Grade 6 - Data Literacy

Contents

📋 Developmental Tracking Sheet

What to look for from the end of Grade 5	**Diagnostic Thinking Tasks:** (sample tasks to uncover students' current understandings)
Looking back: ● **explaining** the importance of collecting a sample of data that is representative of a population ● **collecting** data to answer questions of interest about a population (using sampling techniques) ● **selecting** from among a variety of graphs, the type of graph best suited to represent various sets of data, and **justifying** choice of graphs (including stacked-bar graphs) ● **displaying** the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs ● **creating** an infographic about a data set, representing the data in appropriate ways	The principal of our school would like to make our school a better place to learn. What survey questions could you ask people in our school to help our principal investigate how this could be done? Who and how many people would you survey? Explain why this selection of people makes sense. Is there a way that you might display the data that would help us make some decisions about improving our school? Why this task? ● it is inherently differentiated by allowing students to generate their own survey questions based on their current understanding of data collection. ● allows students to be reacquainted with data collection through thoughtful survey questions (as a means of solving problems and gathering information) ● creates an opportunity for the teacher to observe: ○ are students comfortable with wording survey questions to gather data? ○ do students attend to the importance of sampling techniques? (sample size, representation, etc.) ○ familiarity with organizational tools - do students mention or sketch out t-charts or graphic representations in their explanations? ○ what next steps in learning do students need before they are ready to spend time actually gathering, organizing, and displaying information? **Alternate task** - - explore the Diagnostic Assessments included in the MathUP topics listed below

Next Steps for Learning:

- Based on what you saw and heard, what is next for you and your students?
- Does a starting point now stand out in the grade-level sample problems or MathUP Connections?

Resources to Address Grade Level Expectations:

MathUP Connections

- Collecting, Organizing, and Describing Data, Lessons 1-3
- Displaying and Interpreting Data, Lessons 1-4

Building Fluency Lessons

- Youcubed Data Talks
- Display four different graphs (e.g., broken line graph, circle graph, histogram, stacked bar graph). Which of the graphs is least like the others, and why?
- After students have learned the difference between discrete and continuous data, pose this prompt: "You are collecting data about _____. Fill in the blank, then give some examples of discrete and continuous data that you might collect for this topic."
- Display a broken line graph or histogram without labels. Ask students what the graph might be about. Ask them to justify their thinking.

Sample Problems and Explorations:

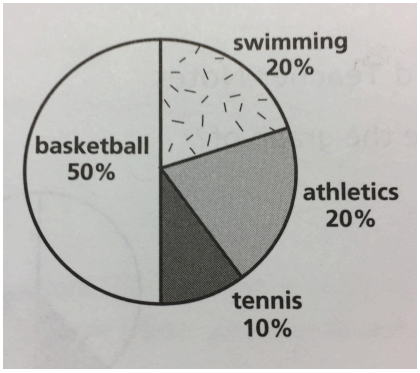
Tier 1 Grade 6 Data- Week at a Glance

Alanna collects data and thinks that the best way to display the data is on a continuous line graph. What data might she have collected? Collect similar data and create a continuous line graph of the data using a digital tool.

Explain how the shape of data can look very different on two different histograms. Give an example that supports your explanation. Explain why someone might want to graph data each of the two ways.

This is the result of a survey of students in grade 6.

How might you show this data in different ways?

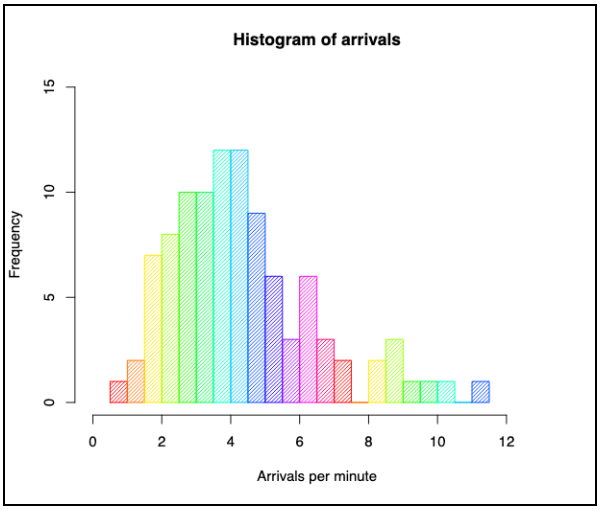


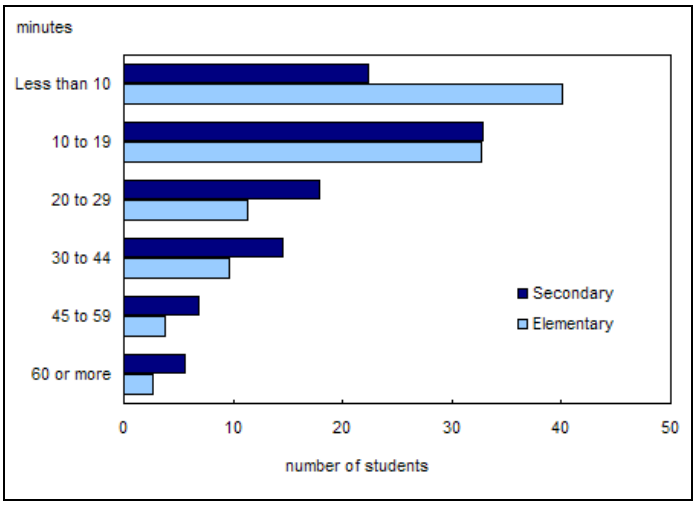
Provide secondary data (See sample at right - Census at School Canada has lots of data sets) to students and have them identify and justify what type of graph would be best to display the data.

Age	Girls mm	Boys mm
8 or younger	152.8	131.4
9	147.1	153.0
10	146.7	148.8
11	149.6	153.7
12	151.6	156.0
13	152.7	160.9

Show students these two graphs.

Ask: What does each graph tell you? What information is missing from each? What are the similarities and differences between the two graphs?





Have students complete a Venn diagram or T-chart to compare bar graphs and histograms, including the type of data displayed in each (discrete vs continuous).

Have all students in the class measure and record (their height in cm, their age in days or months, the length of a leaf, or the time it takes to brush their teeth, for example).

Then, discuss the best way to display this data: Why is a histogram better for displaying this data than a bar graph? (continuous data) How will you determine the intervals you use?

Review how to display data in a graph with proper sources, titles, and labels, and appropriate scales, and then have students complete a histogram of the class set of data.

Introduce students to infographics by looking at a few of these examples:
Canadians' Attitudes Towards Sport (from Canadian Centre for Ethics in Sports)
Canada's Educational Portrait (2016) (from Statistics Canada)
Impact of COVID on Canadian Families (from Statistics Canada)
Physical Activity of Canadian Children and Youth (from Statistics Canada)
The Internet and Digital Technology (from Statistics Canada)
Media Use by Teens and Tweens (2019 - U.S. data) (from Common Sense Media)

Co-create an anchor chart with students of the characteristics of an infographic and/or what makes an infographic effective.
Have students create their own infographics using primary and/or secondary data about a topic of their choice

Models and Tools

Concrete Learning Resources Tools:

- grid paper
- snap cubes
- tiles

Virtual Learning Resources and Tools:

- Stats Canada Infographics
- Infographics
- Remembrance Day Interactive Infographic
- Census at School Canada
- Online Graphing Tool
- NCES Graph Creator
- Google Sheets
- CODAP Data Tool

Expectation Cluster:

D1 manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life

D1.1 describe the difference between discrete and continuous data, and provide examples of each

D1.2 collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using intervals

D1.3 select from among a variety of graphs, including histograms and broken-line graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs

D1.4 create an infographic about a data set, representing the data in appropriate ways, including in tables, histograms, and broken-line graphs, and incorporating any other relevant information that helps to tell a story about the data

C4 Mathematical Modelling: apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations

Mathematical Modelling is a key process expectation that connects across multiple strands. Opportunities to engage students in modelling may arise naturally within rich, real-world contexts — for example, in financial literacy (e.g., creating a budget), measurement (e.g., designing a garden space), or data (e.g., interpreting results from a student survey). We recommend using open-ended tasks where students define problems, make decisions, and justify their thinking — even in informal ways — as early steps toward developing modelling skills.

⭐ **Connections to Essential Key Concepts** ⭐

B1 demonstrate and understanding of numbers and make connections to the way numbers are used in everyday life

B1.4 read, represent, compare, and order decimal numbers up to thousandths, in various contexts

B1.6 describe relationships and show equivalences among fractions and decimal numbers up to thousandths, using appropriate tools and drawings, in various contexts

B2 use knowledge of numbers and operations to solve mathematical problems encountered in everyday life

B2.11 represent and solve problems involving the division of decimal numbers up to thousandths by whole numbers up to 10, using appropriate tools and strategies

B2.12 solve problems involving ratios, including percents and rates, using appropriate tools and strategies

Process Expectation Focus: Representing, Communicating

Resource List of texts referenced in the preparation of these plans, and available in all WRDSB schools.