Standard: DA.CVT.01 Grade Band: 3-5

Grade	Standard DA.CVT.01
3	Collect, organize, and present the same **data** in a variety of visual formats (e.g., charts, graphs, tables, etc.).
4	Organize and present collected data in a variety of visual formats to emphasize particular aspects or parts of the data set to make interpretation easier.
5	Interpret and communicate data in a variety of visual formats to highlight the relationships among the data to support a claim.

Grade	Essential Skills
3	Determine how **data** should be collected and organized so it can be presented in at least three different displays.
4	Distinguish among different ways of **visualizing** the same data by describing what information is given in each visualization. Analyze different displays of the same data to determine which visualization is most effective to display information and/or support a claim.
5	Interpret data to make a claim. Justify the choice of a visual representation or format of the data to most effectively support a claim or communicate an interpretation.

Explanation
Students will experiment with different visual formats (various types of graphs, charts, tables) to display **data** and note how their different effects on the interpretation of data. Visual displays often make it easier to see relationships within or draw conclusions from a data set and students should recognize how different visualizations emphasize different attributes of the data for example pie charts show how much of a whole is represented by various categories where line graphs can show change over time. By fifth grade, students should be able to justify their choice of visual format to best support their claim and/or effectively communicate their interpretation.

Think of this as similar to….
The people in a crowd display how much they like something by how loudly they cheer.

Essential Questions
Why would you use different formats to display **data**?
How can you determine what display to use for a specific data set or purpose?
How can you decide the way to display data that makes it easiest to draw conclusions or justify a claim?

Implementation Examples—What would this look like in the classroom?

Grade(s)	Title	Description	Link	Content Connection & Notes
3-4	**Tuva Data Set: Man's Best Friend**	**Grade 3**--Data is provided on dog breeds, their maximum weight, life expectancy, and if they are good with children. Students will manipulate the dashboard to create different displays of the data. They can create many different displays quickly and analyze the information each display conveys (can you tell if a dog is friendly to children from the display? can you tell if big dogs are more likely to be friendly than small dogs?) Students should choose one question (what is the maximum weight of different dog breeds?) and display the associated data in a variety of ways. They will have to take screenshots or use some other method to save their work since the dashboard does not save the displays. **Grade 4**--Students can ask a question (are big dogs more likely to be friendly than small dogs?). Using the dashboard, they create different displays for the same information (bar chart, pie graph, scatter plot, etc.) and determine how helpful each display is in answering their question. Students can explain their thinking in a video, a graphic organizer, or other response and include screenshots of the displays.	Tuva Data Set	

Grade(s)	Title	Description	Link	Content Connection & Notes
3-5	**Journey North**	**Grade 3**--Journey North contains crowdsourced data about the movement and appearance of various species across North America as the seasons change. Students use the data from the Journey North site to formulate questions (How does the temperature affect the number of robins sited? How far do the different species of eagle fly?) and find data to answer those questions. Data on the site is available in charts and maps, and students can generate a variety of types of graphs from the data as well. Students should explain how the information differs among the different displays. **Grade 4**--Students should analyze the different displays of the same data and determine what conclusions are most obvious from each. For example, from the map you may conclude that Monarchs are first sighted in the Southern US in March and arrive in Maryland in April. If you graph the data, you may conclude that more butterflies are seen in North Carolina than in other states. **Grade 5**-- Students should draw a conclusion and decide which display best supports their claim. They will have to explain how they arrived at the claim and why they think that the display they chose best supports the claim.	See Journey North Inquiry Guide and data from the Journey North site or use data from other citizen science sites.	This lesson also aligns with **CS** DA.IM.01 and **Math** 3.MD.B.3 and **NGSS** 3-LS3-1.
3-5	**Simulating Experiments**	**Grade 3**--Students run a simulation (of how many apples the elephant and hippo collect, and how long it takes to collect all the apples) multiple times in Sprite Lab. Students display the results of the simulation in pictographs, bar graphs, line graphs, etc. identifying the information given in each display (A pictograph may depict the results from one trial or cumulative results from multiple trials; a line graph can have different lines for the different animals over a number of trials, etc.) **Grade 4**--Students can change variables in the simulation and collect data about the effect of the variable on the outcome. They create different data displays and determine what information each display provides. **Grade 5**--Students draw a conclusion about the effect of a specific change in a variable on the outcome of the simulation (the faster the elephant, the more apples it collects) and create a data display to support their claim. They have to justify their conclusion with a data display and justify the display they chose in its effectiveness in supporting their claim.	Simulating Experiments	This lesson also aligns with **CS** DA.IM.01 and **Math** 3. MD.B.3 if students use scaled picture or bar graphs (e.g., if each square represents 2 apples)

Grade(s)	Title	Description	Link	Content Connection & Notes
5	**Math Disney Land Parking Challenge**	**Grade 5**—Students will apply multiplication and division skills to solve the real-world problem of parking at Disneyland. Students calculate how much a parking structure will cost to build and how profitable it will be and make a recommendation about whether or not to build the parking structure. They create a display to justify their recommendation and explain why that display is best to make their case. The display is incorporated into a brochure, a recommendation to Disney or an ad about the parking structure.	Disney Land Parking Challenge	

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These annotations are a collaboration between Maryland Center for Computing Education and the Maryland State Department of Education.