

Name \_\_\_\_\_

## Investigation 4: Do You Have Too Much Homework?

### Worksheet 4.1 Directions for Using ASA Census at School Website

#### Scenario

The National Education Association (NEA) reported that survey data and anecdotal evidence show some students spend many hours nightly doing homework. According to research from the Brookings Institution and Rand Corporation, this homework overload is not the norm. Their researchers analyzed data from a variety of sources and concluded that the majority of US students spend less than an hour a day on homework, regardless of grade level, and this has held true for most of the past 50 years. In the last 20 years, the amount of homework has increased only in the lower grade levels. Source: <http://www.nea.org/tools/16938.htm>

Do you spend more time doing homework now than you did when you were in elementary or middle school? This investigation will look at the amount of time fourth, eighth, and 12<sup>th</sup> grade students spend on homework each week.

Statistical Question: \_\_\_\_\_

#### Collect Appropriate Data

How to use the Random Sampler.

Steps:

1. Go to the Census at School website: <https://ww2.amstat.org/CensusAtSchool/>
2. Choose the *Random Sampler* and click *Accept the Conditions of Use*.



3. Select *100* for the sample size, *All States* for State, *4* for Grade level, *All* for Gender, and *All* for Data Collection Year, and then click *Submit*.

- Home
- Student Section
- Teacher Section
- Random Sampler**
- International

### Random Sampler Form

Sample Size:

State:

- |  |   |                                       |   |
|--|---|---------------------------------------|---|
| <input type="checkbox"/> All States    | <input type="checkbox"/> Alaska               | <input type="checkbox"/> Arizona      | <input type="checkbox"/> Arkansas       |
| <input type="checkbox"/> Alabama       | <input type="checkbox"/> Canal Zone           | <input type="checkbox"/> Colorado     | <input type="checkbox"/> Connecticut    |
| <input type="checkbox"/> California    | <input type="checkbox"/> District of Columbia | <input type="checkbox"/> Florida      | <input type="checkbox"/> Georgia        |
| <input type="checkbox"/> Delaware      | <input type="checkbox"/> Hawaii               | <input type="checkbox"/> Idaho        | <input type="checkbox"/> Illinois       |
| <input type="checkbox"/> Guam          | <input type="checkbox"/> Iowa                 | <input type="checkbox"/> Kansas       | <input type="checkbox"/> Kentucky       |
| <input type="checkbox"/> Indiana       | <input type="checkbox"/> Maine                | <input type="checkbox"/> Maryland     | <input type="checkbox"/> Massachusetts  |
| <input type="checkbox"/> Louisiana     | <input type="checkbox"/> Minnesota            | <input type="checkbox"/> Mississippi  | <input type="checkbox"/> Missouri       |
| <input type="checkbox"/> Michigan      | <input type="checkbox"/> Nebraska             | <input type="checkbox"/> Nevada       | <input type="checkbox"/> New Hampshire  |
| <input type="checkbox"/> Montana       | <input type="checkbox"/> New Mexico           | <input type="checkbox"/> New York     | <input type="checkbox"/> North Carolina |
| <input type="checkbox"/> New Jersey    | <input type="checkbox"/> Ohio                 | <input type="checkbox"/> Oklahoma     | <input type="checkbox"/> Oregon         |
| <input type="checkbox"/> North Dakota  | <input type="checkbox"/> Puerto Rico          | <input type="checkbox"/> Rhode Island | <input type="checkbox"/> South Carolina |
| <input type="checkbox"/> Pennsylvania  | <input type="checkbox"/> Tennessee            | <input type="checkbox"/> Texas        | <input type="checkbox"/> Utah           |
| <input type="checkbox"/> South Dakota  | <input type="checkbox"/> Vermont              | <input type="checkbox"/> Virginia     | <input type="checkbox"/> Washington     |
| <input type="checkbox"/> West Virginia | <input type="checkbox"/> Wisconsin            | <input type="checkbox"/> Wyoming      |   |

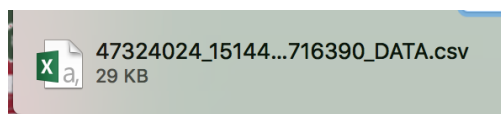
Grade level:

- ☐ All Grades
- ☐ 4  
☐ 5  
☐ 6  
☐ 7  
☐ 8  
☐ 9  
☐ 10  
☐ 11  
☐ 12

Gender:

Data Collection Year:

4. Select *Download Data*.
5. An Excel spreadsheet file will download with a name similar to:



6. Open this file with Excel. Go to column AR. Select this column and copy this column to a new Excel spreadsheet in column A. This is a random sample of fourth graders with the number of hours of homework each week that they reported.
7. Repeat the steps above and collect a random sample of eighth graders by choosing *8* for Grade level. Store this in the Excel spreadsheet in column B.
8. Repeat the steps above and collect a random sample of 12<sup>th</sup> graders by choosing *12* for Grade level. Store this in the Excel spreadsheet in column C.

In the sample of 100, there may be some blank cells which indicate students who did not report the number of homework hours and there may be some data that have been entered incorrectly. For example, someone may have entered 500 hours doing homework when they meant to enter 5.

To clean up the data, look through each of the three columns of data and delete any cells that contain no data or data that would not be a reasonable number of hours of doing homework in a week. There should be at least 75 pieces of data for each of the three grades.

## Analyze the Data

Use technology to analyze the fourth, eighth and 12<sup>th</sup> grade students hours of homework. Your analysis should include graphs and calculations that describe each grade level's distribution and help with the comparison of homework hours for each grade level.

## Interpret the Results in the Context of the Original Question

**Option 1:** Write and orally present a report summarizing your results.

Your report and presentation should include the following:

- the statistical question that was investigated
- a description of the population sampled
- a summary of the sampling procedure
- plots of the collected data
- analysis and descriptions of the data, using calculations and the plots noting any unusual results
- a statement of conclusions about the statistical question
- recommendations for any follow-up studies or questions that may be investigated

**Option 2:** Create a poster and orally present the poster summarizing your results. A data visualization poster is a display containing two or more related graphics that summarize a set of data, look at the data from different points of view, and answer specific statistical questions about the data.

The poster and presentation should include the following:

- the statistical question that was investigated as the title of the poster
- a description of the population sampled (in the oral report)
- a summary of the sampling procedure (in the oral report)
- the organized collected data – tables and plots (at least 2 graphs)
- analysis and descriptions of the data, using calculations and the plots noting any unusual results (in the oral report)
- a statement of conclusions about the statistical question
- recommendations for any follow-up studies or questions that may be investigated (in the oral report)