C4.1 Populations and communities

What the Cell · DP Biology · note-taking sheet · SL statements C4.1.1–18

Name _____ **Date** _____

How to use this sheet: go through the slides and videos with it, then close them and write from memory. Use your own words and add page numbers from the book (pp. 548–577) where you want more detail.

Guiding questions. How do interactions between organisms keep population sizes in check? Which interactions make the populations in a community depend on one another?

C4.1.1–4 Populations and sampling

Define a population. What separates one population of a species from another?

Why do we sample, and why must sampling be random?

Method	Used for	Steps and formula
Random quadrats		
Lincoln index		

Three assumptions of the Lincoln index. What does a standard deviation tell you?

C4.1.5–8 Population growth

Define carrying capacity. Name three density-dependent factors and explain negative feedback.

Sketch a sigmoid curve. Label the three phases and K, and give a reason for each phase.

How does a log scale show whether duckweed growth is exponential?

C4.1.9–12 Communities and relationships

Define a community. Give one example of intraspecific competition and one of cooperation.

Relationship	Example	Relationship	Example
Herbivory		Mutualism	
Predation		Parasitism	
Competition		Pathogenicity	

Mutualism	Benefit to plant or coral	Benefit to partner
Legume and Rhizobium		
Orchid and fungus		
Coral and zooxanthellae		

C4.1.13–15 Competition between species

How does an invasive species outcompete an endemic one? Use the squirrels and a local example.

Three ways of testing for interspecific competition. Why does a result only indicate competition?

List the five steps for comparing two species with chi-squared.

C4.1.16–18 Control of populations

Explain the cycles of snowshoe hare and lynx.

Distinguish top-down from bottom-up control, with an example of each.

Give one example of allelopathy and one of an antibiotic. What do they have in common?

Before you finish

Tick the ones you can explain without notes. Circle anything to ask about.

- ☐ Population
- ☐ Random sampling
- ☐ Quadrats
- ☐ Lincoln index
- ☐ Carrying capacity
- ☐ Density dependence
- ☐ Sigmoid curve
- ☐ Duckweed model
- ☐ Community
- ☐ Intraspecific relations
- ☐ Six relationships
- ☐ Mutualism
- ☐ Invasive species
- ☐ Tests for competition
- ☐ Chi-squared
- ☐ Predator and prey
- ☐ Top-down, bottom-up
- ☐ Allelopathy, antibiotics