

CHAPTER
8 **Project Recording Sheet**
Ratio, Proportion, and Percent

Counting the Unknown

Will the capture-recapture technique used by fisheries biologists help us predict the number of unknown objects? Try this activity and find out.

Begin with a bag filled with centimeter cubes, cardboard squares, or other similar objects with multiple colors. **DO NOT LOOK INTO THE BAG.**

Step 1 Reach into the bag (without looking) and remove some, but not all, of the objects. Mark the objects and record the number of objects that you marked below.

Step 2 Return all objects to the bag and shake the bag to distribute the objects. (The bag now contains both marked and unmarked objects.)

Step 3 Reach into the bag again (still without looking) and remove some of the objects. Record the number of marked objects that you drew in column 2 of the table and the total number in column 3. Return the objects to the bag and repeat for at least 5 trials.

Step 4 Total the results. Use the the formula in the table to calculate the predicted total number of objects.

$$\frac{\text{Marked Number Recaptured}}{\text{Total Number Recaptured}} = \frac{\text{Original Number Marked}}{\text{Predicted Total Number}}$$

| Trial | 2 Marked Number Recaptured | 3 Total Number Recaptured |
|--------------|---|--|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| Total | | |

Open the bag. Compare the actual number of objects with the prediction that you made. Try the activity again. How do your results compare with the first time? What do these results tell you about sampling an unknown population?