Unit 1: Day 11 and 12: Summative Task"		MEL4E
Minds On: 30 Action: 100 Consolidate:20 Total=150 min	**Learning Goal**: Students will • Collect, organize, represent, and make inferences from data using a variety of tools and strategies, and describe related applications	**Materials** • Computer Lab • BLM 1.11.1 – BLM1.11.5 • highlighters

				Assessment Opportunities
⬛	**Minds On…**	**Whole Class → Discussion** Provide students an overview of their summative task. Discuss BLM1.11.3 and BLM1.11.4. ***The students are to find an article dealing with statistics that interests them. They will conduct a survey to collect primary data and compare this primary data with the data from the article which is a secondary source.*** Model to the students using the article on BLM1.11.1. Read key points of the article to the students and highlight statistics within the article. **Small Groups → Game "Survey Says"** Take turns asking each group what they think one of the survey questions might be in respect to the article. Check with the questions outlined on BLM1.11.2. Reward points to the group if their response is similar to any of the questions on the survey.		
⬛	**Action!**	**Individual or Pairs → Research** Students research a topic of their choice to obtain data or statistics. Use computer search engines or newspapers to obtain data. Data should be valid from reliable sources. Topics should be approved by teacher. **Individual or Pairs→ Survey** Students create and conduct their survey. Approve topics and questions prior to the conduction of the survey. **Individual or Pairs→ Analysing Data** Students create appropriate graphs for their primary data, reflect on their primary data and compare their findings with the articles. **Mathematical Processes/Performance Task/Rubric** Assess students' use of the process expectations on the task using BLM 1.11.4..	⇒	Performing the summative task in pairs may provide confidence for struggling students. Contact School Librarian to assist in data searching.
⬛	**Consolidate Debrief**	**Whole Class → Reporting** Students report any interesting findings to the class.		
	Application	**Home Activity or Further Classroom Consolidation** Start personal data collection log. BLM1.11.5.		

BLM 1.11.1: Sample Statistic Article

Daily soft drinks - even diet - linked to higher heart disease risk: study

Mon Jul 23, 5:45 PM
By Sheryl Ubelacker

NEWS FROM
Canadian Press

TORONTO (CP) - For those who drink diet pops in the belief that sugar-free beverages are healthier than regular soft drinks, new research suggest they should think again.

A huge U.S. study of middle-aged adults has found that drinking more than one soft drink a day - even a sugar-free diet brand - may be associated with an elevated risk for metabolic syndrome, a cluster of factors that significantly boosts the chance of having a heart attack of stroke and developing diabetes.

"We found that one or more sodas per day increases your risk of new-onset metabolic syndrome by about 45 per cent, and it did not seem to matter if it was regular or diet," Dr. Ramachandran Vasan, senior investigator for the Framingham Heart Study, said Monday from Boston.

Because the corn syrup that sweetens most regular soft drinks can cause weight gain and lead to insulin resistance and diabetes, "you would expect to see an association with regular soft drinks - but not diet soft drinks, he said. "Our findings suggest that this is not the case."

"That for me is striking."

Metabolic syndrome is associated with five specific health indicators: excess abdominal fat; high blood sugar; high triglycerides; low levels of the good cholestrol HDL; and elevated blood pressure.

"And other than high blood pressure, the other four ... all were associated with drinking one or more sodas per day," said Vasan, a professor of medicine at Boston University.

The study included nearly 9,000 observations of middle-aged men and women over four years at three different times. The study looked at how many 355-millilitre cans of cola or other soft drinks a participant consumed each day.

The researchers found that compared to those who drank less than one can per day, subjects who downed one or more soft drinks daily had a:
- 31 per cent greater risk of becoming obeses (with a body mass index of 30 or more).
- 30 per cent increased risk of adding on belly fat.
- 25 per cent higher risk of developing high blood triglycerides or high blood sugar.
- 32 per cent higher risk of having low HDL levels.

But Vasan and his colleagues, whose study was published Monday in Circulation: Journal of the American Heart Association, are unsure what it is about soft drinks that ratchets up the risk of metabolic syndome.

"We really don't know," he said. "This soda consumption may be a marker for a particular dietary pattern or lifestyle. Individuals who drink one or more sodas per day tend to be people who have greater caloric intake. They tend to have more of saturated fats and trans fats in their diet, they tend to be more sedentary, they seem to have lower consumption of fibre."

"And we tried to adjust for all of these in our analysis... but it's very difficult to completely adjust away lifestyle."

BLM 1.11.1: Sample Statistic Article (continued)

While soft drink consumption is declining in Canada, statistics from 2006 showed that Canadians overall still gulp down an average of 85 litres each per year.

Dr. David Jenkins, director of the Risk Factor Modification Centre at St. Michael's Hospital in Toronto, said previous studies have suggested that diet pops did not have the same effects on weight and health as do naturally sweetened soft drinks.

"The unusual thing that needs comment is they (the study authors) say that the diet colas are the sam as the calorically sweetened colas," said Jenkins. "So I think that is the piece that they've put into this puzzle... I think we need a lot more scrutiny of that."

Jenkins said he believes that high consumption of soft drinks likely goes along with eating a high-calorie diet.

"I think the disappointing thing is if you thought you were doing (yourself) a major service ... by taking diets drinks, this is not helping you," he said. "Before we were saying taking the diet (drink) and you're OK. Now we're saying; 'Watch it.'"
The study findings also beg the question whether there is some ingredient in soft drinks - both regular and diet - that may encourage metabolic syndrome.

Caramel, used to colour colas, is an ingredient that goes through a chemical reaction that has been shown in studies to "be quite toxic," said Jenkins. "It's possible that (such products) increase insulin resistance and cause oxidative stress and damage and all the other things we don't want."
Dr. Arya Sharma, chair of cardiovascular obesity research at McMaster University, said one explanation for the link between diet drinks and metabolic syndrome is that their just-as-sugary taste may condition consumers to crave other foods that bring sweetness to the palate.

"So people who drink diet pop may be eating other sweets, whether that comes in the form of dessert or other things, I don't know," Sharma said Monday from Hamilton. "It may be that people who are drinking diet pop - and we have this effect often with people who go on diets or when people go running or whatever - that you do a little bit of something that you think is good, and then you overcompensate by doing more of something that is bad."

"The idea could be because I'm drinking diet pop, I can afford to splurge on dessert."

Vasan said he cannot out-and-out recommend that people stop drinking pop based on this study, because the findings are based on association, not clear cause and effect. More research is needed, he said.

"The simple message is eat healthy, exercise regularly and everything should be done in moderation." he said. "If you're a regular soda drinker you should be aware that this study adds to the evidence that regular soda may be associated with metabolic consequences."

"If you're a diet soda drinker, stay tuned for additional research to confirm or refute these findings."

http://chealth.canoe.ca/channel_health_news_details.asp?news_id=22070&news_channel_id=159&channel_id=159

BLM 1.11.2: Sample Survey Questions

Circle only one response that best describes you.

1.   **Age: 14   15   16   17   18   other**

2.   **Gender: M   or   F**

3.   **What type of pop do you drink?**
Regular   or   Diet

4.   **Which pop do you think is better for you health wise?**
Regular   or   Diet

5.   **How many cans of pop do you drink a day on average?**
(Note: for this survey a small bottle of pop will be considered equivalent to 2 cans of pop and a 2L bottle will be considered equivalent to 4 cans of pop)

a)   **Less than one a day**
b)   **one a day**
c)   **two a day**
d)   **three a day**
e)   **four a day**
f)   **more than four a day**

6.   **Do you drink pop before you go to sleep?**
Yes   or   No

7.   **Do you drink pop for breakfast or before 10 am?**
Yes   or   No

8.   **What particular kind of pop do you drink the most?**
a)   **cola**
b)   **gingerale**
c)   **orange**
d)   **root beer**
e)   **lemon – lime**
f)   **other specify: _____**

9.   **For this question please check off all that apply. When will you drink a pop?**
a)   **breakfast**
b)   **mid morning**
c)   **lunch**
d)   **mid afternoon**
e)   **dinner**
f)   **evening**

BLM 1.11.3: Summative Task

Research:

Using the computer search engines or valid data bases, research a topic of interest to you. Obtain secondary data results. Verify with teacher or teacher librarian on the validity of the data collected.

Survey:

Conduct a survey of students in the school to determine if the school results will reflect the researched data.

1.   Create a Survey

   a)   Ask a minimum of 5 questions with a choice of options that can easily be circled or tallied. Always include an **other** category.
    E.g.   Age: 14   15   16   17   18   other

   b)   Ask questions that will allow you to create a minimum of three (3) different graphs. Suggestions: bar graph (or column graph), histogram, circle graph or broken-line graph.

   c)   Type or print out the questions so that 2 surveys can fit on a page. Surveys should be proofread by another person.

2.   Collect the information on tally charts.

Graphs:

Create a minimum of three (3) different graphs. Use computers or rulers and different colours to create clear, organized, and proper graphs.

Report:

Write a brief report on your results. Reflect on the researched data with the data collected within the school to compare differences and similarities.

BLM 1.11.4: Rubric

	Level 1	Level 2	Level 3	Level 4
Selecting Tools and Computational Strategies				
Selection and use of tools and strategies to solve a problem	Selects and applies appropriate data to create graphs, with major errors, omissions, or mis-sequencing	Selects and applies appropriate data to create graphs, with minor errors, omissions, or mis-sequencing	Selects and applies appropriate data to create graphs, accurately, and logically sequenced	Selects and applies the most appropriate data to create graphs, accurately and logically sequenced
Connecting				
Relating mathematical ideas to situations drawn from other contexts	Makes weak connections between secondary data and primary data	Makes simple connections between secondary data and primary data	Makes appropriate connections between secondary data and primary data	Makes strong connections between secondary data and primary data
Collection of data that can be used to solve the problem	Gathers data that is connected to the topic, yet inappropriate for the research data	Gathers data that is appropriate and connected to the research data, yet missing many significant cases	Gathers data that is appropriate and connected to the research data, including most significant cases	Gathers data that is appropriate and connected to the research data, including all significant cases, including extreme cases
Representing				
Creation of a model to represent the data	Creates graphs that represents little of the range of data	Creates graphs that represents some of the range of data	Creates graphs that represents most of the range of data	Creates graphs that represents the full range of data
Communicating				
Correct use of mathematical symbols, labels, units and conventions across a range of media	Sometimes uses mathematical symbols, labels and conventions correctly	Usually uses mathematical symbols, labels and conventions correctly	Consistently uses mathematical symbols, labels and convention correctly	Consistently and meticulously uses mathematical symbols, labels and conventions, recognizing novel opportunities for their use
Degree of clarity in explanations and justifications in reporting	Explanations and justifications are partially understandable	Explanations and justifications are understandable by me, but would likely be unclear to others	Explanations and justifications are clear for a range of audiences	Explanations and justifications are particularly clear and detailed

BLM 1.11.5: Personal Data Collection Log

Simply check off if the item is an income (I) or expense (E)

	Date	Item	Purpose	I	E	Amount
e.g.	Sept 11	Athletic Fee	Phys. Ed. course		√	$50.00