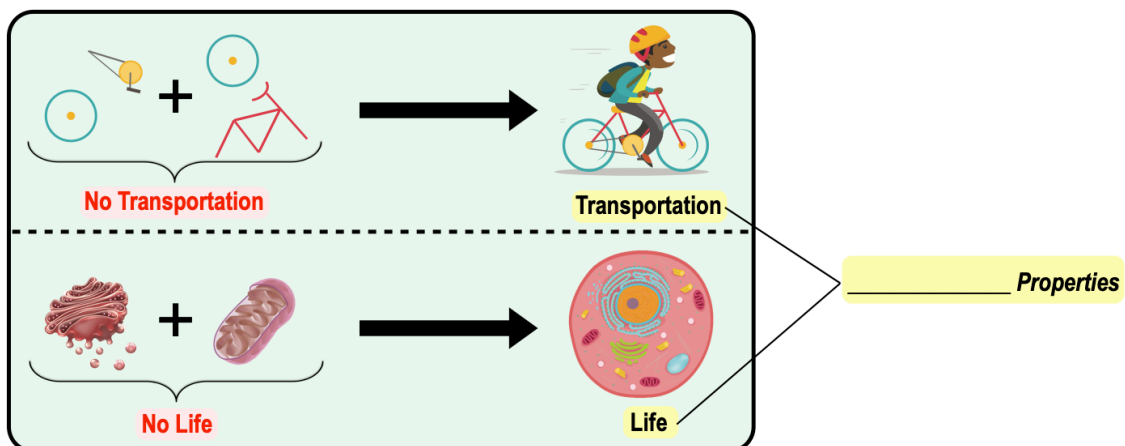
Population  
Organelles  
Organ System  
Cell  
Tissues  
Ecosystem  
Organ  
Community  
Molecules  
Multicellular Organism



## 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*.



**CONCEPT: LIFE'S ORGANIZATIONAL HIERARCHY**

**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.