

## Atlantic Canada Math Outcomes Related to *Census at School* for Grades 4 – 8

Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
<p><b>D8</b> estimate and measure in millimeters, centimeters, decimeters, metres and kilometers</p> <p><b>F1</b> recognize and use a variety of methods for the collection and organization of data</p> <p><b>F2</b> describe data maxima, minima, range and frequency</p> <p><b>F3</b> read and interpret bar graphs, line graphs, pictographs and stem-and-leaf plots</p> <p><b>F5</b> construct bar graphs, pictographs and stem-and-leaf plots</p> <p><b>F6</b> interpolate data from a display</p> <p><b>F7</b> describe data, using the mean</p> <p><b>F8</b> explore real-world issues of interest to students and for which data collection is necessary to determine an answer</p> <p><b>G1</b> predict probabilities as either close to 0, near 1, or near <math>\frac{1}{2}</math></p> <p><b>G3</b> predict whether one simple outcome is more or less likely than another</p>	<p><b>A3</b> interpret, model, and rename fractions</p> <p><b>A10</b> compare and order fractions using conceptual methods</p> <p><b>D4</b> demonstrate an understanding of the relationships among particular SI units</p> <p><b>F1</b> use double bar graphs to display data</p> <p><b>F2</b> use pictographs and bar graphs to display and interpret data</p> <p><b>F3</b> use coordinate graphs to display data</p> <p><b>F4</b> create and interpret line graphs</p> <p><b>F5</b> group data appropriately and use stem-and-leaf plots to describe the data</p> <p><b>F6</b> recognize and explain the effect of certain changes in data on the mean of that data</p> <p><b>F7</b> explore relevant issues for which data collection assists in reaching conclusions</p> <p><b>G2:</b> determine simple theoretical probabilities and use fractions to describe them</p>	<p><b>A3</b> write and interpret ratios, comparing part-to-part and part-to-whole</p> <p><b>A4</b> demonstrate an understanding of equivalent ratios</p> <p><b>A5</b> demonstrate an understanding of the concept of percent as a ratio</p> <p><b>F1</b> choose and evaluate appropriate samples for data collection</p> <p><b>F2</b> identify various types of data sources</p> <p><b>F4</b> use bar graphs, double bar graphs, and stem-and-leaf plots to display data</p> <p><b>F5</b> use circle graphs to represent data proportionally</p> <p><b>F6</b> interpret data represented in scatterplots</p> <p><b>F7</b> make inferences from data displays</p> <p><b>F8</b> demonstrate an understanding of the differences among mean, median, and mode</p> <p><b>F9</b> explore relevant issues for which data collection assists in reaching conclusions</p> <p><b>G2:</b> evaluate the reliability of sampling results</p> <p><b>G3</b> analyse simple probabilistic claims</p>	<p><b>A10</b> illustrate, explain, and express ratios, fractions, decimals, and percents in alternative forms</p> <p><b>A11</b> demonstrate number sense for percent</p> <p><b>B2</b> use mental math strategies for calculations involving integers and decimal numbers</p> <p><b>B6</b> estimate the sum or difference of fractions when appropriate</p> <p><b>B8</b> estimate and determine percent when given the part and the whole</p> <p><b>B9</b> estimate and determine the percent of a number</p> <p><b>B10</b> create and solve problems that involve the use of percent</p> <p><b>C7</b> interpolate and extrapolate number values from a given graph</p> <p><b>C9</b> construct and analyse graphs to show how a change in one quantity affects a related quantity</p> <p><b>F1</b> communicate through example the distinction between biased and unbiased sampling, and first- and second-hand data</p> <p><b>F2</b> formulate questions for investigation from relevant contexts</p> <p><b>F3</b> select, defend, and use appropriate data collection methods and evaluate issues to be considered when collecting data</p> <p><b>F4</b> construct a histogram</p> <p><b>F5</b> construct appropriate data displays, grouping data where appropriate and taking into consideration the nature of the data</p> <p><b>F6</b> read and make inferences for grouped and ungrouped data displays</p> <p><b>F7</b> formulate statistics projects to explore current issues from within mathematics, other subject areas, or the world of students</p> <p><b>F8</b> determine measures of central tendency and how they are affected by data presentations and fluctuations</p> <p><b>F9</b> draw inferences and make predictions based on the variability of data sets, using range and the examination of outliers, gaps, and clusters</p> <p><b>G1</b> identify situations for which the probability would be near 0, <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math>, and 1</p> <p><b>G6</b> use fractions, decimals, and percents as numerical expressions to describe probability</p>	<p><b>B2</b> solve problems involving proportions, using a variety of methods</p> <p><b>B3</b> create and solve problems which involve finding a, b, or c in the relationship <math>a\% \text{ of } b = c</math>, using estimation and calculation</p> <p><b>B5</b> add and subtract fractions concretely, pictorially, and symbolically</p> <p><b>B6</b> add and subtract fractions mentally, when appropriate</p> <p><b>C2</b> interpret graphs that represent linear and non-linear data</p> <p><b>F1</b> demonstrate an understanding of the variability of repeated samples of the same population</p> <p><b>F2</b> develop and apply the concept of randomness</p> <p><b>F3</b> construct and interpret circle graphs</p> <p><b>F4</b> construct and interpret scatter plots and determine a line of best fit by inspection</p> <p><b>F5</b> construct and interpret box-and-whisker plots</p> <p><b>F6</b> extrapolate and interpolate information from graphs</p> <p><b>F7</b> determine the effect of variations in the data on the mean, median and mode</p> <p><b>F8</b> develop and conduct statistics projects to solve problems</p> <p><b>F9</b> evaluate data interpretations that are based on graphs and tables</p> <p><b>G4</b> demonstrate an understanding of how data is used to establish broad probability patterns</p>

## Atlantic Canada Outcomes Related to *Census at School* Activities Grades 9 - 11

Grade 9	Grade 10	Grade 11
<p><b>F1</b> describe characteristics of possible relationships shown in scatter-plots  <b>F2</b> sketch lines of best fit and determine their equations  <b>F3</b> sketch curves of best fit that appear to be non-linear  <b>F4</b> select, defend, and use the most appropriate methods for displaying data  <b>F5</b> draw inferences and make predictions based on data analysis and data displays  <b>F6</b> demonstrate an understanding of the role of data management in society  <b>F7</b> evaluate arguments and interpretations that are based on data analysis</p> <p><b>G3</b> demonstrate an understanding of how experimental and theoretical probabilities are related  <b>G4</b> recognize and explain why decisions based on probabilities may be combinations of theoretical calculations, experimental results, and subjective judgments</p>	<p><b>A2</b> analyse graphs or charts given of situations to identify specific information  <b>A7</b> demonstrate an understanding of and apply the proper use of discrete and continuous number systems</p> <p><b>C1</b> express problems in terms of equations and vice versa  <b>C2</b> model real-world phenomena with linear, quadratic, exponential, and power equations and linear inequalities  <b>C3</b> gather data, plot the data using appropriate scales, and demonstrate an understanding of independent and dependent variables and of domain and range  <b>C4</b> create and analyse scatter plots using appropriate technology  <b>C5</b> sketch graphs from words, tables, and collected data  <b>C8</b> identify, generalize, and apply patterns  <b>C9</b> construct and analyse graphs and tables relating two variables  <b>C10</b> describe real-world relationships depicted by graphs, tables of values, and written descriptions  <b>C14</b> determine the equation of a line using the slope and y-intercept  <b>C15</b> develop and apply strategies for solving problems  <b>C17</b> solve problems using graphing technology  <b>C28</b> explore and describe the dynamics of change depicted in tables and graphs  <b>C32</b> determine if a graph is linear by plotting points in a given situation</p> <p><b>F1</b> design and conduct experiments using statistical methods and scientific inquiry  <b>F2</b> demonstrate an understanding of concerns and issues that pertain to the collection of data  <b>F3</b> construct various displays of data  <b>F4</b> calculate various statistics, using appropriate technology, analyse and interpret displays, and describe the relationships  <b>F5</b> analyse statistical summaries, draw conclusions, and communicate results about distributions of data  <b>F6</b> solve problems by modeling real-world phenomena  <b>F8</b> determine and apply a line of best fit, using the least squares method and median-median method, with and without technology, and describe the differences between the two methods  <b>F9</b> demonstrate an intuitive understanding of correlation  <b>F10</b> use interpolation, extrapolation, and equations to predict and solve problems  <b>F11</b> describe real-world relationships depicted by graphs and tables of values and written descriptions  <b>F13</b> calculate and apply mean and standard deviation, using technology, to determine if a variation makes a difference  <b>F14</b> make and interpret frequency bar graphs while conducting experiments and exploring measurement issues</p>	<p><b>A3</b> demonstrate an understanding of the application of random numbers to statistical sampling</p> <p><b>F1</b> draw inferences about a population from a sample  <b>F2</b> identify bias in a collection, interpretation, and presentation  <b>F4</b> demonstrate an understanding of the differences in the quality of sampling  <b>F7</b> draw inferences from graphs, tables, and reports  <b>F8</b> apply characteristics of normal distributions  <b>F9</b> demonstrate an understanding of the difference between sample standard population deviation and population standard deviation  <b>F10</b> interpret and apply histograms  <b>F11</b> determine, interpret, and apply confidence intervals  <b>F15</b> design and conduct surveys and/or simulate data collection to explore sampling variability  <b>F 16</b> demonstrate an understanding of the difference between situations involving binomial experiments and those which do not</p> <p><b>FX</b> distinguish between descriptive and inferential statistics  <b>FX2</b> demonstrate an understanding of the differences in the quality of sampling methods  <b>FY</b> demonstrate an understanding of how the confidence levels affects the confidence interval  <b>FY2</b> demonstrate an understanding of the role of the central limit theorem in the development of confidence intervals  <b>FY3</b> distinguish between the calculation of confidence intervals for a known population mean versus an unknown population mean  <b>FY4</b> distinguish between the calculation of confidence intervals for a known population proportion versus an unknown population proportion  <b>FY5</b> identify the characteristics of a binomial experiment</p> <p><b>G3</b> graph and interpret sample distributions of the sample mean and sample distributions of the sample proportion</p>

**Note: For details on the Census at School project see [www.censusatschool.ca](http://www.censusatschool.ca)**

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