# Standard: DA.CVT.01   Grade Band: K-2

| Grade | Standard DA.CVT.01 |
|-------|--------------------|
| K | With guidance, collect **data** on a basic topic (e.g., weather, temperature) and present it visually. |
| 1 | With guidance, collect and organize data. Present data effectively in two different ways |
| 2 | With guidance, collect, organize, and present the same data in a variety of visual ways (e.g., bar graph, pie chart, table, etc.) |

| Grade | Essential Skills |
|-------|------------------|
| K | Collect **data** on a familiar topic. Display data. |
| 1 | Collect and organize data from a survey or from observations. Display data in two or more ways. |
| 2 | Collect and organize data (from an experiment, website, data set, survey, etc.) and display it in three or more ways. |

## Explanation

Students will gather **data** as a class or individually about topics that interest them and organize and display the data. Pictographs are an effective introduction to **data visualization**, but as students gain proficiency they should be comfortable using displays such as a bar graphs, pie charts, and tables. Using computer **applications** such as spreadsheets can help students create such displays quickly and easily.

## Think of this as similar to….

The people in a crowd display how much they like something by how loudly they cheer.

## Essential Questions

How can you collect **data**?

Why would you want to display data?

How can a **computing device** help create a data display?

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

| Grade(s) | Title | Description | Link | Content Connection & Notes |
|---|---|---|---|---|
| K | **Math Pictographs** | **Grade K**- Each student or group of students is given a collection of counting bears (or other items) in different colors. The students use the bears to create a pictograph sorted by color and count the number of each color. This activity can be extended by transitioning students to using a spreadsheet application to transition to bar graphs from pictographs. | See [Graphing in Google Sheets](#) | This lesson also aligns with **Math** K.CC.B.4a; K.CC.B.5 |
| K-1 | **Survey and Data** | **Grade K**- With guidance, students decide on a topic for a survey (for example, favorite ice cream flavor) Each student can choose a different color post it to represent their choice and add it to the class graph.<br>**Grade 1**-Students can extend their survey to their families and/or other classes. They can note patterns in ice cream preferences of adults vs. children, etc. and make predictions based on those patterns. They can use a spreadsheet, instead of a post-it graph, and generate a chart from their data. | [Survey and Graphing](#) | This lesson also aligns with **Math** K.CC.B.4a and K.CC.B.5 |
| K-2 | **Weather Predictions** | **Grade K**- Students observe the weather (sunny, cloudy, rain, snow) each day and display the data in a picture graph. Data can be displayed in a cumulative way such as number of sunny days in a week, or rainy days in a month.<br>**Grade 1**- Students collect both weather and temperature data. While collecting the data, they should decide how to organize the data (by time period--week, month, season; by kind of weather--rainy, sunny, cloudy; etc.). Students will create different displays based on the different ways the data was organized.<br>**Grade 2**--Determine how to display the data in order to answer a variety of different questions, such as "Which month has the most rainy days?" "How does the temperature change between September and December?" "What was the biggest change in temperature from one day to the next?" | See [Weather Graphing Activity](#) | This lesson also aligns with **NGSS** K-ESS2-2 and **Math** K.MD.B.3, 1.MD.C.4, 2.MD.D.10 |
| 1 | **Beam of Light** | **Grade 1**- Students place different materials (clear plastic, wax paper, cardboard, mirror) in the path of a beam of light and determine what happens to the light. They then create displays (using photos or the actual items) that summarize their findings. One display can be categorical, and students can draw or take pictures of objects and place them into groups: see through, cloudy, blocks, reflects. Another display can be numerical, and students can create a graph with the number of objects in each category. | | This lesson also aligns with **NGSS** 1-PS4-3 |

| Grade(s) | Title | Description | Link | Content Connection & Notes |
|---|---|---|---|---|
| 2 | **Object Stacking** | **Grade 2**-Students perform two trials to stack objects (cookies, checkers, etc.) as high as they can. They record their results using tally marks and then use a spreadsheet to create pictographs of each of their trials and create bar graphs using the same data. Students should compare the results of their first and second trials and can add more ways to display their data and/or the data from the rest of the class as desired. | Object Stacking | This lesson also aligns with **CS** DA.IM.01 and **Math** 2.MD.10 |
| 2 | **Picturing Data** | **Grade 2**--Students run a supplied program in Code.org's Play Lab.  The program generates a random number of animals each time it is run. Students count the animals and display their data using tally marks, they then use the data to create a bar graph and a pie chart. Students are asked to compare the numbers of different animals and determine which appeared the least and the most. Teachers can extend the activity by combining the data from the whole class. | Picturing Data | This lesson also aligns with **Math** 2.MD.10 |

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