## BLacKstone Valley Prep

## MAYORAL ACADEMY



Discovering Data: Collecting, Recording, and Interpreting Data in Pre K-2

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## Today's Agenda

- Introductions
- Do Now
- Objectives
- Standards
- Data Unit
- Vocabulary
- Data Collection
- Data Representation
- Data Interpretation
- Estimation
- Daily Routines


## Do Now

## Turn and Talk:

- How have you taught data in the past?
- What parts of your unit were successful?
- Where would you like to improve?


## Let's share out!

What did your partner say?

## Objectives

## Teachers will ...

$\longrightarrow$ Gain an understanding of how to teach students about data and probability in an early childhood (Pre K- 2 ${ }^{\text {nd }}$ ) classroom.

Learn how to teach data and probability as part of regular classroom routines.

## Common Core

## State Standards

## Kindergarten

M\&D 2: Directly compare two objects with a measurable attribute in common ...
M\&D 3: Classify objects and count the number of objects in a category.

## First Grade

M\&D 1: Organize, represent and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than another.

## Second Grade

M\&D 10: Draw a picture graph and bar graph to represent a data set with up to 4 categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

## Student Friendly Math Vocabulary

Defining key vocabulary using language the students understand is a crucial step in their success for this unit. Turn and Talk: How would you define these words using "student friendly" language?

- Data-
- Survey-
- Tally-


## Let's share!

- Graph-
- Compare-
- Interpret-


## Student Friendly Math Vocabulary

- Data- Information we gather to answer a question or solve a problem
- Survey-asking the same question to a group of people
- Tally- a mark that means one
- Table- a tool used to collect and sort data
- Graph- a tool used to show and compare data
- Compare- looking at how things are alike or different
- Interpret- thinking about what a graph shows us to help answer our question or solve our problem
*Refer to vocabulary poster for visuals to support vocabulary comprehens:


## Math Vocabulary

Data- Information we gather to answer a question or solve a problem

Survey- Asking the same question to a group of people

Tally- A mark that means one


Table- A tool used to collect and sort data


Graph- A tool used to show and compore data


Compare- Looking ot how things are alike or olifferent

Interpret- Thinking obout what a graph shows us to help answer our question or solve our problem

Estimation- Making a pretty good guess bosed on the information that you have


## Refer to Page 13 in your packet

## Data and Collection

## Students will understand...

1. What is data? (11) Math Vocabulary Data- information
solve a problem $\square$
2. Why do we collect data?
3. How do we collect data?
4. What tools can we use to collect data?


We collect data to:

- answer a question
- solve a problem

Collecting data in an Early Childhood Setting

## Surveying a group of people (pg. 2)

Asking a class of students what color eyes they have.

## Examining pictures (pg. 3)

Examining a picture of animals at the zoo to see how many of each animal there are

Examining objects


Counting out a set of objects such as colored blocks to see how many of each color there are

## Analyzing math stories

Focusing on the question who are the main characters?

## How do we think of a (survey) question?

Students can generate a question based on:

- What they are interested in Do you like soccer or basketball more?
- What they want to know Do you have brown eyes, green eyes, or blue eyes?
- Their knowledge of others they will survey
What is your favorite subject? P.E., math, or science?



## How do we make a survey question?

## Pick a question with a few possible answers

 or limited options for answers-What is your eye color?
-What animal do you like best? dog, rabbit, or lion?
Make sure that the answer choices are related

What color hair do you have? (brown, blond, black or red?) vs.
What do you like best? (elephants, soccer, or summer)


## 4．What tools do we use to collect data？

Tables can be used as a tool to collect data． What is your favorite pet？

## Favorite Pets

| Pet | Tally Marks | Number |
| :---: | :--- | :---: |
|  | 册 册 | 10 |
| IIII | 4 |  |
| H | 册 I | 6 |

Refer to page 1 in your packet

## How do we represent data?

## Bar Graphs



## Representation

## Pie Graphs



## Representation

## Pie Graphs

## Tuwn and Talk

How can we adapt pie graph lessons for pre-k and kindergarten students?

## Lets share!

## Representation

## Please see page 10

10 scholars were deciding what their favorite spring activity was. Quentin ikes riding his F
What was the scholar' fovorite sping activity;

| P8O |  |
| :--- | :--- |
|  |  |
|  |  |

Glue the cut out pictures into the pie groph. Remember to group the pictures together. Spring Acfivity Graph


## Representation

## Picture Graphs

## Using pictures to collect data.



## Representation

## Picture Graphs

## Using objects to collect data.



Please refer to pg. 7

## How do we Interpret data？

## Turn and Talk：

| Sufied Animals ot the Toy Store |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\rightarrow$ | $\cdots$ | $\cdots$ | $\rightarrow$ | $\pi$ |  |  |  |  |  |  |
| 葋番 | $0$ | $6$ | $6$ | $6$ | $6$ | $6$ | $6$ | 惑 |  |  |
| $0$ |  |  |  |  |  |  |  |  |  |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

－What are some basic questions you could ask students about the data represented on this graph？（pre－k and kindergarten questions）
－What are some more challenging questions you could ask students about the data represented on this graph？（first an second grade questions）

## How do we Interpret data?

(-) Read the data
How many turtles are in the picture? How do you know?

- Make comparisons with the data Are there more fish or turtles? How do you know?
Use math to understand the data
How many more fish are there than turtles?
(-) Apply the data
If I want to get one of each animal at the pet store, which should I get first?



## How do we Interpret data?

Name $\qquad$ Date. $\qquad$

Survey Question: What is your favorite pet?囲

Data Table: HH


## Graph:

| $\mathbf{6}$ |  |  |  |
| :--- | :--- | :--- | :--- |
| $\mathbf{5}$ |  |  |  |
| $\mathbf{4}$ |  |  |  |
| $\mathbf{3}$ |  |  |  |
| $\mathbf{2}$ |  |  |  |
| $\mathbf{1}$ |  |  |  |
|  | Dog | Gerbil | Cat |

## Interpreting the Data:

How many students like dogs the best?

| 6 | 4 | 2 |
| :---: | :---: | :---: |
| $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| ¢ Howmany students like cats the best? |  |  |
| 5 | 2 | 3 |
| $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| $\star$ Howmany more students like cats more than gerbils? |  |  |
| 3 | 1 | 2 |
| $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |

$\star$ How can this data help us?


## How do we teach Estimation?

Level 1:
Same size clear container, Same sized objects (0-20)


Same size clear container, Different sized objects (0-20)


Level 3: Different size clear containers, Same sized objects (0-50)

Different size clear containers, Different sized objects (0-50)


Level 4:

Different size clear containers, Different sized objects (0-100)

## How Do We Incorporate Data and Graphing into Daily Routines?

## Question of the Day

Ask a choice question. Tally each student answer. Interpret the data.

## Competitions

Awarding tallies for each point earned.

* Boys vs. Girls
* Teacher vs. Students
* Table competitions


## Graphing Everything

Use a variety of graphs and interpret the data each time you add to them.
$\star$ Lost Tooth Graph

* Daily Weather Graph
* Books Read Graph



## Resources

1. The Great Graph Contest by Loreen Leedy
2. Great Estimation by Bruce Goldstone

3. The Best Vacation Ever: Collecting Data by Stuart S. Murphy
4. Year Round: Charts and Graphs by Teacher Created Resources


## $3,2,1 \ldots$ and done!

3
What are three things you learned?
2
What are two things you will use?
1
What is one question you still have on this unit?

Please take the rest of the time to check out our samples around the room. Thank you!

