3.DA.2 Data and Analysis

> *The student will create and evaluate data representations and conclusions. (a) Create charts and graphs based on data collection. (b) Analyze data to identify patterns, draw conclusions, and make predictions.*

Understanding the Standard

Computers can be used to create tables or graphs that help students observe data in different ways and identify the type of data needed to address a problem or question. Once data has been collected and organized into a chart or graph, it can be analyzed to determine if a pattern exists. The pattern can be used to make predictions or answer questions. Determining what type of data is needed to answer a question and using a computer to access, organize, and analyze this data are skills needed in many career and academic fields.

Term	Definition
Data	Individual facts and information
Prediction	Making a guess of what will happen based on current facts
Table	A way of organizing and displaying data using horizontal rows and vertical columns.
Graph	A way of organizing and displaying data using images to represent the relationship between two or more types of data.
Analyze	Examine something closely to find patterns or connections.

Prerequisite Knowledge

Students should have a foundational knowledge of parts of a computer. They should have experience collecting and recording basic data and organizing the data into charts and graphs, as well as generating questions about the data and determining whether the data can be used to answer generated questions.

Integration Opportunities

Science 3.1c,d Analyze scientific data and use evidence to construct or support an explanation.

Math 3.PS.1 Have students survey their classmates to gather data on favorite musical genres, then create pictographs and bar graphs to represent the results. Analyze these visualizations to identify patterns and draw conclusions about music preferences in their class.

Physical Education 3.5d,e Have students create a chart or graph to represent the macronutrients found in a variety of snack foods. Students use the data to determine which foods are most beneficial before physical activity and after.

Summary of a Lesson

Have students collect and organize weather data to make predictions about future weather patterns. Students will track an assortment of weather characteristics (high and low temperature, wind speed, precipitation, barometric pressure) for a few weeks and record in a weather tracking chart using both numerical measurements and pictures or symbols. Discuss the difference between qualitative data, such as the categories "rainy," "sunny," or "windy," and quantitative data, such as wind speed, temperature, or precipitation measurement in inches. They will then look for patterns in the data, noticing whether specific measurements or characteristics should be included or may be ignored when describing those patterns. Students should then select which features should be displayed in graph form in order to best show the patterns they have noticed.