

Step Into Statistics

Utah Secondary Mathematics Core Curriculum Standards

Comparing results of probability experiments, displaying data, collecting and interpreting data, formulating questions that can be answered through data collection and analysis, computing the mean and median, computing and comparing range

GAISE Guidelines for Assessment and Instruction in Statistics Education

Level B Understanding – formulate questions, collect data, analyze data, and interpret the results

Teacher generated question – What questions can we ask about foot sizes?

Student generated questions – What is the “typical” foot size in our class? Generally, do boys or girls have bigger feet?

Learning Outcomes

- Students become interested in statistics
- Students understand how to collect and interpret statistical information
- Students create and conduct a statistical investigation

Specific Skills

- Students formulate questions
- Students collect and record data
- Students chart results
- Students compute range, mode, and median
- Students analyze results

Materials Needed

- Rulers with centimeters

Directions

Ask students what questions could be asked about the sizes of feet in their class. Be sure that questions about the typical foot size of the class and the comparison of the feet of the boys and the girls are included. Ask the students to decide how to conduct an investigation to answer the questions. Following a procedure created by the students (i.e., which foot should be measured, who should do the measuring, etc.), collect and record the data. Round measurements to the nearest $\frac{1}{2}$ centimeter. Guide the students in answering the questions by calculating descriptive statistics such as means and medians and making comparative boxplots.

Created for the American Statistical Association Meeting Within a Meeting Program (2008) for Middle School Teachers

Gender	Foot Length (cm)
Female	22.5
Female	23.0
Female	23.5
Female	24.0
Female	24.5
Female	24.5
Female	25.0
Female	25.0
Female	26.0
Female	26.0
Female	26.0
Female	26.0
Male	25.5
Male	25.5
Male	26.0
Male	27.0
Male	27.0
Male	27.5
Male	28.0
Male	28.5
Male	29.0

Prompt the students to generate and answer data analysis questions.

What is the “typical” foot size in our class? (Median)

What is the mean foot size for the class?

What is the mean foot size for girls in the class? For the boys?

Do boys or girls generally have bigger feet?

After a brief lesson about quartiles, have the students make boxplots and interpret the graphs.

Are foot sizes symmetrically distributed?

What is the range of the most common foot sizes?

What percentage of the class have these foot sizes? (Middle 50%)

