



Drexel-SDP GK-12 ACTIVITY

How Many Pets? A Data Analysis Activity

Subject Area(s) Data Analysis & Probability

Associated Unit

Associated Lesson

Activity Title How Many Pets? A Data Analysis Activity

Grade Level 5 (4-6)

Time Required 20 minutes

Summary

This lesson provides students with an opportunity to utilize data analysis skills. Students collect data regarding the number of pets they own. Once the data is collected students perform analysis and draw conclusions using the results of the analysis.

Engineering Connection

Engineers repeatedly perform data analysis. In doing the analysis they create tables and graphs to visually display their data. When conducting experiments engineers can end up with a lot of data. It is important to organize this data so that it can be analyzed. The results of this analysis can be used to draw conclusions. In this activity students will have an opportunity to collect data, create tables and graphs, and present the information to the class.

When learning data analysis students are presented with worksheets containing meaningless data to analyze. This exercise was designed to provide students with an opportunity to practice data analysis techniques in a different context. It can be used to analyze objects other than pets such as

siblings or stuffed animals. It can also be integrated into activities designed to have students learn about one another.

Keywords

Mean, Median, Mode, Bar Chart

PA Educational Standards

- Math: 2.6.5 (B) Describe data sets using mean, median, mode, and range.
- Math 2.6.5(A) Organize and display data using pictures, tallies, tables, charts, bar graphs, and circle graphs.

Pre-Requisite Knowledge

Students should be familiar with mean, median, mode, and range. This activity can also be used to teach those concepts if they have not learned them.

Students should be familiar with tables, charts, bar graphs and other methods of displaying data.

Learning Objectives

After this lesson, students should be able to:

- Find the mean, median, mode, and range of a series of data

Materials List

For each student:

- Paper for recording data

Introduction / Motivation

Imagine that you and 9 friends are trying to figure out which movie to see. There are 5 movies to choose from and you agree to go to the most popular one. How do you figure out which movie to see? You'll probably ask everyone and see the movie with the most votes, right? If you do it this way, you also collected data, performed an analysis and made a conclusion.

When conducting experiments engineers want to be able to answer their research question. In order to do so, they have to collect data and perform data analysis. Engineers use their analysis results to identify trends or common patterns in the data. Tests such as, mean or median, can be used for analysis of a single set of data or to monitor changes of variables over time.

In this lab you will collect data from your classmates and analyze the data. At the conclusion of the activity you will discuss patterns or trends that you have found.

Vocabulary / Definitions

Word	Definition
Mean	The sum of the set of numbers divided by n, the number of numbers in the set.
Median	The number that lies in the middle when a set of numbers is arranged in order. If there are two middle values, the median is the mean of these values.
Mode	The number(s) that occurs most often in a set of numbers

Range	The difference between the greatest number and the least number in a set of data.
-------	---

Procedure

- 1) Construct an unlabeled data table and ask the students to fill in the appropriate labels. Discuss why the labels belong in the correct locations.
- 2) Ask each student to share the number of pets they own.
- 3) In their individual notebooks/papers have students recreate and complete the table with the number of pets living with each person in their group.
- 4) Construct a chart of your choice such as, bar chart, pie chart, etc., based on the data table. On their own paper allow students to construct charts based on their own data.
- 5) As a class or individually ask students to calculate the mean, median, mode, and range for the data from their data.

Assessment

Post Activity Assessment

Discuss the variety of pets (or selected objects) among members of the class. Ask students to identify the most or least common item using the table and again using the chart. The students should identify the same item using each representation. You can ask students to create different charts such as a pie chart and discuss whether or not the chart shows the same information as the bar chart. They should be able to see that although the information looks differently that it is the same.

Owner

Drexel University GK-12 Program

Contributors

Quincy Brown, Computer Science Department, Drexel University

Copyright

Copyright 2007 Drexel University GK12 Program. Reproduction permission is granted for non-profit educational use