4.DA.2 Data and Analysis

> *The student will create and evaluate data representations to make predictions and conclusions. (a) Formulate questions that require the collection or acquisition of data. (b) Collect data to create charts and graphs. (c) Recognize and analyze patterns and relationships within data sets. (d) Analyze visual representations to make predictions and draw conclusions.*

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
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

To engage with this standard, students need to have an understanding of how to collect and sort data as well as how to use evidence to support their thinking.

Integration Opportunities

English 4.RL.1c Have students gather evidence about a specific character's characteristics during the course of a story. Then have students select and create a visual representation (e.g. chart, graph) of the evidence to identify patterns and make predictions of how the character will develop by the end of the story.

History VS Skills c,g, VS.2 Research the populations of Virginia-recognized tribal communities over time and analyze the changes using questioning and analysis.

Science 4.1c, 4.4 Collect data on weather phenomena and organize and represent data in bar graphs and line graphs.

Physical Education 4.3b,c,e,f Have students collect and track personal baseline data using the FITT principle. Then have students transfer the data into a visual representation (charts or graphs) and analyze their results to set a SMART goal for at least one fitness component.

Summary of a Lesson

Working in pairs or small groups. students will collect data on an assigned question using various collection methods (i.e. surveys, interviews, observations, logs, tracking sheets, or sensors if available at the school, etc). Once the data is collected students will input and organize data using Excel or Google Sheets. Data can then be sorted and analyzed to find a pattern or make a prediction of what might happen next. Students then use the data to create a visual representation (ex. bar graph, chart, line graph) to emphasize a certain aspect or idea that they see an emerging pattern or connection. The students then identify the data needed to answer the question posed at the beginning of the lesson.