

Mini Math Lessons/Strings/Counting Patterns/Money Games will continue to take place at the beginning of all 100 minute math blocks and any other math times as needed

Unit 2: Data Management - Term 1	Timeline: 3 weeks
<p style="text-align: center;"><b>Big Ideas (Marian Small)</b></p> <p><b>Organizing and Collecting Data</b></p> <ol style="list-style-type: none"> <li>1. When working with data, you usually organize or classify the data into meaningful categories. (BIOCD 1)</li> <li>2. There are always many ways to sort or organize data. (BIOCD 2)</li> <li>3. To collect good first-hand data, you must decide what collection method is most suitable and how best to pose any questions required to collect the data. (CIOCD 3)</li> </ol> <p><b>Displaying and Analyzing Data</b></p> <ol style="list-style-type: none"> <li>1. Graphs are powerful data displays, since visual displays quickly reveal information about data (BIDAD 1)</li> <li>2. Concrete graphs, picture graphs, pictographs, tally charts, bar graphs, and line plots are useful for comparing the frequency of data in different categories. (BIDAD 2)</li> <li>3. It is important not only to read information from graphs but to make inferences, draw conclusions, and make predictions. (BIDAD 3)</li> </ol>	
<p style="text-align: center;"><b>Big Questions</b></p> <ol style="list-style-type: none"> <li>1. What categories should be used to best represent the data?</li> <li>2. What is the best way to sort or organize the data?</li> <li>3. What is the best collection method?</li> <li>4. Which questions need to be asked to get the most valid information?</li> <li>5. How can I best display the data?</li> <li>6. What kind of graph should I use? (concrete, picture, picto, tally marks, bar graphs etc.)</li> <li>7. What inferences, conclusions and predictions can be made from the graph?</li> </ol>	
<p><b>Overall Expectations</b></p> <p><b>D-1</b> - collect and organize categorical or discrete primary data and display the data using charts and graphs, including vertical and horizontal bar graphs, with labels ordered appropriately along horizontal axes, as needed;</p> <p><b>D-2</b> - read, describe, and interpret primary data presented in charts and graphs, including vertical and horizontal bar graphs;</p>	
<p><b>Specific Expectation</b></p> <p><b>Collection and Organization of Data</b></p> <p>d-1.1 - demonstrate an ability to organize objects into categories, by sorting and classifying objects using two or more attributes simultaneously (<i>Sample problem:</i> Sort a collection of buttons by size, colour, and number of holes.);</p> <p>d-1.2 -collect data by conducting a simple survey about themselves, their environment, issues in their school or community, or content from another subject;</p> <p>d-1.3 - collect and organize categorical or discrete primary data and display the data in charts, tables, and graphs (including vertical and horizontal bar graphs), with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed, using many-to-one correspondence (e.g., in a pictograph, one car sticker represents 3 cars; on a bar graph, one square represents 2 students) (<i>Sample problem:</i> Graph data related to the eye</p>	

<p>colour of students in the class, using a vertical bar graph. Why does the scale on the vertical axis include values that are not in the set of data?).</p> <p><b>Data Relationships</b></p> <p>d-2.1 - read primary data presented in charts, tables, and graphs (including vertical and horizontal bar graphs), then describe the data using comparative language, and describe the shape of the data (e.g., "Most of the data are at the high end."; "All of the data values are different.");</p> <p>d-2.2 -interpret and draw conclusions from data presented in charts, tables, and graphs;</p> <p>d-2.3 - demonstrate an understanding of mode (e.g., "The mode is the value that shows up most often on a graph."), and identify the mode in a set of data.</p>	
<p><b>Learning Goal</b></p> <p>We are learning about attributes and how to read and organize data into charts, tables and graphs.</p> <p>We are learning about mode (e.g., the value that shows up most often)</p>	<p><b>Success Criteria</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> I can sort objects using 2 or more attributes (e.g., size, shape, colour, characteristics etc.)</li> <li><input type="checkbox"/> I can read and collect data using surveys</li> <li><input type="checkbox"/> I can read and organize data into charts, tables and graphs (vertical and horizontal bar graphs)</li> <li><input type="checkbox"/> My graphs have appropriate titles and labels</li> <li><input type="checkbox"/> I can identify the mode (e.g., the value that shows up most often) in a set of data</li> </ul>
<p><b>Assessment For Learning</b></p> <p>Daily Warm Ups</p> <p>Reading a Bar Graph and Pictograph conversations</p>	<p><b>Assessment As Learning (Descriptive feedback)</b></p> <p>Inquiry Tasks</p> <p>Warm Ups</p> <p>Checklists and Observations during break out lessons and games</p>
<p><b>Culminating Task/Assessment Of Learning</b></p> <p>Create a Survey Question, conduct the survey and create a bar graph (vertical or horizontal)</p> <p>Reading a Graph</p> <p>Exit Tickets for each task</p>	<p><b>Vocabulary</b></p> <p>Attributes, sort, organize, tally marks, chart, table, pictograph, bar graph, vertical, horizontal, scale, mode, data, survey</p>
<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>- "Superteacher" Website</li> <li>- Math Makes Sense - Unit 5</li> <li>- Math Makes Sense Textbook - for the pictures</li> <li>- Minilessons for Extending Addition and Subtraction - Catherine Fosnot</li> <li>- Marian Smalls Minds On Activities</li> </ul> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Attribute Blocks</li> <li>- Smarties</li> <li>- Venn Diagrams</li> </ul>	<p><b>Accommodations:</b></p> <ul style="list-style-type: none"> <li>- Simplify numbers for students if needed</li> <li>- Provide extra support to students who are having difficulty communicating</li> <li>- Preferred seating - minimize distractions for some - sit near the front etc.</li> <li>- Fidget toys if needed</li> <li>- Allow breaks if needed</li> <li>- Hands on manipulatives</li> <li>- Extra time for processing</li> <li>- Prompt students for getting back on task</li> <li>- Small group lessons for students who need extra practise understanding a concept</li> </ul>

Unit Lessons and Activities
<p><b>Lesson 1 - A - Sorting by 2 Attributes (Tuesday)</b>  Based on Lesson 1 - Math Makes Sense</p> <ol style="list-style-type: none"> <li>1. Teacher sorts blocks by two different attributes (size and shape - so can include different colours) - students have to guess the sorting rule</li> <li>2. Show students a <b>Venn diagram</b> and sort buttons by blue and 2 holes - all other blocks go on the sorting mat - in the rectangle - but not in the circles - Black Line Master 5.7</li> <li>3. Explain that there are two ways to sort data - chart and venn diagram - discuss when you would want to use what</li> </ol> <p><b>Working on It</b></p> <ul style="list-style-type: none"> <li>- Sorting game in partners, one student picks a rule and sorts buttons into Venn Diagram, other student guesses rule</li> </ul>
<p><b>Lesson 2 - Sorting by 3 Attributes (Wednesday)</b></p> <ol style="list-style-type: none"> <li>1. Students are given a image with a Venn Diagram and one object in the middle, they must come up with different sorting rules and three things that could be in any of the rings</li> <li>2. Students are introduced to 3 ring Venn Diagram with same sorting game as yesterday</li> <li>3. Students are to sort buttons into a jar using two attributes and all other buttons are discarded</li> </ol> <p><b>Assessment of Learning:</b> Exit ticket of EQAO question with sorting</p>
<p><b>Lesson 3 - Inquiry - Graphing Candy (Thursday)</b>  <b>Minds On:</b></p> <ul style="list-style-type: none"> <li>- When graphing data, what kind of graphs can you use? (bar graphs, pictographs etc.)?</li> <li>- What else do you know about graphs? - Make an anchor chart for each graph</li> </ul> <p><b>Working on it: (Give students 1 inch square chart paper - cut in half - it will force them to not use 1 to 1</b></p> <ul style="list-style-type: none"> <li>- I decided to organize my halloween candy from last night and the results were as follows: <ul style="list-style-type: none"> <li>- 40 Kit Kats</li> <li>- 25 Mars Bars</li> <li>- 30 Coffee Crisps</li> </ul> </li> <li>- How can this information be displayed in a graph? Create the graph.</li> </ul> <p><b>Reflection:</b></p> <ul style="list-style-type: none"> <li>- Show a variety of graph - counting by 5's and if anyone did - counting by 10's</li> <li>- Create a checklist for graphs (e.g., title, labelled axis, scale, neat, use colours)</li> </ul>
<p><b>Lesson 4 - Graphing a Bar Graph and introducing the term MODE (Tuesday)</b></p> <ul style="list-style-type: none"> <li>- Show an example of a bar graph and focus on the data</li> <li>- Ask questions about how many</li> <li>- Discuss the <b>scale</b> - what it shows</li> <li>- What is the <b>Mode</b>? - explain what this is and how you know</li> </ul> <p><b>Working on It</b></p> <ul style="list-style-type: none"> <li>- Students complete their own bar graph</li> </ul>
<p><b>Lesson 5 - Inquiry - Creating a pictograph - smartie colours - each smartie represents 2 (Wednesday)</b>  <b>Minds On:</b></p> <ul style="list-style-type: none"> <li>- What is a pictograph?</li> </ul>

- What does it mean - each smartie represents 2?
- So if I had to show 4 smarties - how many would I draw on the graph?

**Working On It:**

- As a group - count the different colours of smarties (from the bulk barn?) and put the data on a chart or blackboard (try to have 10 - 30 of 4 different colours - make sure at least one colour has an odd number so students would have to draw half a smartie)
- Students show the data on a graph - making sure they label all the parts of the graph and one picture of a smartie represents 2

**Reflection:**

- Depends on what students were struggling with - focus is on how to represent the odd number

**Lesson 6a - Math Game "Clear The Board" - to develop concept of mode (Thursday)**

Minds on: Play as a class first (record data on a chart paper)

Working on it: Play with partners and record data for graphing

**Lesson 6b - Creating a Bar Graph from Math Game: "Clear the Board"**

Differentiation: graph paper with axis for some students

**Lesson 7 - Interpreting Graphs (based on MMS - Lesson 3) (Tuesday)**

- Show students page 200 in the Math Makes Sense Text Book - discuss the graphs, **\*\*Make sure you talk about the key for the pictograph\*\*** Remind them that on a pictograph you need to add the key to show how many each picture represents.

**ASK:**

- Do both graphs show the same information?
- What is the mode?
- How many more Action movies were rented than Kids movies
- Which graph is easier to read? Why?

etc.

- Show students page 201 in Math Makes Sense Text Book - discuss the graph again etc.

**Working On It:**

- Students complete pages 100 and 101

**Lesson 9 - Inquiry - Conducting a Survey and Recording the Data in a Bar Graph and a Pictograph - TWO PARTS (Wednesday and Thursday)**

**Part 1**

**Minds On:**

- What do you remember about conducting a survey? (needs to have a good question with clear choices)
- When you are surveying people, how do you record the data? (tally marks) - **Quickly review**

**TALLY MARKS**

- What is a pictograph?
- What does a pictograph have to have (a key)
- What is a bar graph?
- What are the parts of a bar graph?
- What are some good survey questions?

**Working on it:**

- Show students the recording sheet and quickly review what they need to do.
- Tell students they need to write their survey question and the choices and show the teacher before asking people - put a happy face or some symbol to show that the teacher has checked

the work so far

- Students conduct the survey and complete the sheet

**Reflection:**

- Show some of the results and focus on what students were struggling with.

**Part 2**

**Minds On:**

- What are some questions you can ask about the data?
- What would be a challenging question you could ask

**Working On It:**

- Create 5 or more questions about your data, have you math partner answer the questions

**Reflection:**

- What was challenging?
- What would you do different next time?

**Lesson 9 - Assessment of Learning Rotations**

- Students create a survey question, conduct the survey and record the data etc.
  - Students are given a graph - they need to answer questions about the graph
- EQAO (Google Classroom)- have them complete it independently or together

**Notes for Next Year:**