

Lesson Two: Populations

6.LS2.1: Evaluate and communicate the impact of environmental variables on population size.

Engage

When ecologists want to know how populations change, they need a method to count the individuals in a population. When it is not possible to count every individual, scientists estimate population sizes.

Estimated Population Size	Actual Population Size

1. What method did you use to estimate the size of the population?

2. What are possible sources of inaccuracy or error in your method?

3. What must be true of the beans if an estimate is to give reasonable results?

4. How do you think a scientist might estimate the size of a population of trees?

Explore and Explain

Directions: Read pages 68–74 and answer the following questions as they guide you in understanding populations.

Page 68

1. What are some of the things ecologists study?

2. Fill in the blank: _____ can change in size when new members _____ the population or when members _____ the population.

Page 69

3. What is the most common way new individuals join a population?

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4. If more individuals are born into a population than die in a period of time, what effect will this have on a population?

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5. What is birth rate? Death rate?

Birth Rate -

Death Rate -

6. What is the main way individuals leave a population?

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7. If the birth rate and the death rate for a population are even, what effect will it have?

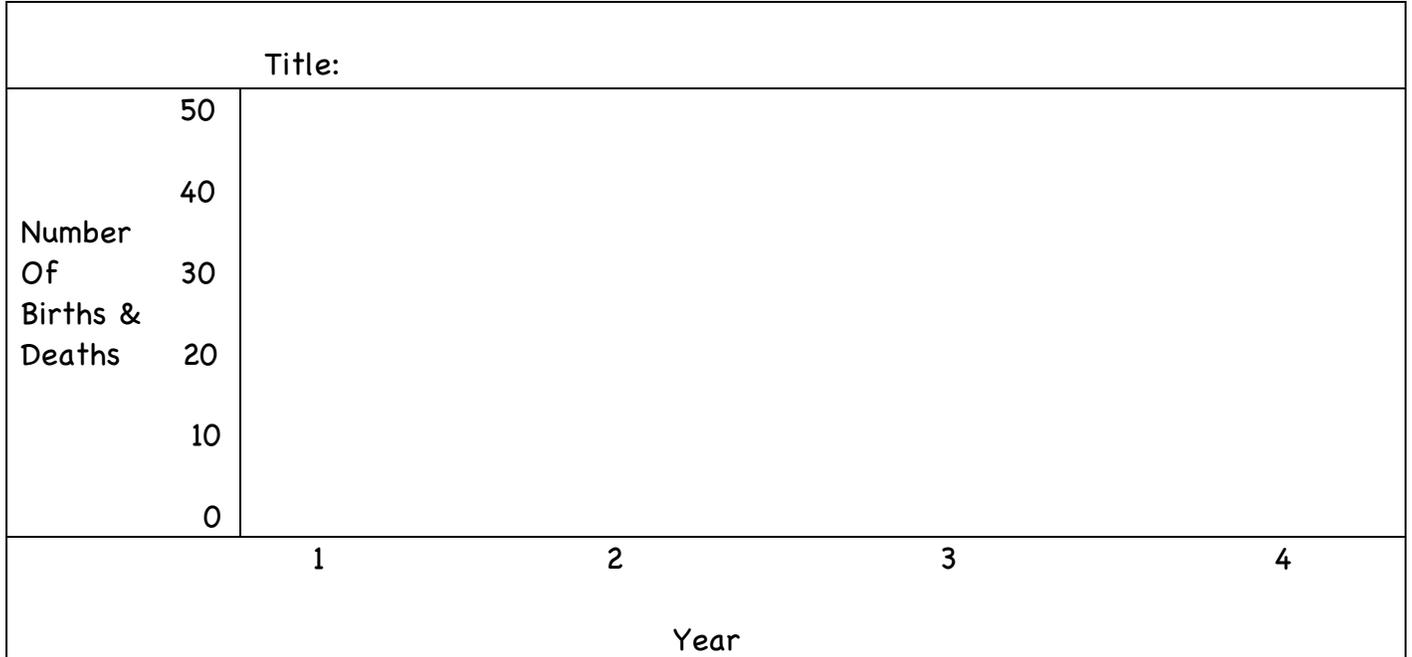
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8. If the death rate is higher than the birth rate, what effect will this have on a population?

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Do The Math

9. Using the data table, create a double bar graph showing alligator births and deaths for four years.



10. What factors might explain the number of births and deaths in year 3?

Page 70

11. Write the mathematical statements for the following scenarios.

Birth Rate is greater than Death Rate
Death Rate is greater than Birth Rate

12. What is the difference between immigration and emigration?

13. Provide an example for each of the following?

Immigration -
Emigration -

Page 71

14. What kind of graph can be used to show changes in populations?

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Figure 2

15. In year _____, the rabbit population reached its highest point.

16. What was the size of the rabbit population in that year?

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17. How do you think the rabbit population affected the fox population over the same ten-year period? Explain your reasoning. (P.S.: Foxes eat Rabbits)

Page 72

18. What is population density?

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19. What is the formula for population density?

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Apply IT

20. What is the population density of the flamingos in the pond on the bottom? Show your work & use a calculator for calculations.

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21. If 14 more flamingos landed in the pond on the bottom, what would the population density be then? Show your work & use a calculator for calculations.

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Page 73

22. What is a limiting factor?

23. Provide some examples of limiting factors.

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24. What are two ways climate or weather can be limiting factors?

1.
2.

Page 74

25. What are examples for how space is a limiting factor?

Animals -
Plants -

26. What is one example of how food and water can limit the size of a population?

27. What is carrying capacity?

Evaluate

Directions: Answer the following questions using your notes

1. What are two ways to join a population?

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2. What are two ways to leave a population?

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3. Suppose a population of 8 wolves has produced 20 young in a year. If 7 wolves have died, how many wolves are in the population now? Show your work.

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4. The number of individuals that are born in a population in a certain time period is the _____.

5. Three coyotes per square kilometer is an example of _____.

6. If foxes arrive in an area and catch and eat a large number of rabbits, the foxes are causing an increase in the _____ of the rabbit population.

7. If animals cannot find enough places to build nests, it is because space is a _____ for the population.

8. Sunlight can be a limiting factor for populations of (plants, animals.)

9. If an area has all the wolves that it can support, the wolf population has reached its _____.

10. The number of individuals that die in a population in a certain time period is the _____.