Name _____ Date _____ Class _____

Counting Turtles

Problem

How can the mark-and-recapture method help ecologists monitor the size of a population?

Skills Focus

calculating, graphing, predicting

Materials

- model paper turtle population
- calculator
- graph paper

Procedure

1. The data table shows the results from the first three years of the study. Copy it into your notebook.
2. Your teacher will give you a box representing the pond. Fifteen of the turtles have been marked, as shown in the data table for Year 4.
3. Capture a member of the population by randomly selecting one turtle. Set it aside.
4. Repeat Step 3 nine times. Record the total number of turtles you captured.
5. Examine each turtle to see whether it has a mark. Count the number of recaptured (marked) turtles. Record this number in the data table.

Data Table

Year	*Number Marked*	*Total Number Captured*	*Number Recaptured (with Marks)*	*Estimated Total Population*
1	*32*	*28*	*15*	
2	*25*	*21*	*11*	
3	*23*	*19*	*11*	
4	*15*			

Counting Turtles *(continued)*

Analyze and Conclude

Write your answers in the spaces provided.

1. **Calculating** Use the equation below to estimate the turtle population for each year. The first year is done for you as a sample. If your answer is a decimal, round it to the nearest whole number. Record the population for each year in the last column of the data table.

$$\text{Total population} = \frac{\text{Number marked} \times \text{Total number captured}}{\text{Number recaptured (with marks)}}$$

Sample (Year 1):

$$32 \times \frac{28}{15} = 59.7 \text{ or } 60 \text{ turtles}$$

2. **Graphing** On the next page, graph the estimated total populations for the four years. Mark years on the horizontal axis. Mark population size on the vertical axis.
3. **Interpreting Data** Describe how the turtle population has changed over the four years of the study. Suggest three possible causes for the changes.

_____

_____

_____

_____

_____

4. **Predicting** Use your graph to predict what the turtle population will be in Year 5. Explain your prediction.

_____

_____

_____

_____

5. **Communicating** Write a paragraph that explains why the mark-and-recapture method is a useful tool for ecologists. When is this technique most useful for estimating population size?

_____

_____

_____

_____

Name _____ Date _____ Class _____

More to Explore

Suppose that only six turtles had been recaptured in Year 2. How would this change your graph?