

How many Bears are in the Forest?

Name _____

Directions:

1. Scoop out a cupful of bears from the forest. Using a magic marker, 'tag' each bear. Record how many bears you tagged below.
2. Return the tagged bears to the 'forest'. Shake the bag and then scoop out a cupful of bears.
3. Count and record the number of tagged bears and the total bears recaptured in the chart below.
4. Repeat steps 2 & 3 eight more times.
5. Total the recaptured column and the tagged column and record these numbers in the proportion below. Solve the proportion to determine an estimate of the bears in your forest.
6. Count the exact number of bears in your forest.
7. Answer the questions that follow the activity.

Original Number of tagged bears: _____

Sample	Tagged bears	Recaptured bears
A		
B		
C		
D		
E		
F		
G		
H		
I		
Total of columns		

1. Using the information from your experiment, solve the following proportion. Show how you set up the proportion, and then solve.

$$\frac{\text{Original Number of Tagged Bears}}{\text{Number of Bears in Forest}} = \frac{\text{Total tagged in samples}}{\text{Total recaptured in samples}}$$

Answers and Scoring Rubric:

1. Answers will vary. Check that students correctly set up the proportion and correctly solved.

1 pt

2. Students should describe cross multiplication in order to solve the proportion.

2 pts – student accurately describes procedure

1 pt – student describes but leaves out some information)

3. Answers will vary. Students should find the difference between actual and estimate.

1 pt

4. Students should define proportion as two equivalent ratios.

2 pts – student correctly defines proportion

1 pt – student seems to know the meaning but is not totally clear.

5. Students should come to the conclusion that the more samples involved, the greater the accuracy.

1 pt

6. Students should understand that their estimate would not be as accurate if tags fell off.

1 pt

7. Compare: Bears are captured and tagged. Scientist record numbers. Bears are released and recaptured. Scientist records the data.

Contrast: We are not dealing with real bears in a real forest. It requires more time to capture and tag and recapture bears. While captured, scientist may do more than tag bears. They will weigh, measure and look at the general health of the bears.

2 pts – students compares and contrasts activity

1pt – student only compares or contrasts activity