NCEA Math Lesson Plan

Grade: 6 **Subject:** Mathematics

Domain:
Statistics and Probability

Standard Number(s) and Description:
6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

Vocabulary to be Highlighted:
Dot plot

Mathematical Practices (#):
1. Make sense of problems and persevere in solving them.
6. Attend to precision.

Essential Questions:
How are measures of center used in the world to describe sets of data?
How can we use the mean, median, mode, and range to describe the shape of the data?
How can we compute and compare the mean, median, and mode?

Materials/Tools (include technology):
Large white paper
Computers
Markers
Calculators

Connections to Other Math Domains:

Connections to Other Subject Areas:
Religion
Social Studies

Catholic Identity Component:
Read Luke 2:1 -5 and discuss why the Holy Family traveled to Bethlehem (for the census).

- Why did the Romans need a census at that time?
- Why does the U.S. government take a census now? How often does the government take a census? What types of information can we glean from the census?

Resources (attachments):
Census PDF of U.S. regions: available at http://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

Census homepage: http://www.census.gov/en.html

American Statistical Association Census At School Project:

http://www.amstat.org/censusatschool/

Central Tendency Quia quiz: available at http://www.quia.com/quiz/296551.html

Activities/Timeline:

1. Relate the story of Mary and Joseph and the census to the United States census.

2. The class is going to create a dot plot about the percentages of people under 18 in each state of the United States. Teach students how to set up a dot plot:
   - A dot plot has one vertical axis that represents the variable. Each dot point represents a different number in the data set.
   - The x-axis represents percentages, so it can have a range of 0-100%. Note that most percentages will not be anywhere near 100%.
   - Represent each state by a single dot or x.
   - Include a key stating what each dot represents (dot = state in the U.S.).
   - Include a title.

3. Divide students into four groups to represent four different regions of the United States. Divide each region into two or three smaller groups, if necessary.
   - Region 1: Northeast - Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, and Pennsylvania
   - Region 2: Midwest - Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota
   - Region 3: South - Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, Washington, D.C., West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, and Texas
   - Region 4: West - Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming, Alaska, California, Hawaii, Oregon, and Washington

4. Students should go to the U.S. Census Data website and select each of their 10 states from the drop down menu “Quick Facts.” When they select a state, they should record the statistical percentage for the “Persons under 18 years, percent.”

5. One student from each group should add their data to the class dot plot on the board.

6. When students have plotted all the state data, discuss how to describe and analyze the center, spread, and overall shape of the census data.
   - Find the mean and median and compare. Which measure of center should be used to represent the data? Explain.
   - Find the range. What is the spread of the data? How much does it vary?
   - Look at the shape of the dot plot. What is the shape of the data? What does it mean about the United States child population? What implications does this have on society?
   - Does this data have a mode? Is the mode relevant to this data set? Explain your answer.
   - What similarities and differences are there between Mary and Joseph’s census and today’s census data?
   - Do you think people move after they learn information from the census?

Formative Assessment (what to look for, how/when to look):

Observe student answers.

Summative Assessment: