

Lesson Plan Title	Survey Says! (Response Notebooks, p. 54-55, <i>Beyond the Blueprint</i>)
Lesson Plan Created by	Marlene Lovanio, CSDE Educational Consultant for Secondary Mathematics; Patti Hahn; Tracy Moore; Paul Weston
Grade	7
Subject	Mathematics
Content/Content Standards Addressed	<p>4.1.1 Formulate questions and design studies (e.g., surveys, experiments, research using published sources and the internet), to collect and analyze data.</p> <p>4.1.2 Organize and display data using appropriate graphical representation such as, tables and charts, line, bar and circle graphs, Venn diagrams, stem and leaf plots, scatter plots, histograms.</p> <p>4.2.3 Make and defend in writing predictions based on patterns and trends from the graphical representations.</p> <p>4.2.4 Find, use and interpret measures of central tendency and spread, including mean, median, mode, range and outliers.</p> <p>4.2.5 Compare two sets of data based on their spread and measures of central tendency.</p>
Time	Several days between initial discussion of surveys and presentation of results.
Indicators/Objective(s)	<p>Students will design surveys, compile and organize sets of data.</p> <p>Students will compute, understand and analyze the mean, median, mode and range of a set of data.</p> <p>Students will create scatter plots and other types of graphs as appropriate based on the data.</p>
Required Materials for Lesson/Technology	Computer access to Excel and PowerPoint
Initiation (prior knowledge; connections; vocabulary)	<p>Student need to be able to organize sets of numerical data.</p> <p>Student need to be able to compute, understand and analyze the mean, median, mode and range of a set of data.</p> <p>Students should be able to create scatter plots and other types of graphs.</p> <p>Ask students why surveys are done, who uses survey information and how</p>

	<p>they know information is true. Have students consider how surveys inform people and if survey results can be good or bad.</p> <p>Activate prior knowledge about surveying with a Response Notebook (<i>Beyond the Blueprint</i>, p. 54). Have students complete the response notebook item attached. (This should be modeled before students actually completing a response notebook.) If they haven't seen one yet, model with this one and have students complete a response notebook with another reading having to do with conclusions made from surveys including those from other groups of students.</p> <p>As a class, have a discussion about formulating a question to study, good questions for the survey, what groups you would want to survey and the number of people you need to ask to collect some meaningful data. Questions need to be precise and unambiguous. They should give students information about the groups they are comparing that is relevant and interesting. You also need to decide how data will be displayed after they are collected, which could influence what data students will collect. If data is to be collected beyond the class itself you may want to help co-ordinate the data collection.</p>
Learning Procedures	<p>Student will be required to conduct a survey comparing two groups of people. The data they collect must be numerical data. Their first step will be to determine a question that they want answered (e.g., Do males spend less time on homework than females?). Then, students need to design a survey question that will meet the requirements of this assignment. Possible questions could be: How many minutes do you spend doing homework each evening? And they could compare males and females.</p> <p>After the data are collected, they need to be interpreted and analyzed. In general, expect students to use the mean, median, mode and range to draw conclusions from their data. If they have outliers they should also be addressed. The data should also be displayed graphically, possibly using Excel and in some sort of table if reasonable. You may want to set up a list of expectations or rubric with your class at the beginning of this project so that students understand how they should analyze their data.</p> <p>Survey results will be shared with the class using a poster display, PowerPoint presentation or any other method you or your students choose. Student should be able to draw conclusions from their survey and justify them using their data.</p>
Guided Practice	<p>Give students different scenarios or reports containing data and have them determine the question being answered, who was surveyed, what participants were asked and whether it is biased (if possible).</p>
Instructional Strategies	<p>Students use the response notebook to activate prior learning.</p> <p>Teacher guides whole class discussion.</p> <p>Students work in small groups to come up with their initial question and surveys. Implement the "ask 3 then me" strategy to encourage students to use</p>

	<p>each other as a resource.</p> <p>Differentiate by giving each group a set of questions to ponder at the beginning of each work session based on their prior work to encourage a better end product.</p>
Closure	Day 1 – Brainstorm ideas about what studies might be interesting to the students, faculty or parents in the school.
Independent Practice	Have students rate each others’ survey question and choice of groups to survey.
Assessment based on Objectives (informal, formal, formative, summative – essential question)	<p>Pre-assess their understanding through the response notebook activity.</p> <p>Circulate during group work and scaffold questions for groups so that they don’t get completely hung up.</p> <p>Give groups questions to ponder to focus their work based on their prior work session.</p> <p>The final presentation of their project is their assessment. You may want to have the class fill out an evaluation for each presentation or have teams fill out self-evaluations of their projects. Criteria should include:</p> <ul style="list-style-type: none"> ➤ Specific description of initial question and data collection methods. ➤ Use of mean, median, mode and or outliers in analysis of data. ➤ Clearly stated conclusions based on data and measures of central tendency. ➤ Display of data comparison using graphs charts or tables.
Interventions (for struggling students)	Organizing the project into individual steps with outcomes for each piece will help students who can be overwhelmed with multistep tasks. Giving students sets of instructions to assist them in finding measures of central tendency or particular graphs is also useful.
Enrichment (for gifted students)	Expectations for presentations and displays can vary depending on level of knowledge of Excel and PowerPoint. Students can also send out surveys across the Internet to schools in other parts of the country to compare data. Use Survey Monkey to design and gather information from groups under 100.
Connections to Other Subjects	Politics/history, sports, science, health, art and music

Comment [MF1]: Reflections?

Response Notebook

Text	Response or Questions
<p>According to a recent comparison shopping survey of 500 preteens conducted by Web site ShopLocal.com, preteens want more than paper, pencils and protractors for back-to-school supplies. Seventy-three percent of kids between the ages of 7 and 12 want to head back to school with their gaming systems in hand, and an equally strong 70 percent want a new computer.</p> <p>Source: http://blogs.mediapost.com/research_brief/?m=200707 ©2006 MediaPost Communications. All rights reserved. 1140 Broadway, 4th Floor, New York, NY 10001</p>	