

Measurement and Data

From *Big Ideas of Early Mathematics*

BIG
IDEAS



Measurement

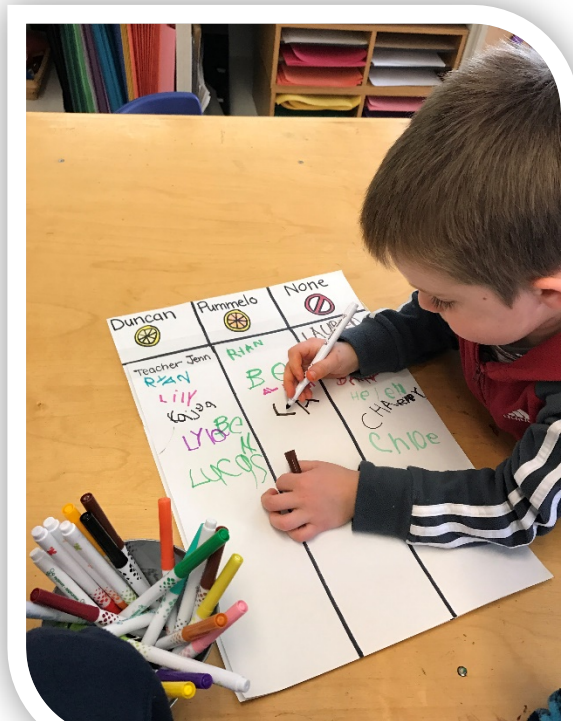
- Many different attributes can be measured, even when measuring a single object
- All measurement involves a “fair” comparison
- Quantifying a measurement helps us describe and compare more precisely

Data Analysis

- The purpose of collecting data is to answer questions when the answers are not immediately obvious
- Data must be represented in order to be interpreted, and how data are gathered and organized depends on the question
- It is useful to compare parts of the data and to draw conclusions about the data as a whole

Idea:

Conduct a daily lunch count: Each morning a designated “lunch helper” polls the class to determine how many children brought their lunches from home and how many are planning to eat school lunch. This can be done by providing the lunch helper with a clipboard and allowing time for him/her to survey the class about their lunch plans (most easily by show of hands). Inform the children that the purpose is to report the information to the cafeteria staff so they can plan how many lunches to prepare. The lunch helper can record his/her findings and take them to the cafeteria. *Even if this is not something your school engages in, the cafeteria staff will most likely humor the idea. Potential variations could be to record how many children will choose each option available (e.g. pizza or tacos) or to create a daily class graph pertaining to lunch selections.



i. Example of collecting data

Opportunities that Encourage Measurement and Data Understanding

BLOCK AREA	ART AREA	PUBLISHING & LITERACY AREA	RECIPE MAKING	SCIENCE INTEGRATION
Measure block buildings using some sort of nonstandard units of measurement (string, links, etc.) and compare with measurements from other buildings that use the same number of blocks.	Hang contact paper (sticky side out) and ask children to stick a crayon of their favorite color onto it. Solicit ideas for organization (often placing same colors together) and analyze data collected.	Survey children about their favorite books upon conclusion of an author study and create a class graph.	Children create their own best recipes for bubble solution using a variety of measuring tools and materials (e.g. small cups, measuring spoons, dish soap, water, corn syrup, gelatin, glycerin, etc.). Ask them to record their recipes to share with others and follow other children's recipes to try out other bubble solutions.	Children use nonstandard units of measurement (e.g. links, cubes, paperclips, string) to measure a worm they are observing.



Library Books with Data or Measurement Concepts:

Actual Size by Steve Jenkins (measurement)

How Big is a Foot? by Rolf Myller (measurement)

Shoes, Shoes, Shoes by Ann Morris (data analysis)

Where's My Teddy? By Jez Alborough (measurement)

Measuring Penny by Loreen Leedy (measurement)

The Best Part of Me by Wendy Ewald (data analysis)

If the Shoe Fits: Nonstandard Units of Measurement by Jennifer Dussling (measurement)

The Growing Story by Ruth Krauss (measurement)

Anno's Flea Market By Mitsumasa Anno (data analysis)

Twelve Snails to One Lizard: A Book about Mischief and Measurement by Susan Hightower (measurement)

Math Counts: Length (measurement)

Math Counts: Size (measurement)

Which Would You Rather Be? By William Steig (data analysis)

Next to an Ant by Mara Rockliff (measurement)

Tall by Jez Alborough (measurement)

Tiger Math: Learning to Graph from a Baby Tiger by Ann Whitehead Nagda and Cindy Bickel (data analysis)

Tikki Tikki Tembo by Arlene Mosel (measurement)



Data or Measurement Songs:

“Colors” (Hap Palmer)

“The World is Big, the World is Small” (Ella Jenkins)

Key Data and Measurement Terms:

nonstandard units of measurement anything that has not been standardized for comparison (e.g. pencils, hands, paperclips, string, cubes)

indirect comparison utilizes representations that stand in for the attributes being compared

inventory sorting items into categories, counting how many are in each category and recording the total

fact-finding survey involves objective data about objects or ways of doing things

preference survey (polls) people select among two or more options to indicate their personal preference

object graph a graph made using real things

pictograph a graph in which each object is represented by a picture

