

## MATH EXAMPLE LESSON PLAN: REACTION TO THE TOYOTA RECALLS OF 2010

### Goals and Objectives

Students will be able to aggregate the percentages they find in frequency tables produced by polling data. Students will (1) collapse response categories by adding percentages (see *Connecticut State Department Math Content Standard 2.2*); and (2) use percentages and the sample size to calculate the raw counts for different responses (see *Connecticut State Department Math Content Standard 4.2*). In doing this, students use their mathematical knowledge to manipulate the apparently static polling data they find in the media. In this way, the students will become more active consumers of that data.

### Lesson Overview and Activity

**Initiation.** Show student one frequency table from a poll found in iPOLL that took place in the last year, like the question about the Toyota 2010 recalls found on this page.

**Development.** Discuss with students how one would determine what percentage of respondents heard *at least something* about the problems with Toyota automobiles:

$$64\% + 27\% + 6\% = 97\%$$

Discuss with students how to determine *how many* respondents had heard something about problems with Toyota automobiles:

$$\frac{x}{967} = \frac{97}{100} \quad \text{Solve for } x. \quad x = 940$$

**Activity.** Distribute a handout with 10 iPOLL frequencies. Include questions that are timely, but that also contain response categories that are “ordinal” (e.g. the responses categories have a clear ordering) and that, thus, make sense to collapse.

**Questions.** For each question on the handout, ask students to answer the following questions:

- What percentage of respondents answered in the affirmative on this issue?
- What percentage of respondents answered in the negative on this issue?
- How many respondents answered in the affirmative on this issue?
- How many respondents answered in the negative on this issue?

### Requirements

1. Student knowledge about how percentages are calculated.
2. One class session
3. A handout with 10 iPOLL questions that have ordinal response categories (Likert scales, etc.) that include both the frequencies of responses and the sample sizes.

### Example Frequency Table

How much have you heard or read about the recent problems with some Toyota automobiles involving problems with their gas pedals and brakes--a lot, some, not much, or nothing at all?

64%	A lot
27%	Some
6%	Not much
2%	Nothing at all
1%	Don't know/no answer

Source:  
CBS News Poll  
February 2010  
Based on 967 telephone interviews

### Closure

Emphasize for students that, with their mathematical skills, they can manipulate the information they find in the average frequency table, whether that table is found in iPOLL or another source.

### Assessment

**Assignment:** Ask students to answer in a one-page paper the same questions for three additional iPOLL frequency tables of their choosing. **Evaluation:** Can they locate frequency tables for which this assignment makes sense? Can they correctly add percentages and calculate the necessary Ns?