4.1 Species, Communities and Ecosystems

Ecological Terms

Differentiate, with examples, between abiotic and biotic factors

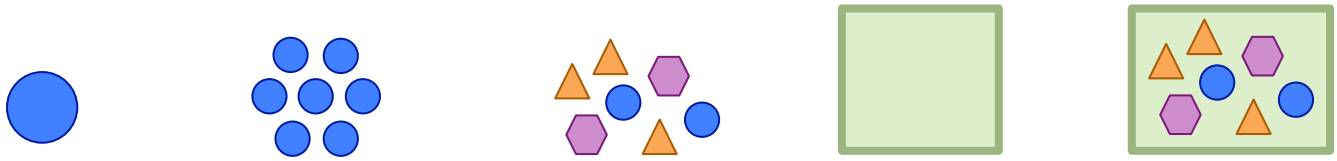
Abiotic: .....

.....

Biotic: .....

.....

With the aid of the following diagram, define the following terms



Species | Population | Community | Habitat | Ecosystem

Species: .....

.....

Population: .....

.....

Community: .....

.....

Habitat: .....

.....

Ecosystem: .....

.....

Modes of Nutrition

Define nutrient

.....

.....

Distinguish between autotroph and heterotroph

Autotroph: ……

……

Heterotroph: ……

……

Differentiate between the following types of heterotrophs, providing an example of each

Consumer: ……

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Detritivore: ……

……

Decomposer: ……

……

Ecosystem Sustainability

Compare the fate of energy and nutrients within an ecosystem

……

……

Outline the role of decomposers in maintaining nutrient supply

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……

Define mesocosm

……

……

Identify two methods of population sampling

1. ……
2. ……

Chi-Squared Test

Complete the chi-squared test for association based on the following information

The distribution of two species of limpets (*L. pelta* and *L. scutum*) are recorded via 150 quadrats.

25 = both species 45 = *L. pelta* only 30 = *L. scutum* only 50 = neither species

1. Identify Hypotheses

Null Hypothesis: .....

Alternative Hypothesis: .....

2. Calculate Frequencies

Observed Frequencies:

		L. scutum		
		Present	Absent	Total
L. pelta	Present	25	45	
	Absent	30	50	
	Total			

Expected Frequencies:

		L. scutum		
		Present	Absent	Total
L. pelta	Present			
	Absent			
	Total			

3. Calculate Chi-Squared Value

	Both present	*L. pelta* only	*L. scutum* only	Neither present
$\frac{(O-E)^2}{E}$				

χ^2: .....

4. Determine Statistical Significance

Degree of Freedom	Probability of Exceeding Critical Value						
	0.90	0.75	0.50	0.25	0.10	0.05	0.01
1	0.016	0.102	0.455	1.32	2.71	3.84	6.63
2	0.211	0.575	1.386	2.77	4.61	5.99	9.21
3	0.584	1.212	2.366	4.11	6.25	7.81	11.34

Conclusion: .....