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| **Unit Plan – Making & Interpreting Graphs****Developed by:** Jana Nicol **School:** Island View School**Date:** November 2013 **Grade level:** 2**Subject:** Mathematics **Unit:** Graphing (SP1, SP2)**Duration:** 8-9 x 60 minute lessons |

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| **Outcomes****SP1 –** Gather and record data about self and others to answer questions.**SP2 –** Construct and interpret concrete graphs and pictographs to solve problems.**I can statements** * I can ask a question that can be answered by gathering information about myself and others.
* I can organize data as it is collected using objects, tallies, checkmarks, charts or lists.
* I can tell about the attributes of bar graphs and pictographs.
* I can answer questions about a bar graph or pictograph.
* I can solve a problem by making and interpreting a bar graph or pictograph.
 | **Materials*** *I Can Statements – SP1 SP2.doc*
* *Blank pictograph template.doc*
* *Graphing Centres.doc*
* Pre-assessment: *Bar Graph – Pets.pdf\**
* Pre-assessment: *Pictograph – Stuffed Animals.pdf\**
* *Blank bar graph template.pdf\**
* Post-assessment: *SP1 SP2 Assessment.doc*
* Math Word Wall cards (data, horizontal, vertical, bar graph, pictograph)
* Sidewalk chalk
* Zipper bags
* Looseleaf/paper
* Animal counters
* Cube links
* Pencils, pencil crayons, markers
* Math Journals
* Digital camera
* *Multiple Intelligences Matrix – Grade 2 Math – SP1 SP2.doc*
* *Student progress record – Whole class – Grade 2 Math – SP1 SP2.doc*

**\*** Files available for download at <http://superteacherworksheets.com>  |
| **Technology*** Netbooks and teacher laptop/internet access
* <http://ivsgrade2.weebly.com> (Home/Links/Links for Students/Statistics & Probability Games)
* Speakers
* SMART Board access
* *SP1 SP2.nbk*
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| **Connection to Data/Research**“The focus of data management explorations should be that its purpose is to answer questions. The emphasis should always be on how to present and interpret data. The context should be realistic and of interest to the students. The data should be used to solve a problem and the graphs should clearly communicate the information that was collected” – *New Brunswick Grade 2 Math Curriculum, pg. 82.* |

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| **Prior Learning Connections**To make sense of their world, young students often find themselves collecting and organizing data, either verbally, pictorially, or in charts. Even though data management has not been formally taught in mathematics prior to grade two, it is reasonable to expect that students will have had experiences with collecting data and various types of graphs in other content areas” – *New Brunswick Grade 2 Math Curriculum, pg. 82.* |

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| **Accommodations for Everyone**Extra time (less than double), FM system, large print materials, manipulatives, provide tactile/kinaesthetic activities, frequent activity breaks, monitor attention (signal systems) |

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| **Special Concerns**(Classroom management items, medication information, etc). |

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| **Assessment****Formative Assessments –** *To be administered throughout unit on SP1/SP2** Pre-assessment – *Pictograph – Stuffed Animals.pdf*
* Pre-assessment – *Bar Graph – Pets.pdf*
* *Student progress record – Whole class – Grade 2 Math – SP1 SP2.doc* 🡪 Throughout the unit, teacher will record students’ demonstration of understanding of each of the outcomes for SP1 and SP2 as they complete activities, journal entries, and participate in discussions.
* Anecdotal notes 🡪 Record your observations of students’ understandings, areas of difficulty, misconceptions, etc., to guide further instruction throughout the unit.
* Confer with students to provide feedback and help them to set individualized goals.

**Summative Assessment –** *To be administered at the end of the unit on SP1/SP2** *SP1 SP2 Assessment.doc* 🡪 Students will have as many opportunities as needed to rewrite if necessary (students who need it may benefit from oral testing, extra time, and fewer questions, and other accommodations).
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| **Procedure** |
| **Before the unit** | **(15-20 Minutes)** Administer Pre-assessment – *Pictograph – Stuffed Animals.pdf** Determine whether students already have an understanding of interpreting information from a pictograph.
* Scribe and/or perform oral testing for students who require these accommodations.

**(15-20 Minutes)** Administer Pre-assessment – *Bar Graph – Pets.pdf** Determine whether students already have an understanding of interpreting information from a simple bar graph.
* Scribe and/or perform oral testing for students who require these accommodations.

Post the I-Can Statements for SP1/SP2 on the Math wall. |
| **During the unit** | **Lesson 1 – Introducing Graphs – Making a people graph (45 minutes)***Before the lesson – draw a blank graph template on the pavement in the school yard with sidewalk chalk. Write ‘Favourite Colours’ at the top of the graph. Label each column with a different colour word (e.g. blue, red, yellow, green, orange, purple). Optional – bring a chair outside to stand on to take a picture of students inside the people graph.** Ask students if they know what a graph is. Invite students to share their responses with the group.
* Tell the class that they are going to make a graph about their favourite colours. Write a list of colours on the SMART board (or chart paper) for students to choose from. Hand out a sheet of paper to each student, and in large printing (enough to fill the page), they will write their favourite colour on it. **Note:** Nonreaders may be given the option to colour the sheet of paper in their favourite colour, without having to write the word.
* Ask students to hold up their paper, and mark how many have chosen each colour with tallies next to each colour word.
* Invite students to tell the class how many students prefer each colour, by reading the tallies. Write the numbers for each colour next to the tally marks.
* Line students up to go outside to make a people graph. Have them take their sheets of paper with their colour choice with them.
* Show students the blank graph template that is drawn in the pavement with sidewalk chalk. Ask all of the students who chose blue to line up in the blue column, red in the red column, etc.
* **Optional**: When all students are inside of the graph, stand on a chair to take a picture of it.
* Have students exit the graph, but to leave their sheets of paper in place, and to stand around the graph so they can see it from the outside.
* Discuss the following points:
* A graph should begin from the bottom (if it is vertical), or from the left (if it is horizontal)
* Each item in a column of a graph should be lined up (each item should take up the same amount of space... so if two columns have three items, they should end in the same place in the graph).
* Each column in a graph should represent one type of data – e.g. in this graph, all of the red should be in the same column, all the blues in the same column, etc.
* Each axis has a different purpose – one is for number of students, and the other is for favourite colours.
* Bring students back to the classroom. Collect their sheets of paper to be recycled. Show them how to create the same set of data as a pictograph and as a bar graph on the SMART board.
* Introduce the I-Can statements for SP1 and SP2, found on the Math wall (they can also be found on page 3 of *SP1 SP2.nbk*. Tell the class that they are working towards being able to do all of these things as they learn about bar graphs and pictographs in this unit.

**Lesson 2 – Bar graphs – Interpreting data and Formulating Questions (45-60 minutes)***Before the Lesson – Print a copy of Blank bar graph template.pdf. Write the title “Favourite Dessert” on the top. Label the horizontal axis with desserts: “cake”, “ice cream”, “pie”, “fruit”, and the label “Desserts”. Label the vertical axis “Number of Students” and write numbers from 0-12. Photocopy a class set this template.** Open *SP1 SP2.nbk*. Go to page 3 to review the I-Can statements for graphs. Go to page 14 and introduce the graph song. Sing it as a class.
* Go to page 7 of *SP1 SP2.nbk*. Tell students they are going to collect data on animals with the die. Students will take turns rolling the die, and using the square to fill in the spaces on the graph (e.g. place a square above dog if dog is rolled). Model it for them first. Repeat until each student has had one turn.
* Emphasize the features of graphs – graphs have titles, e.g. ‘Animals’. One axis is labelled with the ‘Number of Animals’, and numbers representing how many animals; and the other axis is labelled with names of animals and the title ‘Animals’. The bars on a graph line up with the number of data. Ask students if they have any questions about the features of graphs.
* Go to page 8 of *SP1 SP2.nbk*. Read the questions about the animals graph aloud. Ask students to answer the questions and write their responses on the SMART board. Go back to page 7. Ask students if there are any other questions that could be asked about this graph. Invite others to answer questions that they formulate.
* Tell students that they are going to make their own graphs about favourite desserts. On a blank SMART notebook page (or a sheet of chart paper), write the words “cake”, “ice cream”, “pie”, and “fruit”. Name each dessert, and ask students to raise their hand for their favourite. Mark a tally for each student accordingly. Ask students to take turn reading the tallies, and mark that numeral next to the tallies.
* Hand out a copy of the *Favourite Dessert* bar graph to each student. Invite students to tell the class about the features of the graph which are already present (title, numbers, types of desert, labels of each axis).
* Using the data collected, students will complete the bar graph. On the back of the sheet, students will write 3-5 questions about the graph for a classmate to answer, and leave room for others to respond to their questions. **Note:** Students who have dysgraphia will be given the option to type their questions on a computer. Non-readers will tell their questions to the teacher, who will scribe the questions for them.
* Collect the sheets from students and distribute them to the class, making sure everyone has work that is not their own. Students will answer the questions and write their name on it. **Note:** Teacher will read questions aloud to students who have difficulties with reading. They will scribe answers for non-readers and students who have dysgraphia, or provide them with the option to type their responses on the computer.
* Collect all work and ask students who are willing to share questions they asked, and invite others to answer them. Encourage them to explain their thinking (how did you figure that out?)

**Lesson 3 – Bar graphs – Schoolyard (45-60 minutes)***Before the Lesson – Photocopy a class set of Blank bar graph template.pdf. Make a few copies that already have the title, title of each axis, numbers, and labels already written on them for students who are non-readers or who may have difficulties with writing tasks. Open SP1 SP2.nbk and Blank bar graph template.pdf. Get a class set of small zipper bags.** Review the I-Can statements on the Math wall (or on page 3 of *SP1 SP2.nbk*. Go to page 14 and sing the graph song.
* Go to the last page of the SMART Lesson *SP1 SP2.nbk.* Click on the link to watch the “What is a Graph?” video.
* Tell students that they are going to make a bar graph about objects they find in the schoolyard. Hand out one zipper bag to each student and tell them that they can each find one object to place in their bags to bring inside.
* Take students outside. Give them five minutes to find one object to place in their bags.
* Bring students inside. Have them zip their bags carefully, leave them on their desks, go wash their hands, and return to their seats.
* Collect data. Draw a large + on a blank page on the SMART board. Ask students to raise their hands to share what they found outside. If others found the same thing, have them put their hands down. Continue until every different type of object has been identified and written on the board. Ask students to raise their hands if they found a given object and record that number with tallies next to its name on the board (e.g. ‘how many students found a rock?’). Continue until all data has been collected. **Note:** If there are several different objects where only one of each was found, they could be grouped into ‘other’.
* Hand out a copy of *Blank bar graph template.pdf* to each student. Project a copy of this page on the SMART board to write on/model for students.
* Model how to write a title for a graph at the top of the page. As a class, brainstorm a good title for the graph (e.g. “Things We Found Outside”). Emphasize that all graphs have titles, and that each word in a title should begin with an uppercase letter.
* Model how to label the vertical axis with numbers from 1-10. Model how to label the vertical axis with “Number of Objects”. Give students time to label the vertical axis on their pages. Then model how to label the horizontal axis with the names of each object found. Label this axis “Objects”. Give students time to label the horizontal axis on their pages. **Note:** Nonreaders or students who have dysgraphia may benefit from having this done for them (a few copies should already be made 🡪 see *Before the Lesson*).
* Display the data that had been collected. Students will use the data to make their own bar graphs. Model this on *Blank bar graph template.pdf* with one type of object (e.g. rocks – if 8 students found rocks, make a bar up to the number 8 and colour it in).
* Students will use the data given to fill in the rest of the graph.
* Ask students to pair up after they finish making their graphs, and they will each take turns asking questions about the graph and giving responses. Give an example: “How many students found rocks outside?” Choose a student to respond.
* Collect all work and ask students who are willing to share questions they asked, and invite others to answer them. Encourage students to develop more challenging questions, e.g. how many more students found rocks than grass? or, how many students found rocks and grass altogether? Encourage those who provide answers to explain their thinking (how did you figure that out?)

**Lesson 4-5 – Collecting Data to Make Bar Graphs (45-60 minutes x 2)***Before the lesson – Open SP1 SP2.nbk and Blank bar graph template.pdf. Photocopy a class set of Blank bar graph template.pdf. Get one sheet of looseleaf per student.** Review the I-Can statements on the Math wall (or on page 3 of *SP1 SP2.nbk*). Go to page 14 of *SP1 SP2.nbk* and sing the graph song.
* Tell the class that they are going to have the chance to collect their own data to make a graph.
* Go to page 13 of *SP1 SP2.nbk*. Click on “Video for Bar Graphs”. This video is about data collection. Show the video to the class.
* Ask students about the different ways data was collected (tallies, words, checkmarks, pictures).
* Explain that data can be collected in many different ways. It is important to collect the data carefully, so that when placing the data on the graph, it shows the data accurately.
* Tell students that they will come up with a question, a few possible answers to that question, and then they will get to ask these questions to their classmates and record their data. Then they will put this data into a bar graph.
* Ask the class to suggest ideas for a graph (e.g. favourite animal, favourite dessert, favourite subject in school, favourite toys, etc). Choose 4-5 ideas and write them on a blank page on the SMART Board. Using tallies, have students vote for the topic they like the best. For example, if most students selected ‘Favourite Animals’, tell students that this will be the title of their graph. When they collect the data, they can choose any four animals they want to present as choices to their classmates.
* Model how to collect the data. Take a sheet of looseleaf, and fold it in half. Take that folded sheet and fold it in half once more. Open it up and students will see that the sheet of looseleaf is now divided into four sections. Show a representation of this on the SMART Board. Draw a large + to section the page into four sections.
* If animals were the chosen topic, ask students to suggest a type of animal. Call on four students and write each of their suggestions in one of the spaces on the SMART Board (e.g. one square may say ‘cat’, one may say ‘dog’, one could say ‘hamster’, and the other could say ‘fish’). Tell students that you are going to pretend that you have already collected the data. Show the data with checkmarks or tallies.
* Open *Blank bar graph template.pdf* to project onto the SMART board.
* Review how to label a bar graph (title, one axis for number of objects being counted, one axis for the names of objects being counted).
* Tell the class that once they have gotten their sheet of looseleaf ready to collect data, they will be able to ask their classmates questions to collect data on their sheets. Emphasize the importance of asking students questions quickly so they will be able to ask everyone in the time given. Tell the class that it shouldn’t take any longer than a few seconds to get the data from one classmate. Model how much time this takes by counting to five (‘one banana, two banana, three banana...’) so students will have a grasp of how much time it should take to collect the data from a single student. Review the importance of using quiet voices when asking classmates questions so that everyone can hear one another.
* Hand out a sheet of looseleaf to each student. Remind them that they will collect their own data about \_\_\_\_\_\_\_ (e.g. animals). Guide class through folding their looseleaf in half twice to make four sections. Have students write the names of one animal in each of the four sections. They can choose any four \_\_\_\_\_\_\_\_ (animals) they want. **Note:** Students could also be given the option to draw one animal in each of the spaces. This would accommodate non-readers and those who have difficulties with spelling. Tell students that they may begin collecting data from their classmates after they have finished writing/drawing their choices onto the sheet.
* Provide students with about five minutes to collect the data from their classmates.
* After students have collected the data, they can record the information onto their bar graphs. Hand out a copy of *Blank bar graph template.pdf* to each student.
* While students are working, circulate and provide assistance as needed. Record progress on *Student progress record – Whole class – Grade 2 Math – SP1 SP2.doc.*
* Have students pass in their graphs and data when they are finished.
* **Possible extension:** Students could write questions about their graph and give it to a classmate to answer.
* Lead a discussion on data collection. What methods of data collection did they use (tallies, checkmarks, words, pictures)? Which method do they think would be the quickest?

**Repeat this lesson the next day.** Show the video on how to collect data. This time, allow students to make a graph about whatever they like. Ask students to share some examples with the class of what they could make their graphs about. They will collect their own data on looseleaf, then represent it on a bar graph. Then they will pass in their graphs and data. Students who finish early can write some questions about their graphs and give to a classmate to answer. **Lesson 6 – Introducing pictographs (45-60 minutes)***Before the Lesson – Open SP1 SP2.nbk. Photocopy a class set of Blank pictograph template.doc. Go to* [*http://www.theweathernetwork.com/14-day-weather-trend/canada/new-brunswick/saint-john*](http://www.theweathernetwork.com/14-day-weather-trend/canada/new-brunswick/saint-john) *(or any two week weather forecast), and print off a class set of the two week weather forecast. Make a few copies that already have the title and labels.** Review the I-Can statements on the Math wall (or on page 3 of *SP1 SP2.nbk*). Go to page 14 of *SP1 SP2.nbk* and sing the graph song.
* Go to the last page of the SMART Lesson *SP1 SP2.nbk.* Click on the link to watch the pictograph video.
* Go to page 4 of *SP1 SP2.nbk*. Have students take turns rolling the die and placing coloured marbles in the pictograph (they are sorted by colour). Then go to page 5 of *SP1 SP2.nbk* and call on students to read and respond orally to the questions asked about this graph.
* Tell students they are going to make their own pictograph about weather. Go to <http://www.theweathernetwork.com/14-day-weather-trend/canada/new-brunswick/saint-john> (or any two week weather forecast), and display this on the SMART board. Ask students what types of weather they see (e.g. sunny, partly cloudy, rainy, etc). Ask how many of each types of weather are shown (e.g. there are 5 sunny days, 3 cloudy days, etc). Hand out a copy of the weather forecast to students, so they can see it close-up.
* Hand out a copy of *Blank pictograph template.doc* to each student.
* Tell the class that they are going to make a pictograph to represent the upcoming weather. Display *Blank pictograph template.doc* on the SMART board. Write in the different types of weather on the graph on the vertical axis (sunny, rainy, etc). Give students a couple of minutes to copy these onto their own graphs. **Note:** Nonreaders or students who have dysgraphia may benefit from having this done for them (a few copies should already be made 🡪 see *Before the Lesson*).
* Tell students that they can choose to work on their graph in any of the following ways:
* Option 1 – Using the blank squares in the bottom of *Blank pictograph template.doc*, students can draw a symbol to represent each type of weather in each square, then cut them out and paste them into the appropriate column of the pictograph.
* Option 2 – Students can cut out the weather glyphs on the two-week weather forecast handout, and paste them into the appropriate column of the pictograph.
* **Note:** Modified students and/or students with fine motor difficulties may choose either option, but may need to have the glyphs cut out for them (before the lesson).
* Students will work on completing their pictographs. When they finish, they can write three facts about the data in their graphs on the back of the sheet (e.g. “There were five sunny days”). **Note:** Students who have dysgraphia will be given the option to type their facts on a computer. Non-readers will tell their questions to the teacher, who will scribe the questions for them.
* While students are working, circulate and provide assistance as needed. Record progress on *Student progress record – Whole class – Grade 2 Math – SP1 SP2.doc.*
* Students will pass in their graphs as they finish writing three facts. Students who finish early can play graphing games on the class website: <http://ivsgrade2.weebly.com> (click on links for students, scroll down to statistics and probability games).
* Lead a discussion on the similarities and differences between bar graphs and pictographs. Represent main points in a Venn Diagram on the SMART Board (found on page 11 of *SP1 SP2.nbk*).

**Lesson 7 – Making Pictographs (45-60 minutes)***Before the Lesson – Open SP1 SP2.nbk. Photocopy a class set of Blank pictograph template.doc.** Review the I-Can statements on the Math wall (or on page 3 of *SP1 SP2.nbk*). Go to page 14 of *SP1 SP2.nbk* and sing the graph song.
* Hand out a copy of *Blank pictograph template.doc* to each student.
* Tell the class that they are going to make a pictograph and that they are going to collect their own data. Display *Blank pictograph template.doc* on the SMART board.
* Using this template, complete an example graph on Favourite shapes. On a blank page, draw a large + and in each square write/draw a shape (circle, square, triangle, rectangle). Ask students to raise their hand if a circle is their favourite and show this amount with checkmarks in the appropriate space. Repeat with the remaining shapes.
* Return to *Blank pictograph template.doc*. Label the graph with a title “Favourite Shapes” and label the vertical axis with the names/picture of each shape. Use the grid provided to draw the shapes. If five students liked circles best, draw one circle in each of the five squares. Then move these to the circles row of the pictograph. Tell students that they will draw their information on the squares, and then cut and glue them onto the correct row of their pictographs. Repeat for the rest of the shapes.
* Students will collect data for their own pictographs. They can make a pictograph about anything they like, provided that it is fairly simple to draw (as they will be drawing each object on their graph). Ask students to generate some examples of what they could make a graph about.
* Review how to collect data – take a sheet of looseleaf. Fold it twice to make four spaces. Write or draw each choice in one of the four spaces. Remind them that it should not take more than a few seconds to ask each classmate a question and to use tallies or checkmarks to record their response on the sheet of looseleaf. Hand out a sheet of looseleaf to each student and give them a few minutes to collect their data.
* After students have collected the data, they can complete their pictograph. Hand out a copy of *Blank pictograph template.doc* to each student. They can draw items for their pictograph in the grid provided, then cut and glue it into the appropriate row of the graph. Their graphs should also include a title, and labels on the vertical axis. **Note:** students who have fine motor difficulties may need to have pictures cut out for them. Students who are non-readers or who have dysgraphia may need assistance writing the title and the labels on the vertical axis.
* While students are working, circulate and provide assistance as needed. Record progress on *Student progress record – Whole class – Grade 2 Math – SP1 SP2.doc.*
* When they finish, they can write three facts about the data in their graphs on the back of the sheet (e.g. “There were five sunny days”).  **Note:** Students who have dysgraphia will be given the option to type their facts on a computer. Non-readers will tell their facts to the teacher, who will scribe the questions for them.
* Students will pass in their graphs as they finish writing three facts. Students who finish early can play graphing games on the class website: <http://ivsgrade2.weebly.com> (click on links for students, scroll down to statistics and probability games).

**Lesson 8 – Show What You Know – Graphing Centres (45-60 minutes)***Before the lesson – prepare four centres. 1 – cube links, blank graph, and data set\*, 2 – animal counters, blank graph, and data set\*, 3 – Blank bar graph template.pdf (class set of copies), and directions*\**, 4 – SMART book lesson (SP1 SP2.nbk – pages 6-8), and directions.* *Post directions and place materials needed near the directions in four different parts of the classroom.* *Place students into four mixed-ability groups – Type names of group members into the last page of Graphing Centres.doc.*\*all of the materials for centres #1-2 and directions for centres #3-4 can be found in *Graphing Centres.doc.** Review the I-Can statements on the Math wall (or on page 3 of *SP1 SP2.nbk*). Go to page 14 of *SP1 SP2.nbk* and sing the graph song.
* Tell the class that today they are going to show what they know at four different centres. They will have a chance to make bar graphs and pictographs.
* Open *SP1 SP2.nbk, Graphing Centres.doc,* and *Blank bar graph template.doc.*
* Display *Graphing Centres.doc* on the SMART board. Show the directions for Centre #1. Students will use cube links to make a bar graph using the data provided.
* Scroll down to the directions for Centre #2 on *Graphing Centres.doc.* Students will use animal counters to make a pictograph using the data provided.
* Scroll down to the directions for Centre #3 on *Graphing Centres.doc.* Students will make a bar graph using the data provided on *Blank bar graph template.pdf.* Display *Blank bar graph template.pdf.*
* Scroll down to the directions for Centre #4 on *Graphing Centres.doc.* Students will use the SMART board to work with bar graphs and pictographs. Display *SP1 SP2.nbk* on the SMART board and show students which pages they will use (pages 6-8). Emphasize the importance of taking turns and allowing only one student to touch the SMART board at a time.
* Review rules for centre work: read the directions before beginning, take turns, use quiet voices, be respectful of all group members.
* Display groups (on last page of *Graphing Centres.doc*). Tell students where each group will work. Once students reach their group, they can begin working right away.
* Rotate centres every 10 minutes.
* While students are working, circulate and provide assistance as needed. Record progress on *Student progress record – Whole class – Grade 2 Math – SP1 SP2.doc.*
* After all groups have completed all four centres, have students tidy each area, and then they can return to their own seats.

**Lesson 9 – Optional – Breakfast for a Needy School**In this lesson, data will be collected to make breakfast for a needy school. Access to a kitchen, baking supplies, and volunteers will be needed. Breakfast could also be made for your own school’s breakfast program, or a local food bank, depending on the situation in your own community.*Collecting the data (10-15 minutes)** Tell the class that they are going to have the opportunity to help another school by making food for their breakfast program; and that they are going to collect data to decide what to make.
* Give the class a few options to choose from: e.g. trail mix, granola bars, oatmeal cookies, banana muffins. Record each option on the SMART board. Have students vote for their favourite choice, and mark tallies next to each option accordingly.
* The option with the most votes will be the one students make in the kitchen.
* Have students show this information in a bar graph on the SMART board – students can take turns drawing on *Blank bar graph template.pdf* – e.g. one student can write a title, one can write in the numbers, one can label one axis ‘Breakfast Foods’, one can label the other axis ‘Number of Students’, four students could take turns writing in each type of food on the axis, and four more students could take turns drawing the bars.
* Optional: Save this file and post it to the class website to show parents and members of the community how students are making decisions to help others.

*Getting ready for cooking* * Find a recipe that is easy to follow. Make copies for each group.
* Invite volunteers, and create small groups of students to work with each volunteer.
* Make a list of ingredients needed and buy them. Funding may be procured through the office, or by donations from parents.
* Bring all of the ingredients and baking supplies needed (spoons, measuring cups, bowls, cookie sheets, zipper bags or cling wrap, etc). to school.

*Cooking day (30-60 minutes, depending on recipe)** Show the recipe to the whole class. Read it aloud.
* Have students wash their hands and take them to the kitchen.
* Place students into groups with their volunteers. Give each group a copy of the recipe, and all of the baking supplies they will need.
* Review how to read measurements (e.g. Show them what ½ cup looks like, difference between tablespoon and teaspoon, etc). Remind them that the volunteers will be there the help them.
* Emphasize the importance of re-reading the recipe and following each step in order. Remind students that they must take turns.
* Students will follow recipes under supervision of teacher and volunteers. **Students are not allowed to handle knives and must stay away from the oven/stove at all times!**
* When the recipe is finished baking, volunteers will take food out of the oven and allow it to cool. Students can return to class while food is cooling.
* After cooling time (about an hour), students will wash their hands and return to the kitchen. They will help wrap the food to be sent to the schools (place them in zipper bags or cling wrap).
* Students will help teacher put all food into a box to be sent to the needy school.

*After school that day, the teacher can deliver the food, he receiving school could pick it up.* | **UDL Guidelines****3.1** Activate or supply background knowledge**1.1** Offer ways to customize the display of information**2.5** Illustrate through multiple media**8.3** Foster collaboration & community**4** Provide options for physical action**3.3** Guide information processing, visualization, & manipulation**2.1** Clarify vocabulary & symbols**2.3** Support decoding of text, mathematical notation, & symbols**3.4** Maximize transfer and generalization**2.1** Clarify vocabulary & symbols**2.5** Illustrate through multiple media**2.1** Clarify vocabulary & symbols**2.3** Support decoding of text, mathematical notation, & symbols**5.3** Build fluencies with graduated levels of support for practice & performance**7.2** Optimize relevance, value, & authenticity**1.1** Offer alternatives to visual information**4.1** Vary methods for response & navigation**4.2** Optimize access to tools & assistive technologies **8.3** Foster collaboration & community**3.2** Highlight critical patterns, big ideas, & relationships**2.1** Clarify vocabulary & symbols**1.1** Offer alternatives to visual information**2.5** Illustrate through multiple media**7.2** Optimize relevance, value, & authenticity**4** Provide options for physical action**3.3** Guide information processing, visualization, & manipulation**1.2** Offer alternatives to auditory information**3.1** Activate or supply background knowledge**4.1** Vary methods for response & navigation**4.2** Optimize access to tools & assistive technologies **8.3** Foster collaboration & community**3.2** Highlight critical patterns, big ideas, & relationships**2.1** Clarify vocabulary & symbols**1.1** Offer alternatives to visual information**2.5** Illustrate through multiple media**3.2** Highlight critical patterns, big ideas, & relationships**5.3** Build fluencies with graduated levels of support for practice & performance**7.2** Optimize relevance, value, & authenticity**3.3** Guide information processing, visualization, & manipulation**1.2** Offer alternatives to auditory information**2.1** Clarify vocabulary & symbols**7.2** Optimize relevance, value, & authenticity**3.3** Guide information processing, visualization, & manipulation**8.3** Foster collaboration & community**4.1** Vary methods for response & navigation**4** Provide options for physical action**6.4** Enhance capacity for monitoring progress.**3.2** Highlight critical patterns, big ideas, & relationships(see above)**2.1** Clarify vocabulary & symbols**1.1** Offer alternatives to visual information**2.5** Illustrate through multiple media**4.1** Vary methods for response & navigation**7.2** Optimize relevance, value, & authenticity**1.2** Offer alternatives to auditory information**4.2** Optimize access to tools & assistive technologies **7.1** Optimize individual choice & autonomy**4.2** Optimize access to tools & assistive technologies **6.4** Enhance capacity for monitoring progress.**3.2** Highlight critical patterns, big ideas, & relationships**2.1** Clarify vocabulary & symbols**1.1** Offer alternatives to visual information**3.3** Guide information processing, visualization, & manipulation**2.4** Promote understanding across language**7.1** Optimize individual choice & autonomy**6.3** Facilitate managing information & resources**4** Provide options for physical action**4.2** Optimize access to tools & assistive technologies **6.4** Enhance capacity for monitoring progress.**4.2** Optimize access to tools & assistive technologies **2.1** Clarify vocabulary & symbols**1.1** Offer alternatives to visual information**6.3** Facilitate managing information & resources**5.3** Build fluencies with graduated levels of support for practice & performance**4.1** Vary methods for response & navigation**7.3** Minimize threats & distractions**8.3** Foster collaboration & community**6.4** Enhance capacity for monitoring progress.**7.2** Optimize relevance, value & authenticity**8.3** Foster collaboration & community**3.3** Guide information processing, visualization, & manipulation**7.2** Optimize relevance, value & authenticity**6.3** Facilitate managing information & resources**2.3** Support decoding of text**3.1** Activate or supply background knowledge**8.3** Foster collaboration & community**7.3** Minimize threats & distractions**4** Provide options for physical action |
| **After the unit** | **10-15 minutes –** Students will choose one of the following prompts and respond to it in their Math journals, and use words, numbers and pictures to explain their ideas:* What are the differences between bar graphs and pictographs?
* How do graphs help us understand data?
* What do all types of graphs need?

**30-60 minutes** – Administer *SP1 SP2 Assessment.doc* 🡪 Students will have as many opportunities as needed to rewrite if necessary (students who need it may benefit from oral testing, extra time, and fewer questions, and other accommodations). |

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| **Subject Integration****Link to Visual Arts*** Line designs 🡪 Fold a sheet of paper in half. Students will fill one side of the page with different styles of horizontal lines, and fill in the other with different styles of vertical lines (styles: solid lines, broken lines, wavy lines, dotted lines, zigzag lines, thin lines, thick lines, different colours, etc). This activity will help reinforce the vocabulary – horizontal and vertical.

**Link to You and Your World and English Language Arts*** Teacher will collect data on student preferences for a type of breakfast food to make for the breakfast program of a neighbouring inner-city school. Students will choose between muffins, oatmeal cookies, and granola. Students will use this information to create a bar graph.
* They will learn about the importance of eating breakfast and about making healthy meal choices in the You and Your World unit, *Healthy Lifestyles*.
* Students will help make the chosen food and write about this experience in English Language Arts.
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| **Notes/Reflections** |