Statistics Unit Pre-Assessment

Topics: mean, median, mode, range, quartiles, dot-plots (line-plots), box-plots, variance, sampling, mathematical models including probability

CO State Standards Grade 7:
  3.1.a Use random sampling to draw inferences about a population. (CCSS: 7.SP)
  3.1.b Draw informal comparative inferences about two populations. (CCSS: 7.SP)
  3.2.a Explain that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.⁴ (CCSS: 7.SP.5) Note: This simulation uses percent chance in (ranging from 0% to 100%).

1. Assume there are 26 people in your class.
   a. If 10% of your classmates play soccer, about how many people is this?
   b. If 30% of your classmates eat school lunch, about how many people is this?
   c. If 50% of your classmates walk home from school, about how many people is this?

2. Use the data given to find the following:
   Mean: __________________
   Median: __________________
   Mode: __________________
   Range: __________________
   1\textsuperscript{st} Quartile ______________
   3\textsuperscript{rd} Quartile ______________

3. Create a dot-plot of the data on the number line provided.
4. Using the same number line create a box-plot.
5. What do these two graphs tell you about the variability of the data? What does this mean in terms of the life spans of animals?
6. If the average human life span were added to the table what would this do to the graphs created?
7. Why is it important to use the “average” life span of the animals instead of the life span of just one animal of each type?

(Encyclopaedia Britannica, 2006, p. 62)
CO State Standards Grade 7:

3. Data Analysis, Statistics, and Probability - Evidence outcomes

1. Statistics can be used to gain information about populations by examining samples

**Students can:**

a. Use random sampling to draw inferences about a population. (CCSS: 7.SP)
   i. Explain that generalizations about a population from a sample are valid only if the sample is representative of that population. (CCSS: 7.SP.1)
   ii. Explain that random sampling tends to produce representative samples and support valid inferences. (CCSS: 7.SP.1)
   iii. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. (CCSS: 7.SP.2)
   iv. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. (CCSS: 7.SP.2)

b. Draw informal comparative inferences about two populations. (CCSS: 7.SP)
   i. Informally assess the degree of visual overlap of two numerical data distributions with similar variability, measuring the difference between the centers by expressing it as a multiple of a measure of variability. (CCSS: 7.SP.3)
   ii. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. (CCSS: 7.SP.4)

2. Mathematical models are used to determine probability

**Students can:**

a. Explain that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. (CCSS: 7.SP.5)  
   *This simulation uses percent chance in (ranging from 0% to 100%). Larger numbers indicate greater likelihood. A probability near 0 (0% chance) indicates an unlikely event, a probability ε (chance) indicates an event that is neither unlikely nor likely, and a probability near 1 (100% chance) indicates a likely event. (CCSS: 7.SP.5)*

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