Name & Surname: _____ Class: _____ Date: _____

RESOURCES AND POPULATIONS

How food, water, and space shape ecosystems



About 50 minutes Level ★★★☆☆

TASK A

/6

Use the slides and what you know to climb the ladder from recall to creative thinking.

Remember List three **resources** organisms need to survive.

Remember Analyze why **competition** increases when a population gets bigger.

Understand Explain the difference between **biotic** and abiotic factors.

Apply Predict what happens to a mouse **population** if seeds are scarce for two years.

Evaluate Evaluate this claim with **evidence**: More water always means a larger population.

Create Create a simple **plan** to test the effect of water on plant growth.

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WORDS AND VIEWPOINTS

Review **vocabulary**, then see resources through different eyes.

KEY WORDS

ecosystem: all living things plus nonliving surroundings in a place

resource: food, water, or space an organism needs

biotic: coming from living things

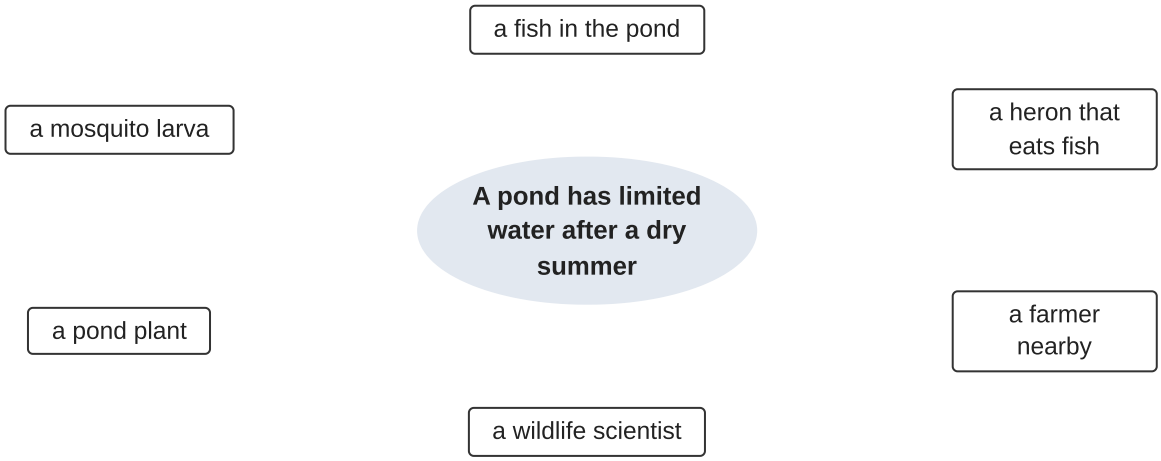
population: group of the same species living in the same place

competition: struggle for the same limited resource

abiotic: coming from nonliving things

TASK B

Choose one viewpoint and write 3-4 sentences about scarce water from that view.



I am thinking of… from the viewpoint of…

.....

I think… (describe the topic from your viewpoint)

.....

.....

.....

A question I have from this viewpoint is…

.....

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DROUGHT STORY SEQUENCE

Draw how **scarce** resources ripple through a food web.

TASK C

Draw and label how resource change affects populations over time.

1

First — Rainy spring: plenty of seeds and water, mouse population grows.

2

Then — Dry summer: water and seeds run low, plants wilt.

3

Next — Hungry fall: mice compete, fewer young survive, hawks have less prey.

4

Finally — Rain returns: resources recover, populations start to grow again.

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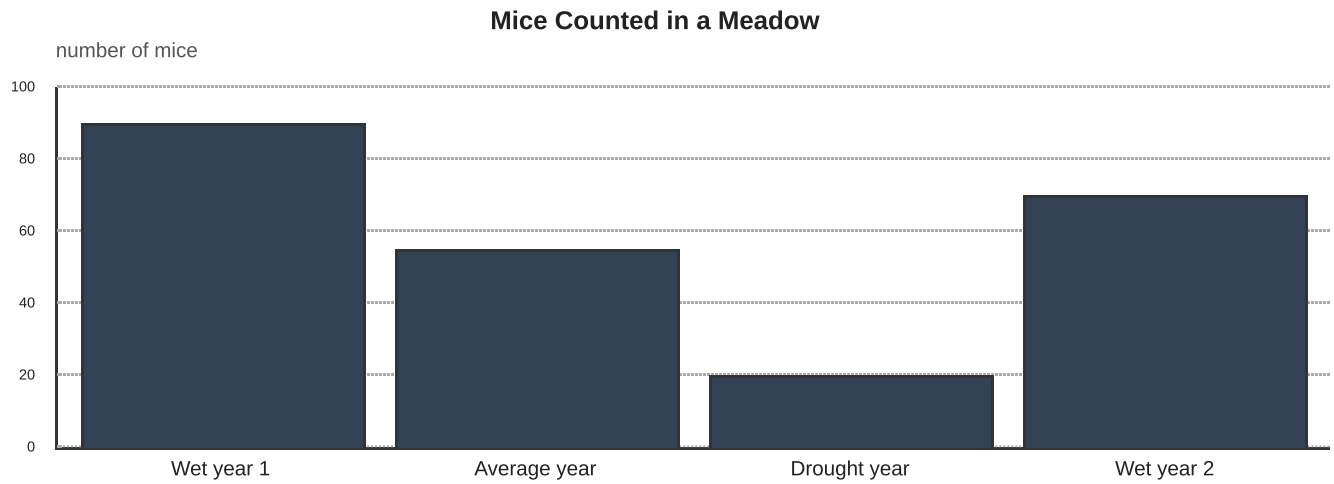
READ DATA TWICE

Interpret **population** data, then give sharp examples.

TASK D

/3

Study the bar chart of mice counted in a meadow, then answer.



1. **Which year had the most mice, and how many?**

2. **What is the difference in mice between Wet year 1 and Drought year?**

3. **What cause-and-effect pattern does the chart show about water and mice?**

TASK E

Give three different examples, then prove they fit.

Give an example of a limited resource for a population

An example

Now another

Now one nobody else will think of!

How do you know they all fit?

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TALK AND SURVEY

Discuss **predictions**, then survey the class.

TASK F

With a partner, discuss your ideas using evidence, no writing.

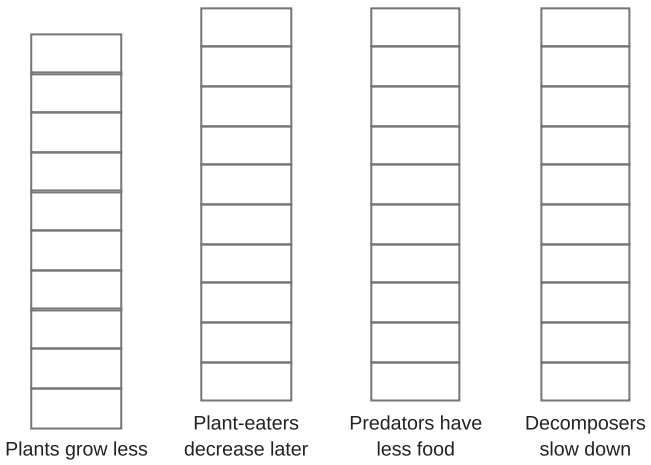
- **What happens to growth and reproduction when water or oxygen is scarce?**
- **If predators decrease while food stays the same, what happens to prey, and why?**
- **How could competition change a population when two species need the same seeds?**

TASK G

Ask classmates, tally votes, then color bars for your results.

If a meadow loses half its water for one summer, which change is most likely?

Answer	Tally	Total
Plants grow less		
Plant-eaters decrease later		
Predators have less food		
Decomposers slow down		



What does your chart show?

HOW DID I DO?

Circle a face for each line.

I can explain how resource availability affects growth and population size.

I can analyze data to find cause-and-effect links in an ecosystem.

I can predict what happens when resources are abundant or scarce.

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Answer sheet: Resources and Populations

Task A

1. Food, water, and oxygen. Shelter and space are also accepted.
2. More individuals need the same limited resources, so resources run out faster and individuals must compete to get enough.
3. Biotic factors are living influences like food and predators. Abiotic factors are nonliving influences like water, oxygen, and light.
4. The mouse population would decrease because less food means slower growth and fewer young survive.
5. Disagree. Water helps, but other limited resources like food, oxygen, and space can still constrain growth and reproduction, and predators and disease can also lower numbers.
6. Starter: I would... Grow two groups of the same plants with the same light and soil but give one more water, then measure height and count leaves over two weeks.

Task B

Answers will vary.

Task C

Answers will vary.

Task D

1. Wet year 1 had the most with 90 mice.
2. 70 mice. 90 minus 20 equals 70.
3. When water and food are abundant, the mouse population is large. When water is scarce in the drought year, the population is much smaller.

Task E

Answers will vary, e.g. fresh water in a pond during a dry summer; nesting space for birds on a crowded cliff; seeds for mice after a poor rain season

Task F

Answers will vary.

Task G

Answers will vary.

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