

## Seeing Red III – The Red Spectrum

### Teacher Notes

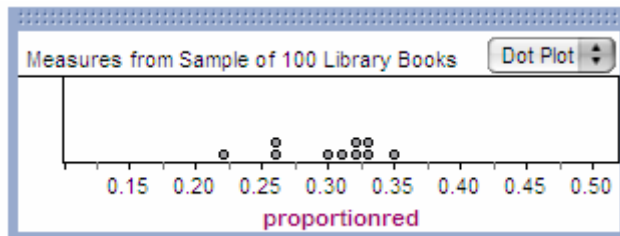
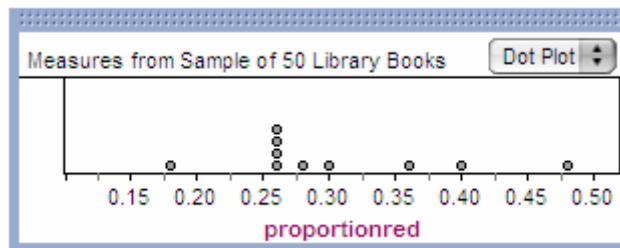
In this activity, students will implement the sampling plan developed in **Seeing Red II** to obtain an estimate for the proportion of red books in the school library. Some students will take samples of size 50 and others will take samples of size 100. This will allow students to compare the variability in the distribution of sample proportions for two different sample sizes.

You should assign about one-third of the class to work as individuals and the other two-thirds of the class to work in pairs. Each individual should take a sample of 50 books and each pair should take a sample of 100 books. About 20 minutes is an appropriate amount of time for students to undertake the random sampling in the library, but be flexible about this time.

Students should use the data table provided in the student worksheet to record whether each book chosen is red or not red.

Following the sampling activity, give students 10 minutes to summarize their results. Ask a student recorder to write the proportion of red books for each random sample on the board or flip chart for the  $n = 50$  and  $n = 100$  sample sizes. Have students work in the same small groups as they did in **Seeing Red II** to create comparative dotplots of the proportions for the two different sample sizes, as indicated on the student worksheet.

A hypothetical set of results for a class of 30 students (10 individuals and 10 pairs) is displayed in the two dotplots below. From graphs like these that students construct in the activity, they can see the sample to sample variability. Students should also notice that there is more variability in the estimates of the proportion of red books in the library for samples of size 50 than for samples of size 100. Why is that the case? Because larger random samples give us more precise estimates of the population characteristic of interest than smaller random samples.



If desired, the next class meeting is a good jumping-off point for a lesson or two about data types and graphical displays that work well with various data types.