




Sugar Shocker Education Kit

For Children and Youth

Nutrition Services





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Description



Description of the Sugar Shocker Education Kit

What we drink is important to our overall health and wellness. The purpose of the Sugar Shocker Education Kit is to raise awareness about the amount of added sugar in common drinks and to learn how to make better drink choices.

The Sugar Shocker Education Kit provides fun, interactive activities to help children and youth learn about healthy drinks choices. The lesson plans in this kit support the Alberta Education Health and Life Skills Curriculum, and are applicable and adaptable to all age groups.¹ The items needed to teach the activities are included in this kit. For more resources and information on healthy eating please visit: www.healthyeatingstartshere.ca

Health and Life Skills Curriculum Outcomes

The classroom activities in this booklet are linked to Alberta Education’s Health and Life Skills Curriculum Outcomes. The table below includes the activities and related learning outcomes.

Sugar Shocker Activity	Health and Life Skills Outcomes (W-Wellness)
Liquid Candy	W-K.5: Recognize that nutritious foods are needed for growth and to feel good/have energy; e.g., nutritious snacks.
	W-1.5: Recognize the importance of basic, healthy, nutritional choices to well-being of self; e.g., variety of food, drinking water, eating a nutritious breakfast.
	W-3.5: Apply guidelines from <i>Eating Well with Canada’s Food Guide</i> to individual nutritional circumstances; e.g., active children eat/drink more.
	W-4.5: Analyze the need for variety and moderation in a balanced diet; e.g., role of protein, fats, carbohydrate, minerals, water, vitamins.
	W-6.5: Analyze personal eating behaviours - food and fluids - in a variety of settings; e.g., home, school, restaurants.
Go, Yield, Stop Drinks	W-K.5: Recognize that nutritious foods are needed for growth and to feel good/ have energy; e.g., nutritious snacks.
	W-1.5: Recognize the importance of basic, healthy, nutritional choices to well-being of self; e.g., variety of food, drinking water, eating a nutritious breakfast.
	W-3.5: Apply guidelines from <i>Eating Well with Canada’s Food Guide</i> to individual nutritional circumstances; e.g., active children eat/drink more.
	W-4.5: Analyze the need for variety and moderation in a balanced diet; e.g., role of protein, fats, carbohydrates, minerals, water, vitamins.
	W-6.5: Analyze personal eating behaviours - food and fluids - in a variety of settings; e.g., home, school, restaurants.

Health and Life Skills Curriculum Outcomes (Continued)

The classroom activities in this booklet are linked to Alberta Education’s Health and Life Skills Curriculum Outcomes. The table below includes the activities and related learning outcomes.

Sugar Shocker Activity	Health and Life Skills Outcomes (W-Wellness)
Label Reading	W-7.5: Relate the factors that influence individual food choices to nutritional needs of adolescents; e.g., finances, media, peer pressure, hunger, body image, activity.
	W-8.5: Evaluate personal food choices, and identify strategies to maintain optimal nutrition when eating away from home; e.g., eating healthy fast foods.
	W-9.5: Develop strategies that promote healthy nutritional choices for self and others; e.g., adopt goals that reflect healthy eating, encourage the placement of nutritious food in vending machines.
What is a High Sugar Day for Susan?	W-4.5: Analyze the need for variety and moderation in a balanced diet; e.g., role of protein, fats, carbohydrates, minerals, water, vitamins.
	W-6.5: Analyze personal eating behaviours -food and fluids-in a variety of settings; e.g., home, school, restaurants.
What is a High Sugar Day for Tom?	W-7.5: Relate the factors that influence individual food choices to nutritional needs of adolescents; e.g., finances, media, peer pressure, hunger, body image, activity.
	W-8.5: Evaluate personal food choices, and identify strategies to maintain optimal nutrition when eating away from home; e.g., eating healthy fast foods.
	W-9.5: Develop strategies that promote healthy nutritional choices for self and others; e.g., adopt goals that reflect healthy eating, encourage the placement of nutritious food in vending machines.

Health and Life Skills Curriculum Outcomes (Continued)

The classroom activities in this booklet are linked to the Alberta Education’s Health and Life Skills Curriculum Outcomes. The table below includes the activities and related to learning outcomes.

Sugar Shocker Activity	Health and Life Skills Outcomes (W-Wellness)
Why Drink Water?	W -1.5: Recognize the importance of basic healthy, nutritional choices to well-being of self; e.g., variety of food, drinking water, eating a nutritious breakfast.
	W-3.5: Apply guidelines from <i>Eating Well with Canada’s Food Guide</i> to individual nutritional circumstances; e.g., active children eat/drink more.
	W-4.5: Analyze the need for variety and moderation in a balanced diet; e.g., role of protein, fats, carbohydrates, minerals, water, vitamins.
	W-8.5: Evaluate personal food choices, and identify strategies to maintain optimal nutrition when eating away from home; e.g., eating healthy fast foods.
Water Wit	W -1.5: Recognize the importance of basic healthy, nutritional choices to well-being of self; e.g., variety of food, drinking water, eating a nutritious breakfast.
	W-4.5: Analyze the need for variety and moderation in a balanced diet; e.g., role of protein, fats, carbohydrates, minerals, water, vitamins.
	W-8.5: Evaluate personal food choices, and identify strategies to maintain optimal nutrition when eating away from home; e.g., eating healthy fast foods.
Working With Water	W -1.5: Recognize the importance of basic healthy, nutritional choices to well-being of self; e.g., variety of food, drinking water, eating a nutritious breakfast.
	W-3.5: Apply guidelines from <i>Eating Well with Canada’s Food Guide</i> to individual nutritional circumstances; e.g., active children eat/drink more.
	W-4.5: Analyze the need for variety and moderation in a balanced diet; e.g., role of protein, fats, carbohydrate, minerals, water, vitamins.

Instructions

Required Items for Making the Sugar Shocker Education Kit

See the table below for the required items to make the Sugar Shocker Education Kit. Most items are found in this manual or can be purchased for minimal costs. The amount of materials listed below is intended for a class of 30 students to complete all activities in this kit (unless specified). The quantity of materials may be adjusted as needed for a larger number of students.

Table 1: Handouts and Kit Materials

Quantity	Handouts	Specifics
30	Health Canada. <i>Eating Well with Canada's Food Guide</i>	Available at : (http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php) (ISBN: 0662196481) Free - allow for two weeks delivery time.
30	"Healthy Drinks, Healthy Kids" Handout	Master copy in Appendix 1
Quantity	Print Resources	Specifics
1 set	Drink Photos	Master copy in Appendix 2
1 set	"A Comparison of Nutrients in Drinks" charts	Master copy in Appendix 3 Make copies or load file for display on interactive whiteboard
1 set	Go, Yield, Stop signs	Master copy in Appendix 4 Use in activity
1 set	A High Sugar Day for Susan A High Sugar Day for Tom	Master copy found on page 48 (Grades 4 to 6) and 51 (Grades 7 to 9) Make copies
Quantity	Items	Specifics
5	Regular teaspoons (5 mL)	Sugar Water Activity page 33
5	Measuring cup or large plastic cup	Sugar Water Activity Should hold 3 cups (750 mL) volume
100 tsp / cubes (500 mL)	White sugar	Sugar Water Activity
66 or 105 tsp / cubes (330 mL – 525 mL)	White sugar	A High Sugar Day for Susan (Grades 4 to 6) page 48 A High Sugar Day for Tom (Grades 7 to 9) page 51
Quantity	Optional Item	Specifics
1	Strong, plastic storage container with lid	To hold items required for one kit At least 40 cm x 22 cm X 21cm

Instructions for Making a Sugar Shocker Educational Kit

Please see the table found on page 10 with required handouts, print materials and items to make the Sugar Shocker Educational Kit.

1. Laminate a complete set of the following print materials:
 - Drink Photos (found in Appendix 2)
 - “Go”, “Yield”, “Stop” signs (found in Appendix 4)
2. Load the following files or make copies to display on interactive whiteboard:
 - High Sugar Day for Susan (page 48)
 - High Sugar Day for Tom (page 51)
 - Comparison of Nutrients in Drinks (found in Appendix 3)
3. Collect the required handouts and other items to complete the kit.
4. Store and transport this kit in a plastic storage container.

Optional: Creating the Sugar Shocker Kit with Drink Containers

1. Collect empty containers for the drinks listed in the table on page 12. Rinse and air dry.
2. Label a clear plastic zip tight bag with the name of each drink and the container volume.
3. Put the designated teaspoons of sugar into each drinks’ bag as specified in the table on page 12: *Average Amount of Sugar in Drinks*.
 - Note: one sugar cube is equal to 1 teaspoon (5 mL) of sugar.
 - If making a complete set 209 tsp or cubes, 4 ¼ cups or about 1 kg of sugar is required.
4. Label the number of teaspoons of sugar that each clear plastic zip-tight bag contains.
5. Store and transport this kit in a plastic storage container.

Average Amount of Added Sugar in Drinks

This is an overview chart of the sugar content for the drinks included in the Sugar Shocker Kit.

Drink	Serving Size	Average added sugar per serving	Average added sugar per 1 cup (250 mL)
Choose Most Often			
Water	Any amount	0 tsp	0 tsp
1% milk	1 cup (250 mL)	0 tsp	0 tsp
Unsweetened fortified soy beverage	1 cup (250 mL)	0 tsp	0 tsp
100% fruit juice, unsweetened	½ cup (125 mL)	0 tsp	0 tsp
Choose Sometimes			
Flavoured milks (chocolate, strawberry, banana and vanilla)	1 cup (250 mL)	4 tsp	4 tsp
Flavoured fortified soy beverage	1 cup (250 mL)	4 tsp	4 tsp
Choose Least Often			
Candy bar milkshake	1 cup (250 mL)	7 tsp	7 tsp
Fruit flavoured drink	1 bottle (591 mL)	18 tsp	8 tsp
Ice slush	1 large (1.18 L)	36 tsp	8 tsp
Iced coffee slush	1⅓ cups (414 mL)	12 tsp	7 tsp
Sweetened iced tea	1 bottle (591 mL)	13 tsp	6 tsp
Sugar sweetened can pop	1 can (355 mL)	10 tsp	7 tsp
Sugar sweetened fountain pop	1 large (1.9 L)	57 tsp	7.5 tsp
Sugar sweetened bottle of pop	1 bottle (591 mL)	18 tsp	8 tsp
Sports drink	1 bottle (710 mL)	10 tsp	4 tsp
Vitamin enhanced water	1 bottle (591 mL)	6 tsp	2.5 tsp
Avoid			
Energy drink	1 can (473 mL)	14 tsp	8 tsp

*Adapted from *Healthy Drinks Healthy Kids*. Please note the table above shows the average added sugar value for each type and size of drink. The amount of sugar in drinks may vary depending on the manufacturer. 4 g sugar = 1 tsp (5 mL). 1 cup = 250 mL.

Background

Background: Why is Too Much Sugar an Issue?

Sugar enriches taste and texture of foods and drinks. It adds flavour and enjoyment to eating. However, when consumed in large amounts, too much sugar can become a problem.

Obesity

In Canada, it is estimated that 22%, or approximately one in five youth, are overweight or obese.² Higher results were found in a recent Alberta study, in which 26% of grade five students were either overweight or obese.³ Unhealthy eating habits and physical inactivity can contribute to excess weight gain beyond normal growth.⁴ Over time, excess weight can increase a child's risk of developing heart disease, type 2 diabetes and cancer. It can also have a negative impact on mental health, such as poor self esteem.⁴

Currently, there is some evidence that consuming sugar-sweetened beverages is associated with obesity.⁵ However, more research is needed.^{6,7,8} Many of these beverages come in large sizes and it can be easy to drink a lot of sugar. Since sugar provides calories (energy) for the body, drinking too many sugar-sweetened drinks can result in increased overall calorie intake, which may lead to excess weight gain.⁵ Reducing sugar sweetened drinks in a child's diet can play an important role in maintaining a healthy weight. For example, at least one study found that reducing liquid calories had more of an impact on weight than reducing calories from food.⁹

Cardiovascular Disease (Heart Disease)

An increased consumption of sugar sweetened drinks and other sources of sugar may result in an increased risk of overweight and obesity.⁵ When people are overweight, the chance of developing heart disease also increases.¹⁰ Furthermore, studies have shown that consuming a large amount of sugar may increase a type of fat found in our blood, called triglycerides. High triglyceride levels in our blood can speed up the development of atherosclerosis (build up of fat on the walls of blood vessels).¹¹

Diabetes

Being overweight also increases the risk of developing type 2 diabetes and its complications.¹² When people with diabetes consume high sugar food and drinks on a regular basis, they may experience higher blood glucose (blood sugar) levels.¹² High blood glucose levels over time increases the chance of developing diabetes complications which can affect the kidneys (nephropathy), nerves (neuropathy), eyes (retinopathy) and heart (cardiovascular disease).¹²



Background: Why is Too Much Sugar an Issue? (Continued)

Dental Cavities

Sugar is one of the main causes of dental cavities.¹³ Other contributing factors are poor oral hygiene, lack of fluoride in drinking water and frequency of meals and snacks. However, the World Health Organization observed that in countries where the populations have a lower sugar intake, there is also a lower rate of cavities.¹³

Nutrition

When high sugar foods or drinks (pop, baked goods, candies and cereals with added sugar) are eaten instead of more nutritious foods, the body may not get enough vitamins, minerals and other important nutrients.¹⁴ For example, if people choose sugar sweetened pop instead of milk, they may not get enough of calcium and vitamin D. High sugar food and drinks are often called “empty calories” because they are typically high in calories and low in nutrients.¹⁴

Behaviour

Despite popular belief, there is no evidence that sugar intake is linked to hyperactivity. This belief can be partly explained by the fact that many adults mistake a child’s excitement surrounding, rather than to the event itself.¹⁴ Current evidence does not find that sugar affects behaviour or cognitive performance.¹⁴

Additionally, when high sugar foods are limited in a child’s diet they are usually replaced with healthier food choices. This results in improved nutrition overall which has a positive effect on behaviour.¹⁴

Background: Types of Sugar

Added Sugars and Naturally Occurring Sugars

Our **total sugar intake** includes sugar that is added during food processing (added sugar) and sugar that occurs naturally in food (naturally occurring sugar).¹⁴ Both added sugars and naturally occurring sugars have the same amount of calories. When consumed in large amounts, sugar may lead to weight gain and other health problems. Additionally, many foods containing added sugars usually offer little or no vitamins and minerals. Consuming a diet with large amounts of added sugars are associated with lower vitamin and mineral intakes and are therefore more likely to have a negative impact on health.^{6,14}

Naturally Occurring Sugars: include sugars that occur naturally in a variety of food or drinks found in *Eating Well with Canada's Food Guide*. For example, lactose is a natural sugar in milk, while fructose is a natural sugar in fruit.¹⁴ Although some foods and drinks contain natural sugar, like fruit and milk, they are also full of nutrients. They are recommended as part of healthy eating and can contribute to good health.

Added Sugars: are defined as all sugars and syrups that are added to foods during processing and preparation.¹⁴ Typical foods and drinks that are a major source of added sugars include:

- sugar sweetened soft drinks (pop);
- fruit drinks;
- candies and chocolates;
- cakes;
- cookies and other baked items;
- sweetened breakfast cereals.

Types of Added Sugar:

There are many sources of added sugars. Below are a few examples:

- Table sugar (sucrose) comes from raw sugar cane or the sugar beet plant. Sucrose is produced naturally in plants.¹⁴
- High-fructose corn syrup has the same chemical components as sugar (sucrose). Some people have raised concerns about high-fructose corn syrup. However, there is lack of evidence that high-fructose corn syrup is less healthy than other types of added sugars.¹⁵
- Glucose is a simple sugar that is found in table sugar (sucrose).
- Dextrose is a simple sugar found in honey.
- Fructose is a simple sugar that is naturally found in fruit.
- Molasses is a sugar by-product of processing sugar cane or sugar beet plants.
- Honey is a type of sugar that is made from bees using the nectar from flowers.
- Syrup – there are a variety of syrups used in food or drink production. Some syrups are made from the sugars above and others are made from plants such as maple or agave.

Remember to judge a drink or food by the nutrients it offers rather than simply the sugar content.

Background: Average Added Sugar Intake of Canadians

Many health research organizations have started to develop guidelines on the recommended intake of added sugar. There is strong agreement to limit overall sugar intake.^{6,10,17,18} Please see the following page for the suggested maximum intake of added sugar outlined by the World Health Organization. The Canadian Sugar Institute estimates that Canadians currently consume approximately 13% of total energy intake from added sugars.¹⁶ This means the estimated intake of sugar in teaspoons per day for Canadians is:

Table 3: Estimated Added Sugar Intake in Canada

Age in years	Daily amount in teaspoons
4 – 8	10.5
9 – 13	13.5
14 – 18	17.0

Calculations based on energy intakes from *Eating Well with Canada's Food Guide*,¹⁷ with the average added sugar being 13% of total energy intake.¹⁸

To put the above amounts into perspective, an average can of sugar sweetened pop (355 mL) contains 10 teaspoons (50 mL) of added sugar.

What Are the Main Food or Drink Sources of Added Sugar?

Information on the main sources of added sugar in Canadian diets is limited. Food consumption surveys in the United States revealed sugar sweetened soft drinks (pop) were the leading source of added sugars (32%), followed by fruit flavoured drinks (15%), sweetened grain products (11%), sweetened dairy products (8%), and candy (7%).¹⁸ Combined, these foods and drinks accounted for 73% of added sugars intake in the United States.¹⁷



Background: What is the Suggested Maximum Intake of Added Sugar?

The World Health Organization recommends that people have no more than 10% of their total energy (calorie) intake from added sugars.^{19,20} As noted previously, “added sugars” are defined as all sugars and syrups that are added to food and drinks during processing and preparation. The Dietary Reference Intakes (DRI) report notes that individuals who consume more than 25% of their energy from added sugar have decreased intake of vitamins and minerals.⁶ More studies are needed to know how much added sugar or total sugar increases risk for specific diseases.⁶

Table 4: Recommended Maximum Intake of Added Sugar Suggested by the World Health Organization

Age in years	Daily amount in teaspoons
4 – 8	8
9 – 13	10.5
14 – 18	13

Calculations based energy intakes from *Eating Well with Canada’s Food Guide*,¹⁷ with the maximum added sugar being 10% of total calories.^{19,20}

Added sugar intake should be minimized. Many drinks with added sugar have low or no nutritional value.²¹ Although sugar in fruit juice is naturally occurring, it is still recommended to limit fruit juice to a ½ cup (125 mL) serving per day²¹. Instead, encourage consumption of whole fruits and vegetables, as they contain fibre and are more satisfying.



Background: Healthy Drink Choices and Fluid Requirements

Water—Why is it Important?

Water makes up 60 – 70% of the body’s weight and it is important for many functions in the body. It helps to:²²

- carry nutrients;
- remove waste;
- cool the body (sweat);
- digest food;
- help with the repair and replacement of old tissue;
- act as a cushion for organs and joints.

Water is lost through our skin, lungs, kidneys and digestive system every day. In order for our body to function properly, we need to get water from fluids and the food we eat.²²

What Food and Drinks Provide Water?

We get about 20% of our water needs from food. Watermelon, oranges, grapes, cucumbers, tomatoes and peppers are some of the foods that have a higher water content.²² Drinks provide about 80% of the water for the body.²² Healthy drinks include water, milk and 100% juice (no more than ½ cup (125 mL) per day).²¹ For young athletes, water is the best drink choice for most activities.²³ Sports drinks are high in sugar and low in nutrients; they are only needed if a person is participating in endurance activities lasting over 60 minutes.²⁴ Caffeinated drinks such as cola and tea can also count towards total fluid intake²² however consuming large amounts of caffeine may also lead to other health problems (see *Background: Caffeinated Drinks and Energy Drinks* on Page 21).

Fluid Requirements

Fluid needs depend on someone’s age, gender, body size, and activity level.²² Under room temperature and a normal amount of physical activity, the daily recommended fluid amounts are:

Table 5: Recommended Fluid Amounts Per Day Including Water²²

Age in years	Approximate Fluid from all Drinks Per Day	
	cups	mL
1 – 3	4	1000
4 – 8	5	1250
9 – 13	6 – 7	1500 – 1750
14 – 18	7 – 11	1750 – 2750




Fluid needs increase in hot climates, dry weather or with increases in physical activity. Thirst is not always a good indicator in guiding the body to drink adequate fluids.²²

Background: Healthy Drink Choices and Fluid Requirements

What are Healthy Drinks?

The *Alberta Nutrition Guidelines for Children and Youth* uses a food rating system as a simple way to separate healthy food and drinks from less healthy food and drinks.²¹ The food rating system includes three categories: *Choose Most Often*, *Choose Sometimes* and *Choose Least Often*. The familiar symbols “Go, Yield and Stop” are used to identify the three categories.²¹ The *Alberta Nutrition Guidelines for Children and Youth* were developed to complement Health Canada’s recommendations in *Eating Well with Canada’s Food Guide*.

Table 6: Go, Yield, Stop Drinks

Drinks	Examples	Comments
Choose Most Often 	Milk (skim, 1% or 2% milk)	These are healthy to choose every day. These drinks are all recommended as healthy choices in <i>Eating Well with Canada’s Food Guide</i> . Note: The <i>Alberta Nutrition Guidelines for Children and Youth</i> recommends no more than ½ cup (125 mL) juice per day. ²¹
	Fortified soy beverage	
	Plain water	
Choose Sometimes 	Flavoured milks (chocolate, strawberry, banana and vanilla)	These are healthy drinks that may have added sugar and fat.
	Flavoured fortified soy beverage	
Choose Least Often 	Sugar sweetened pop	These are drinks that are low in nutrients and high in sugar and/or fat and may contain sugar substitutes.
	Sweetened iced tea	
	Ice slush	
	Iced coffee slush	
	Sports drink	
	Fruit flavoured drink	
	Vitamin enhanced water	
Candy bar milkshake		

Note: Energy Drinks are not recommended for children and youth and should be avoided.

Background: Caffeinated Drinks

There are many caffeinated drinks sold on the market such as cola, coffee, tea and energy drinks. Consuming caffeinated drinks may help people to stay more alert.²⁵ However, having too much caffeine may lead to undesirable effects such as headache, drowsiness, fatigue, irritability, anxiety and depression.²⁶ Studies have shown that consuming too much caffeine may have an adverse effect on children and youth's behaviour such as inability to concentrate and increased restlessness.²⁵ It is recommended to avoid caffeine and to have non-caffeinated drinks instead, like water and milk.

Below is a table comparing the amount of caffeine in different foods and drinks.

Table 7: Caffeine Content in Common Foods and Drinks²⁷

Food or Drink Item	Serving Size	Average Caffeine Content (mg)
Coffee, brewed	1 cup (250 mL)	135
Tea, bag	1 cup (250 mL)	50
Cola	1 can (355 mL)	45
Candy, Sweet Chocolate	1 ounce (28 g)	20

Recommendation for Caffeine Intake

The *Alberta Nutrition Guidelines for Children and Youth* recommend that children and youth should avoid caffeine.²¹ Many of the drinks that contain caffeine are also high in sugar and low in nutrients. The table below summarizes the recommendations suggested by Health Canada for maximum daily caffeine consumption.

Table 8: Maximum Total Caffeine Intake per Day

Age (years)	Maximum Daily Caffeine Intake (mg) ²⁶	Equal to
4 – 6	45	about 1 can (355 mL) of cola*
7 – 9	62.5	about 1.5 cans (533 mL) of cola*
10 – 12	85	about 2 cans (710 mL) of cola*

*Note: These drink choices are also high in sugar, see *Background: Average Added Sugar Intake of Canadians* on Page 17.

Background: Caffeinated Drinks (continued)

Specialty Coffee Drinks

Many coffee drinks are made with flavoured milk, cream and syrups. These additional ingredients increase our overall sugar, fat, and calorie intake. For example, the table below shows that a cup of iced slush coffee has over 70 times more calories, 26 g more sugar and 9 g more fat than a cup of brewed coffee.^{28,29}

Table 9: Comparison of Brewed Coffee and Iced Slush Coffee^{28,29}

Drink per 1 cup/250 mL	Calories(kcals)	Sugar (g)	Fat (g)
Brewed coffee	3	0	0
Iced slush coffee	220	29	9.5

Keep in mind that most specialty coffee drinks usually come in larger portion sizes, which contain even more calories, sugar, fat and caffeine.



Background: Energy Drinks

Energy Drinks

Energy drinks contain caffeine, as well as a variety of vitamins and herbs. These drinks are advertised to give individuals a “boost of energy”, but there is not enough research to support this claim.³⁰

How Have Energy Drink Labels changed?

Energy drinks were originally classified as natural health products, not as regular beverages. Natural Health Products do not follow the same regulations as a food or beverage item and provide much less information on their label.³¹

In Canada, energy drinks have been reclassified as food and beverage and must meet the same labeling standards as food and beverage items.³¹ As of December 2013, all energy drink labels must include a nutrition facts table, a more detailed ingredient list, and the total caffeine content from all sources (natural and added caffeine) must be identified.^{32,33} There is now a limit to the amount of caffeine that can be in a single serving. There are also guidelines providing maximums for the levels of added vitamins, minerals, amino acids and food additives.^{32,33}

However, energy shots are still considered a natural health product because of their small size. They will remain as a natural health product.³²

Are Energy Drinks Healthier Now?

Although the new labeling regulations are a positive change, energy drinks are still not a healthy choice. Energy drinks are not recommended for children and youth because of their high levels of caffeine, large quantities of vitamins and minerals and other ingredients such as herbal extracts.^{32,34} Even though Health Canada has set a limit on caffeine in a single serving, the amount in a single serving could still be higher than the recommended maximum daily intake for children and youth. Therefore some energy drinks may provide more caffeine than is considered safe, especially if youth have multiple energy drinks in a day.³⁴ Drinking large amounts may lead to serious health effects, such as irregular heart function, nausea, vomiting and electrolyte disturbances.³⁵

Energy drinks are not the same as sports drinks. For rehydration during physical activity, it is advised to choose water first. It is recommended to choose a sports drink only if exercise is intense and for at least 60 minutes or more.^{23,24}



Background Information: Vitamin Enhanced Waters and Sugar Substitutes

Flavoured and Enhanced Vitamin/Mineral Water

The introduction of flavoured and vitamin enhanced water is the latest marketing trend towards encouraging consumers to buy more water. Most of these products imply that they provide extra energy, serve as an electrolyte replacement/supplement or improve athletic performance. Research shows that taking a vitamin/mineral supplement does not improve athletic performance in individuals consuming a balanced diet.³⁶

Vitamin enhanced waters typically contain vitamin C and several B vitamins. Most individuals can meet their requirements for these vitamins by eating a variety of vegetables, fruits and grain products. If you are getting enough of these vitamins from food choices, then your body will get rid of the excess vitamins provided by these products through your urine.³⁷

Flavoured and enhanced vitamin or mineral waters may contain added sugar, sugar substitutes and herbal ingredients such as ginseng, chamomile, etc. There is little evidence to support the effect and safety of herbals in these products.³⁸

Sugar Substitutes

The *Alberta Nutrition Guidelines for Children and Youth* does not recommend drinks that are sweetened with sugar substitutes.²¹ The rationale is that the long term studies on the use of sugar substitutes among these age groups have not been done.²² Many of the drinks with sugar substitutes have low nutritional value.²¹ Therefore, they are not a healthy alternative to the sugar sweetened drinks.



Activities

- Liquid Candy
- Sugar Water
- Go, Yield, Stop Drinks
- Label Reading
- What is a High Sugar Day for Susan?
- What is a High Sugar Day for Tom?
- Why Drink Water?
- Water Wit
- Working with Water

Activity: Liquid Candy

Learning Outcomes

Participants are able to identify:

- the amount of sugar in some common drinks;
- drinks that are lower in sugar and higher in nutrients.

Key Messages

- Typical drinks that many students have on a daily basis are high in sugar and low in nutrients.
- Sugary drinks often replace healthy drinks, like water or milk, and can contribute to overall poor nutrition.
- It is important to judge a drink or food by the nutrients it offers rather than simply the sugar content.

Required Items

Load file for display on interactive whiteboard or print a copy of:

- “*Healthy Drinks, Healthy Kids*” handout – one copy for each student, in Appendix 1;
- The “*Drink Photos*” in Appendix 2, including individual drink photos, comparison drink photos and sugar for one year photos;
- “*A Comparison of Nutrients in Drinks*” in Appendix 3.

Instructions

1. For each photo of an individual drink, show the picture of the drink (without the sugar), so that all the students can see it. Ask the students to guess the number of teaspoons of sugar in the drink.
2. After the students have had a chance to guess the number of teaspoons of sugar, reveal the answer and show the picture of the drink with teaspoons of sugar.
3. Refer to the “*Drink Key Messages*” on the following pages to facilitate a discussion on each drink.
4. During the discussion, show the photo illustrating the total sugar content for consuming the same drink every day for a year.
5. If “*Comparing drinks*” activities are used, show the graphs and the photos that support the activities.
6. Provide each student with the “*Healthy Drinks, Healthy Kids*” handout to take home.

Activity: Liquid Candy (Continued)

Liquid Candy Key Messages

Pop:

- Pop is often called “liquid candy” because it contains large amounts of added sugar and has low nutritional value.²¹
- Having sugary drinks, like sugar sweetened pop, on a regular basis can result in a higher energy (calorie) intake, which may lead to excess weight gain beyond normal growth.⁵
- **Can of sugar sweetened pop:** *If a student had 1 can (355 mL) of sugar sweetened pop every day for a year, they would have consumed 32.1 pounds (14.6 kg) of added sugar. (Show the photo of the sugar content for a year.)*
- **Bottle of sugar sweetened pop:** *If a student had 1 bottle (591 mL) of sugar sweetened pop every day for a year, they would have consumed 32.1 pounds (26.3 kg) of added sugar. (Show the photo of the sugar content for a year.)*

Rationale for calculations:

Can of sugar sweetened pop:

- 1 can of sugar sweetened pop contains 10 tsp (50 mL) of added sugar, which equals 40 g sugar
- 40 g sugar x 365 days in a year = 14,600 g sugar
- 14,600 g sugar / 454 g in 1 pound = 32.1 pounds (14.6 kg) sugar

Bottle of sugar sweetened pop:

- 1 bottle of sugar sweetened pop contains 18 tsp (90 mL) of added sugar, which equals 72 g sugar
- 72 g sugar x 365 days in a year = 26,280 g sugar
- 26,280 g sugar / 454 g in 1 pound = 57.9 pounds (26.3 kg) of sugar

Sports Drinks:

- Water is the best choice during and after exercise for most kids and teens.²³
- Sports drinks have added sugar and contain minerals (sodium and potassium). Sports drinks are designed for athletes because they hydrate, provide energy, replace the sodium and small amounts of potassium that are lost through sweat.³⁹
- Sports drinks may be helpful for intense activity, like competitive sports, that last 60 minutes or longer. For lower intensity activity, like riding a bicycle, sports drinks may be helpful if activity lasts a long time (at least three hours).²⁴
- Sports drinks are not recommended as an alternative to water when kids and teens are not active.
- *If a student had 1 bottle (710 mL) of sports drink every day for a year, they would have consumed 32.1 pounds (14.6 kg) of added sugar. (Show the photo of the sugar content for a year.)*

Activity: Liquid Candy (Continued)

Liquid Candy Key Messages

Rationale for calculations:

- 1 bottle (710 mL) of a sports drink has 10 tsp (50 mL) of added sugar, which equals 40 g sugar
- 40 g sugar x 365 days in a year = 14,600 g sugar
- 14,600 g sugar / 454 g in 1 pound = 32.1 pounds (14.6 kg) sugar

Iced tea:

- Sweetened iced tea is very high in sugar and has low nutritional value.²¹ It is similar to sugar sweetened pop.
- If a student had 1 bottle (591 mL) of sweetened iced tea every day for a whole year, they would have 41.8 pounds (19 kg) of added sugar. (Show the photo of the sugar content for a year.)

Rationale for calculations:

- 1 bottle (591 mL) of iced tea has 13 tsp (65 mL) of added sugar, which equals 52 g sugar
- 52 g sugar x 365 days in a year = 18,980 g sugar
- 18,980 g sugar / 454 g in 1 pound = 41.8 pounds (19 kg) of sugar

100% Unsweetened Fruit or Vegetable Juice:

- 100% pure fruit or vegetable juices have no added sugar and contain vitamins and minerals. However, 100% juice is high in natural sugar, especially fruit juice.
- Unlike whole vegetables and fruit, juice contains little or no fibre. Therefore, it is healthier to eat fruits or vegetables instead of drinking juice.
- The *Alberta Nutrition Guidelines for Children and Youth* recommends that children and youth drink no more than ½ cup (125 mL) of 100% unsweetened juice per day.²¹

Fruit Flavoured Drinks:

- A fruit flavoured drink may have “drink”, “beverage”, “punch”, “-ade” or “cocktail” in the name. It has little or no fruit juice in it.
- Fruit flavoured drinks contain sugar, flavour and water and have low nutritional value.²¹
- Although the total sugar content of fruit flavoured drink and unsweetened juice might be similar, the fruit drink contains fewer nutrients than the 100% juice.²⁸

Comparing Drinks

Hold up a copy of the comparison charts (Appendix 3) of *Nutrients Based on a 250 mL Serving Size* for 100% unsweetened juice and fruit flavoured drink. 100% orange juice contains more nutrients as shown by the bars on the graph, meaning it is rich in nutrients. On the other hand, fruit flavoured drink is low in nutrients as shown by the bars. You may also show the comparison photo from Appendix 2 for 100% unsweetened juice and fruit flavoured drink.

Activity: Liquid Candy (Continued)

Liquid Candy Key Messages

Comparing Drinks

Hold up a copy of the comparison charts (Appendix 3) of *Nutrients Based on a 250 mL Serving Size* for sugar sweetened pop and fruit flavoured drink. Point out that both sugar sweetened pop and fruit drink are similar in that they do not contain many nutrients. You may also show the comparison photo from Appendix 2 for sugar sweetened pop and fruit flavoured drink.

Vitamin Enhanced Water:

- Vitamin enhanced waters are fortified with a variety of vitamins, additives and often contain added sugar. Some vitamin enhanced waters contain caffeine.
- Vitamin enhanced waters are expensive and not necessary. Vitamin and mineral supplements cannot replace the health benefits that come from eating a variety of foods from *Eating Well with Canada's Food Guide* including, vegetables and fruits, whole grain products, milk and alternatives and meats and alternatives.⁴⁰
- Plain water and milk (or fortified soy beverage) are the recommended drinks our body needs every day.
- For more information on vitamin enhanced waters, see page 24 of this manual.

Iced Coffee Slush:

- Iced coffee slushes can be very high in sugar and fat. They are often made with sugar and cream or higher fat milk products.
- *If a student had 1 iced coffee slush (414 mL) every day for a whole year, they would have consumed 38.6 pounds (17.5 kg) of added sugar. (Show the photo of the sugar content for a year.)*

Rationale for calculations:

- *1 iced coffee slush (414 mL) has 12 tsp (60 mL) of added sugar, which equals 48 g sugar*
- *48 g sugar x 365 days of a year = 17,520 g sugar*
- *17,520 g sugar / 454 g in 1 pound = 38.6 pounds (17.5 kg) sugar*

Activity: Liquid Candy (Continued)

Liquid Candy Key Messages

Energy Drink:

- Energy drinks often contain a lot of sugar and caffeine. In fact, one energy drink can exceed the maximum amount of caffeine per day for children and youth.³⁴ The total caffeine content, including added and natural caffeine sources, is listed on the energy drink label.³⁴
- Side effects of too much caffeine include: nausea, irritability, increased heart rate, increased blood pressure, diarrhea, anxiety and mood changes.³⁵
- Energy drinks should be avoided by children and youth due to their high levels of caffeine, large quantities of vitamins and minerals and other ingredients, such as herbal extracts.^{32,34}
- *If a student had 1 energy drink (473 ml) every day for a whole year, they would have consumed 45 pounds (20.5 kg) of added sugar. (Show the photo of the sugar content for a year.)*

Rationale for calculations:

- *1 energy drink has 14 tsp (70 mL) of added sugar, which equals 56 g sugar*
- *56 g sugar x 365 days of a year = 20,440 g sugar*
- *20,440 g sugar / 454 g in 1 pound = 45 pounds (20.5 kg) sugar*

Iced Slush:

- Iced slushes are very high in sugar and are low in nutritional value.²¹
- *If a student had 1 large (1.18 L) iced slush every day for a whole year, they would have consumed 115.8 pounds (52.6 kg) of added sugar. (Show the photo of the sugar content for a year.)*

Rationale for calculations:

- *1 large (1.18 L) iced slush has 36 tsp (180 mL) of sugar, which equals 144 g sugar*
- *144 g sugar x 365 days of a year = 52,560 g sugar*
- *52,560 g sugar / 454 g in 1 pound = 115.8 pounds (52.6 kg) sugar*

Large Fountain Pop:

- Sugar sweetened large fountain pops contain a huge amount of sugar and have low nutritional value.²¹
- A large sugar sweetened fountain pop is equivalent to approximately 5.5 x 355 mL cans of sugar sweetened pop.
- *If a student had 1 large sugar sweetened fountain pop every day for a whole year, they would have consumed 183 pounds (83.2 kg) of added sugar. (Show the photo of the sugar content for a year.)*

Rationale for calculations:

- *1 large sugar sweetened fountain pop has 57 tsp (285 mL) of added sugar, which equals 228 g sugar*
- *228 g sugar x 365 days of a year = 83,220 g sugar*
- *83,220 g sugar / 454 g in 1 pound = 183 pounds (83.2 kg) of sugar*

Activity: Liquid Candy (Continued)

Liquid Candy Key Messages

White Milk or Fortified Soy Beverage:

- White milk and fortified soy beverage do not contain any added sugar and are high in nutrients.²¹ *Eating Well with Canada's Food Guide* tells us to have 2 cups of low fat milk (skim, 1% or 2% milk) or fortified soy beverage everyday to keep strong bones and teeth.²¹

Flavoured Milk or Flavoured Fortified Soy Beverage: Chocolate Example

- Although chocolate milk or chocolate fortified soy beverage provides the same nutrients as white milk or plain fortified soy beverage they contain added sugars. Therefore, these drinks fit in the *Choose Sometimes* category.
- Tip: To lower the sugar content, mix white milk and chocolate milk to make your own chocolate milk, or, add only a small amount of chocolate powder/syrup.

Comparing Drinks

Hold up a printed copy of (Appendix 3) of *Nutrients Based on a 250 mL Serving Size* for white milk and chocolate milk. As shown on the graphs, both white milk and chocolate milk contain the same amount of nutrients. However, chocolate milk is still higher in sugar. You may also show the comparison photo from Appendix 2 of white milk and chocolate milk.

Candy Bar Milkshake:

- Candy bar milkshake drinks come in a variety of flavours. Some look very similar to chocolate milk, but they are different. Candy bar milkshakes have added fat and almost twice the added sugar of chocolate milk.
- Candy bar milkshakes fit into the *Choose Least Often* category because they are high in sugar and fat.



Activity: Liquid Candy (Continued)

Additional Learning Opportunities (Grade 3 - 4)

Use the questions below to initiate a discussion on the factors that influence fluid requirements. Refer to page 19 for information on fluid requirements and healthy drink choices.

Question: True or false? All people need to drink the same amount each day.

Answer: False. The amount a person needs to drink in a day depends on:

- Age – teenagers and adults need to drink more than younger children.
- Activity level – people that are active need to drink more than people that are not active.
- People who live in warm climates may need to drink more water than people who live in colder climates.

Question: True or false? The only drinks our body needs each day are water and milk (fortified soy beverage).

Answer: True

- Water is very important and helps every part of our body to work well. Drink water often throughout the day. If you are active or it is hot outside, you need to drink more water.
- Drinking milk or fortified soy beverage is important for building strong bones and teeth. Children and youth need to have 2 – 3 cups (500 mL – 750 mL) of milk or fortified soy beverage each day.
- 100% fruit juice is a healthy choice, but not needed daily. Unlike whole vegetables and fruit, juice contains little or no fibre. Therefore, it is healthier to eat fruits or vegetables instead of drinking juice. A food guide serving of juice is $\frac{1}{2}$ cup (125 mL). The *Alberta Nutrition Guidelines for Children and Youth* recommends that children and youth drink no more than $\frac{1}{2}$ cup (125 mL) of 100% unsweetened juice per day.²¹



Activity: Sugar Water

Additional Learning Opportunities

Participants will discover the amount of sugar needed to make water as sweet as a bottle of sugar sweetened pop.

Required Items

- Measuring cups or large plastic cups that can hold 3 cups (750 mL) of fluid
- Granulated white sugar or sugar cubes, about 500 mL or 100 sugar cubes, enough for 4-5 groups of students
- Paper and pencil
- 4 – 5 Teaspoons (5 mL) enough for each group of students
- “*Healthy Drinks, Healthy Kids*” handout – one copy for each student

Instructions

1. Divide participants into groups of 4-5. Give each group about 2 ¼ cups (600 mL) of water in a cup, approximately 20 teaspoons (100 mL) of sugar, one teaspoon (5 mL), a piece of paper and a pencil.
2. Explain that 600 mL is similar to a bottle of sugar sweetened pop (typical bottle is 591 mL). Ask participants to discuss among themselves how many teaspoons of sugar are needed to make the same amount of water as sweet as the bottled sugar sweetened pop. Have them write down the number on the paper.
3. Each group then adds their chosen amount of sugar into the water. Stir well until dissolved.
4. Get one volunteer from each group to taste their own sugar water. Discuss among group members if the sugar water is as sweet as the bottled sugar sweetened pop.
5. Ask a different volunteer from each group to present findings on:
 - How many teaspoons of sugar have been added to the water?
 - Is the sugar water as sweet as the bottled sugar sweetened pop?
6. Reveal the answer and discuss results.

Answer: about 2 ¼ cups (600 mL) of sugar sweetened pop has 18 tsp (90 mL) of sugar. (4 grams of sugar equals 1 teaspoon (5 mL) of sugar).

Activity: Go, Yield, Stop Drinks

Learning Outcomes

Participants are able to identify:

- drinks that should be consumed daily, occasionally and least often;
- healthier drink choices in settings outside of their home, for example a restaurant.

Key Messages

- When eating at home or eating away from home, students are encouraged to choose drinks from the *Choose Most Often* GO category. Most fast food outlets and restaurants now offer healthier drink choices. Drink Smart!
- The *Alberta Nutrition Guidelines for Children and Youth* uses a food rating system as a simple way to separate healthy food and drinks from less healthy food and drinks. The food rating system includes three categories: *Choose Most Often*, *Choose Sometimes* and *Choose Least Often*. Familiar symbols such as “Go, Yield and Stop” are used to identify the three categories. See below:



Choose Most Often – High nutrient drinks

These drinks should be consumed daily, and are recommended as healthy choices in *Eating Well with Canada’s Food Guide*.



Choose Sometimes – Moderate nutrient drinks

These are healthy drinks that contain added sugar or fat.



Choose Least Often – Low nutrient drinks

These are drinks that are low in nutrients and high in sugar and/or fat and may contain sugar substitutes.

For more information on the *Alberta Nutrition Guidelines for Children and Youth*, see the online version: <http://www.healthyalberta.com/>

Required Items

- “*Healthy Drinks, Healthy Kids*” handout – one copy for each student (Appendix 1)
- A print copy of Drink Photos (Appendix 2)
- One set of Go, Yield, Stop signs (Appendix 4)
- Sticky tac or tape
- *Eating Well with Canada’s Food Guide* – one copy for each student

Activity: Go, Yield, Stop Drinks (Continued)

Instructions

- 1 Place the “Go”, “Yield” and “Stop” signs on the walls in three different corners of the room.
- 2 Explain what the signs represent (*see the Key Messages on the previous page*):
 - *Go* sign = Choose Most Often
 - *Yield* sign = Choose Sometimes
 - *Stop* sign = Choose Least Often
- 3 Give each participant a drink photo from Appendix 2 and sticky tac or tape. Ask participants to decide where their drink belongs. Have participants take turns bringing the drink photo to their choice of corner. Be creative!
- 4 Reveal the correct choice. Refer to the chart on the following page for the answers.
 - If placed correctly, ask the participant to post their drink photo below the sign and walk, skip or jump away (to make the lesson more active).
 - If placed incorrectly, encourage participants to move to the correct corner. Place the drink photo below the sign, then walk, skip or jump away.
- 5 Initiate a discussion with the students on how they can choose “Go Drinks” in different settings.

Prompt:

- Choose milk instead of sugar sweetened pop at fast food restaurants.
- Bring a water bottle to school.




Additional Learning Activity (Grade 3 – 6)

Instructions:

1. Have each student write a list of drinks they have at home, school or when eating away from home with friends or family. For each drink, have the students determine if it is a “Go”, “Yield” or “Stop” drink.
2. Initiate a discussion about typical drinks the students consume at the various locations. Ask the students if they choose different drinks at home compared to when at school or eating away from home. Find out how many students have “Stop” drinks every day.
3. As a class, brainstorm ideas of how you can replace the “Stop” or “Yield” drinks with “Go” drinks. For example, you could order milk instead of sugar sweetened pop at a fast food restaurant.

Activity: Go, Yield, Stop Drinks (Continued)

Below is a reference chart with a variety of drinks categorized according to the *Alberta Nutrition Guidelines for Children and Youth* categories: *Choose Most Often*, *Choose Sometimes* and *Choose Least Often*. Use the chart when discussing the answers with the students. *The Alberta Nutrition Guidelines for Children and Youth* were developed to complement Health Canada's recommendations in *Eating Well with Canada's Food Guide*.

Drinks	Examples	Comments
Choose Most Often 	Milk (skim, 1% or 2% milk)	These are healthy to choose every day.
	Fortified soy beverage	These drinks are all recommended as healthy choices in <i>Eating Well with Canada's Food Guide</i> .
	Plain water	
	100% unsweetened vegetable and fruit juice	Note: The <i>Alberta Nutrition Guidelines for Children and Youth</i> recommends no more than ½ cup (125 mL) juice per day. ²¹
Choose Sometimes 	Flavoured milks (chocolate, strawberry, banana and vanilla)	These are healthy drinks that may have added sugar and fat.
	Flavoured fortified soy beverage	
Choose Least Often 	Sugar sweetened pop	These are drinks that are low in nutrients and high in sugar/fat and may contain sugar substitutes.
	Sweetened iced tea	
	Iced slush	
	Iced coffee slush	
	Sports drink	
	Fruit flavoured drinks	
	Vitamin water	
Candy Bar Milkshake		

Note: Energy Drinks are not recommended for children and youth and should be avoided.

Activity: Label Reading

This activity is intended for smaller groups and may be more appropriate for Grades 6 and up.

Learning Outcomes

Participants are able to:

- choose healthy drink choices by reading the nutrition label;
- set goals to improve their fluid intake.

Key Messages

- Reading ingredient lists and Nutrition Facts tables on drinks can help students choose healthier drinks.
- Choose drinks that are low in total sugar and have a high % Daily Value for vitamins and minerals.

Required Items

- Printed copy of the Nutrition Facts tables for all drinks, found on pages 41 – 45.

Instructions

1. Review the label reading instructions on pages 38 – 40.
2. Divide the class into groups of three to four students. Give each group a drink label with the Nutrition Facts table (found on pages 41 – 45).
3. Teach the students to read ingredient lists to determine if there is added sugar in the drink. Ask each group to share if they have a drink with added sugar. Refer to the instructions “*How to Read Nutrition Labels on Drinks*” on page 39.
4. Teach participants to determine the grams of sugar on the nutrition label. 4 grams of sugar equals 1 teaspoon (5 mL).
5. Ask each group if they have a drink with:
 - less than 5 teaspoons of sugar per serving
 - 5 – 10 teaspoons of sugar per serving
 - more than 10 teaspoons of sugar per serving
6. Talk about added sugar and naturally occurring sugars. Even though a drink may not have added sugar, it can still contain naturally occurring sugar, as represented in the Nutrition Facts table. These drinks can be consumed in moderation.
7. Teach participants to read % Daily Values. Refer to instructions on page 40.
8. Ask each participant to present their drink findings to the group. As a group, decide if the drink is a healthy choice.
9. Help participants to set a healthier drink goal for example, “drink 2 cups (500 mL) of milk per day.”

Activity: Label Reading

Background Information: How to Read Nutrition Labels on Drinks

Understanding labels can help people choose healthy drinks that are lower in sugar and higher in nutrients. Look at the following when reading nutrition labels on drinks:

- 1) Ingredient list
- 2) Nutrition Facts Table
 - Look at the grams of sugar
 - Look at the % Daily Value for vitamins and minerals

Products A and B will be used as examples to show how to read the Ingredient List and the Nutrition Facts Table.

Product A (1% Milk)

Nutrition Facts Table			
Per 1 cup (250 mL)			
Amount	% Daily Value		
Calories 110			
Fat 2.5 g	4%		
Saturated Fat 1.5 g	8%		
Trans Fat 0 g			
Cholesterol 13 g	5%		
Sodium 115 mg	5%		
Total Carbohydrate 13 g	4%		
Fibre 0 g	0%		
Sugars 12 g			
Protein 9 g			
Vitamin A 15%	Vitamin C	0%	
Calcium 30%	Iron	0%	
Ingredients: milk (fat free milk, vitamin A palmitate, vitamin D3)			

Product B (Cran-Apple Drink)

Nutrition Facts Table			
Per 1 cup (250 mL)			
Amount	% Daily Value		
Calories 130			
Fat 0 g	0%		
Saturated Fat 0 g			
Trans Fat 0 g			
Cholesterol 0 g	0%		
Sodium 10 mg	1%		
Total Carbohydrate 34 g	11%		
Fibre 0 g	0%		
Sugars 33 g			
Protein 0 g			
Vitamin A 0%	Vitamin C	100%	
Calcium 0%	Iron	0%	
Ingredients: Water, fruit juice from concentrate (filtered water, concentrated apple, pear and cranberry juices), <u>sugar</u> , <u>glucose/fructose</u> , citric acid, natural flavor, vitamin C			

Activity: Label Reading (Continued)

How to Read Nutrition Labels on Drinks

Ingredient List

Look at the ingredient list to see if sugar has been added to products. Ingredients are listed by weight.⁴¹ Therefore, the first one or two ingredients are the largest in the drink. Any ingredient that ends in “ose” is a sugar; such as glucose, fructose, dextrose, maltose, etc.⁴¹

Product comparison: Product A does not have sugar as an ingredient, while Product B contains sugar, glucose and fructose. Therefore, Product B contains added sugar.

Nutrition Facts Table

A) Look at the Grams of Sugar

The Nutrition Facts table on a drink container or food package indicates the amount of total sugars (which includes both naturally occurring sugar plus added sugars).⁴² Use the Nutrition Facts table to compare the amount of total sugars between products.

Step 1: Look at the serving size as specified on the Nutrition Facts table. If the serving size does not match the container volume, some calculations are needed to determine the total amount of sugar per serving.

Step 2: Look at the number of grams of sugar on the Nutrition Facts table.
Remember: **4 grams of sugar = 1 teaspoon of sugar.**

Product comparison:

1. Both *Product A* and *Product B* have 1 cup (250 mL) as the serving size.
2. *Product A* contains 12 g of sugar per serving, and *Product B* contains 33 g.
3. *Product A* contains about 3 teaspoons (15 mL) of sugar per 1 cup (250 mL) serving.
 - 12 g divided by 4 = 3 teaspoons
4. *Product B* contains 8 teaspoons (45 mL) of sugar per 1 cup (250 mL) serving.
 - 33 g divided by 4 = about 8 teaspoons

When comparing two products with different serving sizes, some calculations are needed before evaluating the products.

Activity: Label Reading (Continued)

B) Percent Daily Value

The Percent (%) Daily Value tells us if there is a “little” or a “lot” of each nutrient listed on the Nutrition Facts table, such as fat, fibre, vitamins and minerals.⁴³ It is based on a recommended, average, healthy 2000 calorie diet.⁴³ The Percent (%) Daily Value compares each nutrient in a food item or drink to the amount that is required in a whole day for an adult male.⁴³

Health Canada indicates that a food or drink item is considered **LOW** in a particular nutrient if the % Daily Value is **5% or less**.⁴²

Health Canada indicates that a food or drink item is considered **HIGH** in a particular nutrient if the % Daily Value is **15% or more**.⁴³

Note: There is no % Daily Value for sugar because we do not need sugar and there is no recommended amount. Less is better!⁴¹

Product comparison:

1. *Product A* is high in vitamin A (15%) and calcium (30%).
2. *Product B* is only high in vitamin C (100%).
3. Since *Product A* is high in 2 nutrients while *Product B* is high in 1 nutrient, *Product A* is the better choice.

In conclusion, *Product A* is a healthier choice because it has no added sugar and is higher in nutrients than *Product B*.

Additional Learning Opportunities: (Grade 7 – 9)

Instructions:

1. Have each student choose a popular drink, such as an energy drink, sugar sweetened pop, iced coffee or sports drink.
2. Have each student research advertisements for their drink and write a short summary about the messages each advertisement communicates. Have the students determine if the messages in the advertisement are supported by the information on the drink’s nutrition label.

Label Reading Activity Sheet:

100% Fruit Juice

Nutrition Facts	
Per 250 ml (1 cup)	
Amount	% Daily Value
Calories 120	
Fat 0 g	0 %
Saturated 0 g	0 %
Trans 0 g	
Cholesterol 0 mg	0 %
Sodium 5 mg	0 %
Carbohydrate 29 g	10 %
Fibre 0 g	0 %
Sugars 29 g	
Protein 1 g	
Vitamin A	0 %
Vitamin C	100 %
Calcium	1 %
Iron	1 %

Ingredients: Apple juice

Label Reading Activity Sheet:

Chocolate Milkshake

Nutrition Facts	
Per 1 medium milkshake (464 ml)	
Amount	% Daily Value
Calories 790	
Fat 20 g	31 %
Saturated 13 g	7 %
Trans 0.5 g	
Cholesterol 90 mg	30 %
Sodium 520 mg	22 %
Carbohydrate 133 g	44 %
Fibre 2 g	1 %
Sugars 113 g	
Protein 21 g	
Vitamin A	20 %
Vitamin C	2 %
Calcium	70 %
Iron	4 %

Ingredients: milk ingredients, sugar, cream, non-fat milk solids, glucose/fructose, guar gum, dextrose, carrageenan, locust bean gum, artificial flavour, cellulose gum, sodium phosphate, sodium citrate, salt, colour, calcium sulphate, vitamin A palmitate.

Label Reading Activity Sheet:

Fountain Pop (sugar sweetened cola)

Nutrition Facts	
Per 730 ml (3 cups)	
Amount	% Daily Value
Calories 320	
Fat 0 g	0 %
Saturated 0 g	0 %
Trans 0 g	
Cholesterol 0 mg	0 %
Sodium 70 mg	3 %
Carbohydrate 81 g	27 %
Fibre 0 g	0 %
Sugars 81 g	
Protein 0 g	
Vitamin A	0 %
Vitamin C	0 %
Calcium	0 %
Iron	0 %

Ingredients: Carbonated water, sugar/glucose fructose, caramel colour, phosphoric acid, natural flavour, caffeine.

Label Reading Activity Sheet:

Orange Pop (sugar sweetened pop)

Nutrition Facts	
Per 1 can (355ml)	
Amount	% Daily Value
Calories 190	
Fat 0 g	0 %
Saturated 0 g	0 %
Trans 0 g	
Cholesterol 0 mg	0 %
Sodium 60 mg	3 %
Carbohydrate 52 g	17 %
Fibre 0 g	0 %
Sugars 52 g	
Protein 0 g	
Vitamin A	0 %
Vitamin C	0 %
Calcium	0 %
Iron	0 %

Ingredients: carbonated water, sugar/glucose-fructose, citric acid, sodium benzoate, acacia gum, natural flavour, ester gum, colour, salt, brominated vegetable oil.

Label Reading Activity Sheet:

Iced Tea (sweetened)

Nutrition Facts	
Per 1 can (355 mL)	
Amount	% Daily Value
Calories 128	
Fat 0 g	0 %
Saturated 0 g	0 %
Trans 0 g	0 %
Cholesterol 0 mg	0 %
Sodium 80 mg	3 %
Carbohydrate 32 g	11 %
Fibre 0 g	0 %
Sugars 32 g	
Protein 0 g	
Vitamin A	0 %
Vitamin C	0 %
Calcium	0 %
Iron	0 %

Ingredients: Water, sugar/glucose – fructose, citric acid, concentrated tea from tea leaves, phosphoric acid, potassium sorbate, natural flavour, sodium benzoate, calcium disodium EDTA.

Activity: What is a High Sugar Day for Susan?

Learning Outcomes

Participants are able to identify:

- the amount of sugar in some common foods and drinks;
- foods that are high in nutrients and moderate to low in sugar.

Key Messages

- Most of the sugar we eat is hidden – we do not see it. Reading the Nutrition Facts table and ingredient list on a food package can tell us if sugars have been added during processing.

Required Items

- Six copies of *A High Sugar Day for Susan* (page 48)
- A large measuring cup or large cup that holds 3 cups (750 ml)
- Sugar cubes, one box (1 sugar cube = 1 tsp of sugar) or granulated sugar about 66 tsp (330 mL)
- A measuring teaspoon (5 mL)
- “*Healthy Drinks, Healthy Kids*” handout – one copy for each student, found in Appendix 1
- *Eating Well with Canada’s Food Guide* – one copy for each student

Instructions

1. Divide participants into six groups and give each group a copy of *A High Sugar Day for Susan*.
2. Assign each group one of Susan’s meals or snacks.
3. For the breakfast group, assign one volunteer to read to the group what Susan ate for breakfast. Have a second volunteer report to the whole group the number of teaspoons of sugar Susan consumed. Ask a third volunteer to measure the sugar and pour into the large measuring cup.
4. Repeat Step 3 for all the other meals and snacks. Continue to add sugar that Susan eats in a day into the same measuring cup.
5. Discuss with the class items that Susan ate and drank with added sugar. See the discussion questions on the following page.

Activity: What is a High Sugar Day for Susan? (Continued)

Discuss the following questions with participants:

Question: How many teaspoons of added sugar did Susan eat in one day?

Answer: Susan had 66 teaspoons of added sugar – that is 1 and $\frac{1}{3}$ cups (330 mL).

Question: How many of these did Susan actually see as sugar?

Answer: 0 teaspoons

Question: What is the estimated Canadian average of added sugar intake for Susan's age?

Answer: The estimated Canadian average of added sugar for Susan's age is 13.5 tsp (67.5 mL) per day. (see page 17, *Background: Average Added Sugar Intake of Canadians*).

Question: Is Susan consuming more added sugar than the estimated Canadian average for her age?

Answer: Yes! Susan consumes 52.5 tsp (262.5 mL) more added sugar than the estimated Canadian average for her age.

Question: A 9 year old girl like Susan needs 6 – 7 cups (1500-1750 mL) of fluid per day. How much fluid did Susan drink in a day? (see page 19 for more information on fluid requirements).

Answer: Susan drank 5½ cups (1375 mL). Most of Susan's fluid intake comes from sugar sweetened pop and fruit flavoured drinks, which are high in sugar but low in nutrients. Susan did not drink enough servings of milk that day. Susan should drink more water and 2 cups (500 mL) of Milk and Alternatives according to *Canada's Food Guide*, this would help meet her fluid needs of 6 – 7 cups (1500 mL – 1750 mL).

Question: How can Susan make healthier choices?

Answer: By choosing food that is lower in added sugar and higher in nutrients. For example, Susan can mix her favourite fruit flavoured cereal with a higher fibre bran cereal for breakfast. Susan can also satisfy her thirst by drinking water, and replace some of the sugar sweetened pop and fruit flavoured drinks with milk and 100% juice.

Additional Learning Activity (Grade 4-6)

Instructions

1. Ask students to write down what they eat in a typical day.
2. By a show of hands, compare how many students have a typical day like Susan's high sugar day, like Susan's healthier day, or somewhere in between.
3. Discuss with the class if there is a difference between the amount of high sugar foods they eat at home, compared to at school or a restaurant. If there is a difference, why do students think they eat more high sugar foods in a particular setting?

A High Sugar Day for Susan

Susan is 9 years old and in grade 4. The following is a sample menu of what Susan eats on a typical day:

Meal or Snack	Added Sugar Eaten (teaspoons)
Breakfast:	
Fruit flavoured cereal, 1 cup (250 mL)	4
1% MF (milk fat) milk, ½ cup (125 mL)	0
Break:	
2 fruit candy rolls	4.5
Lunch:	
1 ham sandwich	0
1 apple (medium size)	0
Fruit punch, 1 cup (250 mL)	8
1 chocolate, caramel, granola bar	3.5
After school:	
Iced slush (650 mL)	21
10 gummy worms	11
Dinner, at restaurant:	
1 chicken hamburger	0
French fries (medium size)	0
1 can sugar sweetened pop (355 mL)	10
Evening:	
Chocolate cake, 1 small piece	4

Activity: What is a High Sugar Day for Tom?

Learning Outcomes

Participants are able to identify:

- the amount of added sugar in some commonly eaten foods;
- foods that are high in nutrients and moderate to low in added sugar.

Key Messages

- Most of the sugar people eat is hidden – they don't see it. Reading the Nutrition Facts table and ingredient list on a food package can tell people if sugars have been added during processing.

Required Items

- Six copies of *A High Sugar Day for Tom* (page 51)
- A large measuring cup or large cup (that holds 3 cups (750 mL))
- Sugar cubes, one box, at least 105 cubes (1 sugar cube = 1 tsp sugar) or granulated sugar 105 tsp (525 mL)
- A measuring teaspoon (5 mL)
- “*Healthy Drinks, Healthy Kids*” handout – one copy for each student
- *Eating Well with Canada's Food Guide* – one copy for each student

Instructions

1. Divide participants into six groups and provide each group with a copy of *A High Sugar Day for Tom* (page 51).
2. Assign each group one of Tom's meals or snacks.
3. For the breakfast group, assign one volunteer to read to the group what Tom ate for breakfast. Have a second volunteer report to the whole group the number of teaspoons of sugar Tom consumed. Ask a third volunteer to measure the sugar and place into the large measuring cup.
4. Repeat Step 3 for all the other meals and snacks. Continue to add sugar that Tom eats during the day into the same measuring cup.
5. Discuss with the class items that Tom ate and drank with added sugar. Use the questions on the following page to initiate a discussion.

Activity: What is a High Sugar Day for Tom? (Continued)

Discuss the following questions with participants:

Question: How many teaspoons of added sugar did Tom eat in one day?

Answer: Tom had 105 teaspoons of added sugar- which is about 5 cups (525 mL).

Question: How many of these did Tom actually see as sugar?

Answer: 0 teaspoons

Question: What is the estimated Canadian average of added sugar intake for Tom's age?

Answer: The estimated Canadian average of added sugar for Tom's age is 13 teaspoons per day (see *Background: Average Added Sugar of Canadians* on page 17).

Question: Is Tom consuming more added sugar than the estimated Canadian average for his age?

Answer: Yes! Tom consumes 92 teaspoons more added sugar than the estimated Canadian average for his age.

Question: A boy of Tom's age needs 7 – 11 cups (1750 – 2750 mL) of fluid per day. How much fluid does Tom drink in a day?

Answer: 10 cups (2500 mL). However, this comes mostly from sugar sweetened pop and fruit flavoured drinks, which are high in sugar but low in nutrients. In addition, Tom does not drink enough servings of Milk and Alternatives per day. Canada's Food Guide also recommends 2 cups (500 mL) of milk daily (see *Background: Healthy Drink Choices* on page 19).

Question: How can Tom eat healthier?

Answer: By choosing food that is lower in added sugar and higher in nutrients. For example, Tom could choose oatmeal and a glass of milk instead of toaster pastries for breakfast. Tom could also satisfy his thirst by drinking water, and he could replace some of the sugar sweetened pop and fruit flavoured drinks with milk and 100% juice.

Additional Learning Opportunity (grade 7 – 9)

Instructions:

1. Divide the class into small groups and assign each group a fast food restaurant.
2. Have each group look up the drinks sold at the restaurant and determine the highest sugar choices and the lowest sugar choices.
3. Ask the group to list or write down the best drink options for their assigned restaurant. Have each group share their findings and indicate if they are surprised by how much sugar is in some of the drinks.

A High Sugar Day for Tom

Tom is 14 years old and in grade 8. The following is a sample menu of what Tom eats on a typical day:

Meals and Snacks	Added Sugar Eaten (teaspoons)
Breakfast:	
2 Toaster pastries	9
Locker break (vending machine):	
1 chocolate bar	8
Fruit punch, 1 cup (250 mL)	8
Lunch:	
1 ham and cheese sandwich	0
1 can sugar sweetened pop (355 mL)	10
1 bag chips	0
10 gummy worms	11
After school:	
Iced slush (650 mL)	21
3 chocolate cream cookies	4
Dinner, at restaurant:	
2 chicken burgers	0
French fries, large	0
Sugar sweetened fountain pop, (1 litre)	30
Apple (1 medium size)	0
Evening:	
1% MF (milk fat) milk, 1 cup (250 mL)	0
Chocolate cake, 1 small piece	4

Activity: Why drink water?

Learning Outcomes

Participants are able to identify:

- the health benefits of drinking water;
- the amount of fluid they need every day;
- the signs and symptoms of dehydration.

Key Messages

- Water has many important functions in the body.
- The best source of fluid is water.
- Fluid requirements can vary based on age, gender, body size, activity level, weather and health status.²²

Instructions

Use the questions and answers from the tables on the following pages to initiate a discussion on the importance of water.

Question 1	Why is water important?
Answer	<p>Water makes up 60 – 70% of the body’s weight and has many important roles. Every system in the body depends on water.²²</p> <p>We need water to:²²</p> <ul style="list-style-type: none">• cool our bodies (when we sweat);• help with digestion;• absorb and carry nutrients throughout our body;• remove wastes and helps the body repair itself;• act as a cushion for our organs and joints;• help with the repair and replacement of old tissue. <p>Our body loses water each day:</p> <p>It is important to drink enough water and other healthy fluids to replace the water that is lost each day.</p> <p>Skin: Water is lost through our skin every day. The amount of water lost through our skin depends on body size, temperature, activity level and stress level. An average person, at rest, loses about 450 mL water through their skin each day.²⁴</p> <p>Breathing: Our lungs use water to breath. An average person, at rest, loses 250 mL – 350 mL of water through breathing each day.²²</p> <p>Urine: Most of our water is lost through our urine. An average person loses 500 mL – 1000 mL of water through urine each day.²²</p>

Activity: Why drink water? (Continued)

Question 2	Which <u>healthy</u> foods and drinks provide fluids to our body?
Answer	<p>Foods:</p> <ul style="list-style-type: none"> • Soup, vegetables and fruit provide us with about 20% of our fluid needs.²² • Fruits such as watermelon, grapes, oranges and apples contain a high amount of water. • Vegetables such as cucumbers, bell peppers, lettuce and tomatoes contain a high amount of water. <p>Drinks:</p> <p>Drinks provide our body with the other 80% of water needed to meet our fluid needs.²² Healthy drinks include: water, milk, and 100% vegetable or fruit juice.</p>
Question 3	How much water should you drink every day?
Answer	<p>Fluid Requirements (Including all drinks):²²</p> <ul style="list-style-type: none"> • 4 – 8 years: 5 cups (1250 mL) per day • 9 – 13 years: 6 – 7 cups (1500 mL – 1750 mL) per day • 14 – 18 years: 7 – 11 cups (1750 mL – 2750 mL) per day <p>Water Requirements:</p> <p>Ideally, water should make up most of your fluid requirements. <i>Eating Well with Canada's Food Guide</i> recommends drinking <u>2 cups</u> (500 mL) of milk or fortified soy beverage daily for adequate vitamin D (for healthy bones and teeth).</p> <p>Age 4 – 8 years:</p> <ul style="list-style-type: none"> • 5 cups (1250 mL) of fluids – 2 cups (500 mL) milk/fortified soy beverage = 3 cups (750 mL) of water each day. <p>Age 9 – 13 years:</p> <ul style="list-style-type: none"> • 6 – 7 cups (1500 – 1750 mL) of fluids – 2 cups (500 mL) milk/fortified soy beverage = 4 – 5 cups (1000 – 1250 mL) of water each day. <p>Age 14 – 18 years:</p> <ul style="list-style-type: none"> • 7 – 11 cups (1750 – 2750 mL) of fluids – 2 cups (500 mL) milk/fortified soy beverage = 5 – 9 cups (1250 – 2250 mL) of water each day.
Question 4	What is dehydration?
Answer	<ul style="list-style-type: none"> • Dehydration is when our body does not have enough fluid. This can happen when we do not drink enough fluids, or if we lose too much fluid (hot weather/physical activity), or both. • Dehydration can make it difficult for us to focus, decrease our physical performance, and over-heat or even put stress on our heart, kidneys and other organs.²²

Activity: Why drink water? (Continued)

Question 5	How do I know if I'm drinking enough?
Answer	<ul style="list-style-type: none"> • Usually by the time we become thirsty, we are already somewhat dehydrated.²² • The amount and colour of our urine can also be a sign of whether we are drinking enough. If your urine is dark yellow (colour of apple juice), it means you need to drink more fluids.²² • When you are dehydrated, or have not had enough to drink, you may feel very thirsty, tired, cranky and dizzy.²² You may even feel light-headed and seldom use the bathroom.²²
Question 6	Ways to avoid dehydration:
Answer	<ul style="list-style-type: none"> • Drink beverages with meals and snacks and throughout the day.²² • Carry a water bottle so that a drink is available anytime, anywhere.²² • Drink extra fluids before, during and after physical activity or play.²² • Watch for signs of dehydration, especially when weather conditions are extreme (very hot, humid, cold or dry).²²

Activity: Water Wit

This activity is intended as a review of the content discussed in the “Why Drink Water?” activity.

Required Materials

- Whiteboard
- Whiteboard marker

Instructions

1. On the white board draw the blank spaces as below:

_____!

2. Write the following letters on the board and explain these are the letters to choose from to solve the puzzle:

A C E F H I M N O R S T W

3. Tell the students that they are going to solve a puzzle. Hint: the phrase is about water.
4. Explain to students that you will ask them a series of questions about water. When the question is answered correctly by a student, he or she can pick one of the letters. Write the letter in the correct place of the phrase. Continue to ask questions until someone guesses the correct phrase about water.
5. The game is complete, when the phrase is guessed correctly.

Phrase: When it comes to thirst, choose water first!

WHEN IT COMES TO THIRST, CHOOSE WATER FIRST!

Activity: Water Wit (Continued)

Use the questions and answers below to initiate a discussion about the importance of water. For each question provide the students with the letter for the phrase on water.

Question 1	True or False? Water makes up 25% of our body's weight.
Answer	<ul style="list-style-type: none"> • False. • Water makes up 60 – 70% of our body's weight.²²
Question 2	Name 2 drinks our body needs every day to stay healthy.
Answer	<ul style="list-style-type: none"> • Water. • Milk or fortified soy beverage.
Question 3	Name 2 ways water helps our body work properly.
Answer	<ul style="list-style-type: none"> • Cool our bodies (when we sweat);²² • Helps with digestion;²² • Absorbs and carries nutrients throughout our body;²² • Removes waste;²² • Act as a cushion for our organs and joints;²² • Helps with the repair and replacement of old tissue.²²
Question 4	True or False? Since people don't feel hot or sweaty when they swim, they do not need to drink extra fluids.
Answer	<ul style="list-style-type: none"> • False. • Whenever you are physically active, whether it is playing soccer, swimming, or riding a bike, it is important to drink extra fluids.²³
Question 5	True or False? Thirst is the best guide for knowing when to drink more water.
Answer	<ul style="list-style-type: none"> • False. • Generally, it is <u>not</u> a good idea to use only thirst as a guide for when to drink. Usually by the time we become thirsty, we may be dehydrated.²² • It is important to drink water throughout the day, even if you do not feel thirsty.
Question 6	Give one suggestion on how to make sure you are getting enough fluids.
Answer	<ul style="list-style-type: none"> • Drink water or milk with meals and snacks throughout the day. • Carry a water bottle so that water is available anytime, anywhere. • Drink extra water before, during and after physical activity or play. • Drink more when the weather is hot, humid or dry.
Question 7	True or False? Sports drinks are the best choice for any type of physical activity.
Answer	<ul style="list-style-type: none"> • False. • Water is the best choice during and after exercise for most kids and teens.²³ • Sports drinks may be helpful for intense activity, like competitive sports, that last 60 minutes or longer.²⁴

Activity: Water Wit (Continued)

Use the questions and answers below to initiate a discussion about the importance of water. For each question provide the students with the letter for the phrase on water.

Question 8	Give one example of when you would need to drink extra water.
	<ul style="list-style-type: none"> • When you are physically active. • If the weather is hot, humid, or cold and dry. • When you are sick.
Question 9	Vegetables and fruit can provide us with about 20% of our fluid needs each day. Name 1 vegetable and 1 fruit that is high in water.
Answer	<ul style="list-style-type: none"> • Fruits such as watermelon, grapes, oranges and apples contain a high amount of water.²² • Vegetables such as cucumbers, bell peppers, lettuce and tomatoes contain a high amount of water.²²
Question 10	The colour of our urine (pee) can be a good sign of whether we are getting enough to drink. What should our urine look like if we have had enough to drink?
Answer	<ul style="list-style-type: none"> • Light yellow. • The amount and colour of our urine can also be a sign of whether or not we are drinking enough. If your urine is dark yellow (colour of apple juice), it means you need to drink more fluids.²²
Question 11	Lucy is 15 years old and her brother Jacob is 8 years old. True or False? Jacob needs to drink the same amount of fluid as his sister Lucy.
Answer	<ul style="list-style-type: none"> • False. • The amount of fluid we need depends on our gender, age, activity level, and body size. • Jacob, at age 8 needs around 5 cups (1250 mL) of fluid each day. • Lucy, at age 15, needs around 7 – 11 cups (1750 – 2750 mL) of fluid each day. • For more information on specific fluid requirements, see “<i>Background: Healthy Drinks and Fluid Requirements</i>”, found on page 19 of this manual.
Question 12	True or False? Our lungs use water for breathing.
Answer	<ul style="list-style-type: none"> • True. • Our lungs use water for breathing. An average person, at rest, loses about 1 cup to 1 ½ cups (250 mL – 375 mL) of water through breathing each day.
Question 13	True or False? You can never drink too much water.
Answer	<ul style="list-style-type: none"> • False. • You can drink too much water. This does not happen often in healthy people.

Activity: Working with Water

Learning Outcomes

- Participants are able to identify the amount of water they need every day.

Key Messages

- We need to drink plenty of water every day to keep a healthy body.
- The amount of fluid we need depends on our age, gender, body size, and activity level. It can also depend on climate (hot, humid, cold or dry) and how healthy we are.²²
- For more information on specific fluid requirements, see “*Background: Healthy Drinks and Fluid Requirements*”, found on page 19 of this manual.

Fluid Requirements (Including all drinks):

<u>Age in years</u>	<u>Amount per day</u>
4 – 8	5 cups (1250 mL)
9 – 13	6 – 7 cups (1500 mL – 1750 mL)
14 – 18	7 – 11 cups (1750 mL – 2750 mL)

Estimated Water Requirements:

The only drinks recommended each day are milk (or fortified soy beverage) and water. *Eating Well with Canada’s Food Guide* recommends having 2 cups (500mL) of low fat milk (or fortified soy beverage) each day.

Age 4 – 8 years:

5 cups (1250 mL) of fluids – 2 cups (500 mL) milk/fortified soy beverage
= 3 cups (750 mL) of water each day.

Age 9 – 13 years:

6 – 7 cups (1500 – 1750 mL) of fluids – 2 cups (500 mL) milk/fortified soy beverage
= 4 – 5 cups (1000 – 1250 mL) of water each day.

Age 14 – 18 years:

7 – 11 cups (1750 – 2750 mL) of fluids – 2 cups (500 mL) milk/fortified soy beverage
= 5 – 9 (1250 – 2250 mL) cups of water each day.

Required Items

- Six 1 cup (250 mL) measuring cups
- Six large pitchers or container filled with water
- Six large pitchers or containers, empty

Activity: Working with Water (All ages)

Instructions

1. Refer to the “Why Drink Water” Activity (on page 52) for discussion questions on the benefits of drinking water.
2. Divide the students into six groups. Give each group a large pitcher filled with water, one measuring cup and an empty pitcher or container.
3. Ask each group to measure out how many cups of water they estimate they need to drink each day. Have students place the measured water into the empty container.
4. Ask each group to share their answers. Have students pour the water back into the original pitcher or container that was filled with water.
5. Discuss how much water each student needs in a day. Refer to the key messages on page 58. For more information on fluid requirements, see “*Background: Healthy Drink Choices and Fluid Requirements*” on page 19 of this kit.
6. Write the estimated water requirements on the board. Have students measure the cups of water they need each day.
7. Ask students if they are surprised how much water they need to drink in a day. Is it more or less than the originally guessed?

Optional

If students have water bottles with them, as a class determine how many cups or milliliters of water it takes to fill up the bottle. Discuss how many times the student would need to fill their water bottle each day to meet their water requirements.



Appendices



Appendix 1: Healthy Drinks Healthy Kids Handout



Healthy Drinks, Healthy Kids

Did you know?

What kids drink can have a big impact on their health.

- Children and youth need plenty of fluids to prevent dehydration and to get nutrients for good health and growth.
- Fruit flavoured drinks, pop, sport drinks, and ice slushes have too much sugar and too few nutrients for healthy growth.
- Large amounts of sugar can cause weight gain, tooth decay, stomachaches, or diarrhea.

How can I tell if my child is drinking enough fluid?

Kids will usually drink when they are thirsty. A child that has dark yellow urine may not be getting enough fluid. Offer water or milk more often.

Healthy drinks to Choose Most Often

Parents and teachers can help kids choose healthy drinks by making sure that healthy choices like water and milk are available.

Water

Offer water throughout the day. Try a personal water bottle during active play, sports, studying, and when travelling. Wash water bottles every day in hot, soapy water.

Milk

Every day, offer milk, or soy beverages fortified with calcium and vitamin D, in the amounts your child needs. These drinks help your child get enough protein, calcium, and vitamin D.

Age	Amount and type of milk needed per day
1–2 years	Breastmilk or 2 cups (500 mL) homo (whole) milk
2–8 years	2 cups (500 mL) lower fat milk or fortified soy beverage
9–18 years	At least 2 cups (500 mL) lower fat milk or fortified soy beverage

If your child needs soy formula, follow-up (stage 2) soy formula is recommended for children 1 to 2 years old. Do not give fortified soy beverages until your child is 2 years old.

100% fruit juice

100% fruit juice has vitamins and minerals, but is high in natural sugars. Kids who drink too much juice may not be hungry to eat healthy meals and snacks and may be at a higher risk for weight gain. Kids should eat their fruit rather than drink it! **Limit juice to ½ cup (125 mL) per day.**

- Choose drinks labelled as 100% fruit juice. Products called “drink”, “punch”, “-ade”, “beverage” or “cocktail” have added sugar and little or no fruit juice.
- Use a cup if you give juice. Don’t use a bottle or sippy cup for juice because this can cause cavities.
- Do not give juice to babies under 6 months old.



Drinks to Choose Sometimes

Flavoured milks or flavoured fortified soy beverages

Kids can enjoy flavoured milks and fortified soy beverages, such as chocolate, vanilla, or strawberry up to 3 times per week. They have the same bone building nutrients as regular milk or fortified soy beverage but also provide added sugar.



Drinks to Choose Least Often

These drinks can be very high in sugar, and have little or no nutrients. Examples are regular pop, sport drinks, ice slushes, fruit flavoured drinks, and punches. **Limit “Choose Least Often” drinks to 1 cup (250 mL) a week.**

Pop

Pop is high in sugar and has acids in it that can weaken tooth enamel. Large amounts of pop can also replace healthy drinks such as milk or fortified soy beverages.

Sport drinks

Sport drinks are high in sugar and have added sodium and potassium. Water is the best choice during and after most activities. Sport drinks may be helpful for intense activity that lasts at least one hour with little time for recovery (for example: tournaments and competitions).

Caffeine

Caffeine is found in drinks like cola, iced tea, coffee-based drinks, and energy drinks. Kids may become nervous, irritable, and have problems sleeping if they have caffeine. It can also be addictive.

Energy Drinks

Energy drinks are high in sugar and caffeine. Do not give to kids of any age.

Artificial sweeteners

Drinks with artificial sweeteners have few nutrients and may take the place of healthy foods. They are not recommended for kids unless advised by a healthcare provider.

Vitamin water

Vitamin water is sold as a “healthy choice” but often has added sugar, artificial sweeteners, and herbs. Vitamin water is not recommended for kids.

Don't give children and youth drinks that have caffeine or artificial sweeteners in them.

Drink facts

Some healthy drinks like milk and 100% fruit juice contain natural sugar and are a part of a healthy diet. Other drinks are high in added sugar and should be avoided. The following table lists drinks and average added sugar. Note: 1 tsp table sugar = 4 grams of sugar.

Drink	Serving Size	Average added sugar per serving	Average added sugar per 1 cup (250 mL)
Choose Most Often			
Water	Any amount	0 tsp	0 tsp
1% milk	1 cup (250 mL)	0 tsp	0 tsp
Unsweetened fortified soy beverage	1 cup (250 mL)	0 tsp	0 tsp
100% fruit juice, unsweetened	½ cup (125 mL)	0 tsp	0 tsp
Choose Sometimes			
Flavoured milk	1 cup (250 mL)	4 tsp	4 tsp
Flavoured fortified soy beverage	1 cup (250 mL)	4 tsp	4 tsp
Choose Least Often			
Vitamin water	2⅓ cups (591 mL)	6 tsp	2.5 tsp
Sport drink	1 bottle (710 mL)	10 tsp	4 tsp
Sweetened iced tea	1 can (355 mL)	8 tsp	6 tsp
Iced coffee slush	1⅔ cups (414 mL)	12 tsp	7 tsp
Regular pop	1 can (355 mL)	10 tsp	7 tsp
Fruit flavoured drink	1 bottle (591 mL)	18 tsp	8 tsp
Ice slush	4¾ cups (1.18 L)	36 tsp	8 tsp
Energy drink	1 can (473 mL)	14 tsp	8 tsp



Appendix 2: Sugar Shocker Drink Photos



Sugar Shocker Drink Photos

The chart below provides an overview of all the drink photos included in the Sugar Shocker Kit. These photos can be used for the activities as directed in the kit or for other educational opportunities such as displays, student presentations or interactive learning.

Drink Photo	Photo Description	Activity/ Purpose
Choose Most Often		
Water		
Water, 250 mL	Water	- Go, Yield, Stop
Water, 250 mL	Water: 0 tsp added sugar	- Displays or other use
Milk		
1% milk, 250 mL	Milk	- Liquid Candy - Go, Yield, Stop
1 % milk, 250 mL	Milk: 0 tsp added sugar	- Liquid Candy
Soy beverage		
Unsweetened soy-beverage, 250 mL	Soy beverage	- Liquid Candy - Go, Yield, Stop
Unsweetened soy-beverage, 250 mL	Soy beverage: 0 tsp added sugar	- Liquid Candy
Juice		
100% orange juice 125 mL	Orange juice	- Liquid Candy - Go, Yield, Stop
100% orange juice, 125 mL	Orange juice: 0 tsp added sugar	- Liquid Candy
Healthy drinks		
Water, milk	Water, milk in one picture	- Displays or other use
Water, milk, 100% juice	Water, milk, 100% juice in one picture	- Displays or other use
Choose Sometimes		
Chocolate milk		
Chocolate milk, 250 mL	Chocolate milk	- Liquid Candy - Go, Yield, Stop
Chocolate milk, 250 mL	Chocolate milk: 4 tsp added sugar	- Liquid Candy
Flavoured soy beverage		
Flavoured soy beverage, 250 mL	Flavoured soy beverage	- Liquid Candy - Go, Yield, Stop
Flavoured soy beverage, 250 mL	Flavoured soy beverage: 4 tsp added sugar	- Liquid Candy
Milk comparison		
Milk comparison	Comparison of regular milk, chocolate milk and candy bar drink with added sugar	- Liquid Candy

Drink Photo	Photo Description	Activity/ Purpose
Choose Least Often		
Candy bar milkshake		
Candy bar milkshake, 250 mL	Candy bar milkshake	- Liquid Candy - Go, Yield, Stop
Candy bar milkshake, 250 mL	Candy bar milkshake: 7 tsp of added sugar	- Liquid Candy
Fruit flavoured drink		
Fruit flavoured drink, 591 mL	Fruit flavoured drink	- Liquid Candy - Go, Yield, Stop
Fruit flavoured drink, 591 mL	Fruit flavoured drink: 18 tsp added sugar	- Liquid Candy
Fruit flavoured drink and 100% juice	Comparison of fruit flavoured drink and 100% juice with added sugar	- Liquid Candy
Fruit flavoured drink and bottle of sugar sweetened pop	Comparison of fruit flavoured drink and bottle of sugar sweetened pop with added sugar	- Liquid Candy
Iced slush		
Ice slush, 1.18 L	Ice slush	- Liquid Candy - Go, Yield, Stop
Ice slush, 1.18 L	Ice slush: 36 tsp added sugar	- Liquid Candy
Ice slush in a year	Amount of added sugar consumed in 1 year from 1 large ice slush each day	- Liquid Candy
Iced coffee slush		
Iced coffee slush, 414 mL	Iced coffee slush	- Liquid Candy - Go, Yield, Stop
Iced coffee slush, 414 mL	Iced coffee slush: 12 tsp added sugar	- Liquid Candy
Iced coffee slush in a year	Amount of added sugar consumed in 1 year from 1 iced coffee slush each day	- Liquid Candy
Iced tea		
Sweetened iced tea, bottle, 591 mL	Sweetened iced tea	- Liquid Candy - Go, Yield, Stop
Sweetened iced tea, bottle, 591 mL	Sweetened iced tea: 13 tsp added sugar	- Liquid Candy

Drink Photo	Photo Description	Activity/ Purpose
Sweetened iced tea in a year	Amount of added sugar consumed in 1 year from 1 bottle of sweetened iced tea each day	- Liquid Candy
Pop		
Sugar sweetened pop, 1 can, 355 mL	Sugar sweetened pop can	- Liquid Candy - Go, Yield, Stop
Sugar sweetened pop, 1 can, 355 mL	Sugar sweetened pop can: 10 tsp added sugar	- Liquid Candy
Sugar sweetened pop can in a year	Amount of added sugar consumed in 1 year from 1 can of sugar sweetened pop each day	- Displays or other use
Sugar sweetened pop, bottle, 591 mL	Sugar sweetened pop bottle	- Liquid Candy - Go, Yield, Stop
Sugar sweetened pop, bottle, 591 mL	Sugar sweetened pop bottle: 18 tsp added sugar	- Liquid Candy
Sugar sweetened pop bottle in a year	Amount of added sugar consumed in 1 year from 1 bottle of sugar sweetened pop each day	- Displays or other use
Sugar sweetened fountain pop, 1.9 L	Sugar sweetened fountain pop	- Liquid Candy - Go, Yield, Stop
Sugar sweetened fountain pop, 1.9 L	Sugar sweetened fountain pop: 57 tsp added sugar	- Liquid Candy
Sugar sweetened fountain pop in a year	Amount of added sugar consumed in 1 year from 1 large sugar sweetened fountain pop each day	- Liquid Candy
Sugar sweetened pop 3 size comparison	Comparison of sugar sweetened pop in 3 different sizes with added sugar	- Displays or other use
Sports drinks		
Sports drink, 710 mL	Sports drink	- Liquid Candy - Go, Yield, Stop
Sports drink, 710 mL	Sports drink: 10 tsp added sugar	- Liquid Candy
Vitamin enhanced water		
Vitamin enhanced water, 591 mL	Vitamin enhanced water	- Liquid Candy - Go, Yield, Stop
Vitamin enhanced water, 591 mL	Vitamin enhanced water: 6 tsp added sugar	- Liquid Candy
Energy Drinks		
Energy drink, 473 mL	Energy drink	- Liquid Candy - Go, Yield, Stop
Energy drink, 473 mL	Energy drink: 14 tsp sugar	- Liquid Candy



Water – 1 cup (250 mL)





Water – 1 cup (250 mL)
0 teaspoons added sugar



1% Milk – 1 cup (250 mL)





1% Milk – 1 cup (250 mL)

0 teaspoons added sugar



Unsweetened Soy Beverage - 1 cup (250 mL)





Unsweetened Soy Beverage - 1 cup (250 mL)

0 teaspoons added sugar



Unsweetened Orange Juice – 1/2 cup (125 mL)





Unsweetened Orange Juice – 1/2 cup (125 mL)

0 teaspoons added sugar



Water



Milk



Water



Milk



100% Juice



Chocolate Milk – 1 cup (250 mL)





Chocolate Milk – 1 cup (250 mL)

4 teaspoons added sugar





Flavoured Soy Beverage – 1 cup (250 mL)





Flavoured Soy Beverage – 1 cup (250mL)

4 teaspoons added sugar



0 tsp added sugar



Milk

4 tsp added sugar



Chocolate Milk

1 cup (250 mL)

7 tsp added sugar



**Candy Bar
Milkshake**





Fruit flavoured drink – 1 bottle (591 mL)





Fruit flavoured drink – 1 bottle (591 mL)

18 teaspoons added sugar



0 tsp added sugar



100% juice

18 tsp added sugar



**Bottle of fruit
flavoured drink**

18 tsp added sugar



**1 bottle fruit
flavoured drink**

18 tsp added sugar



**1 bottle of sugar
sweetened pop**



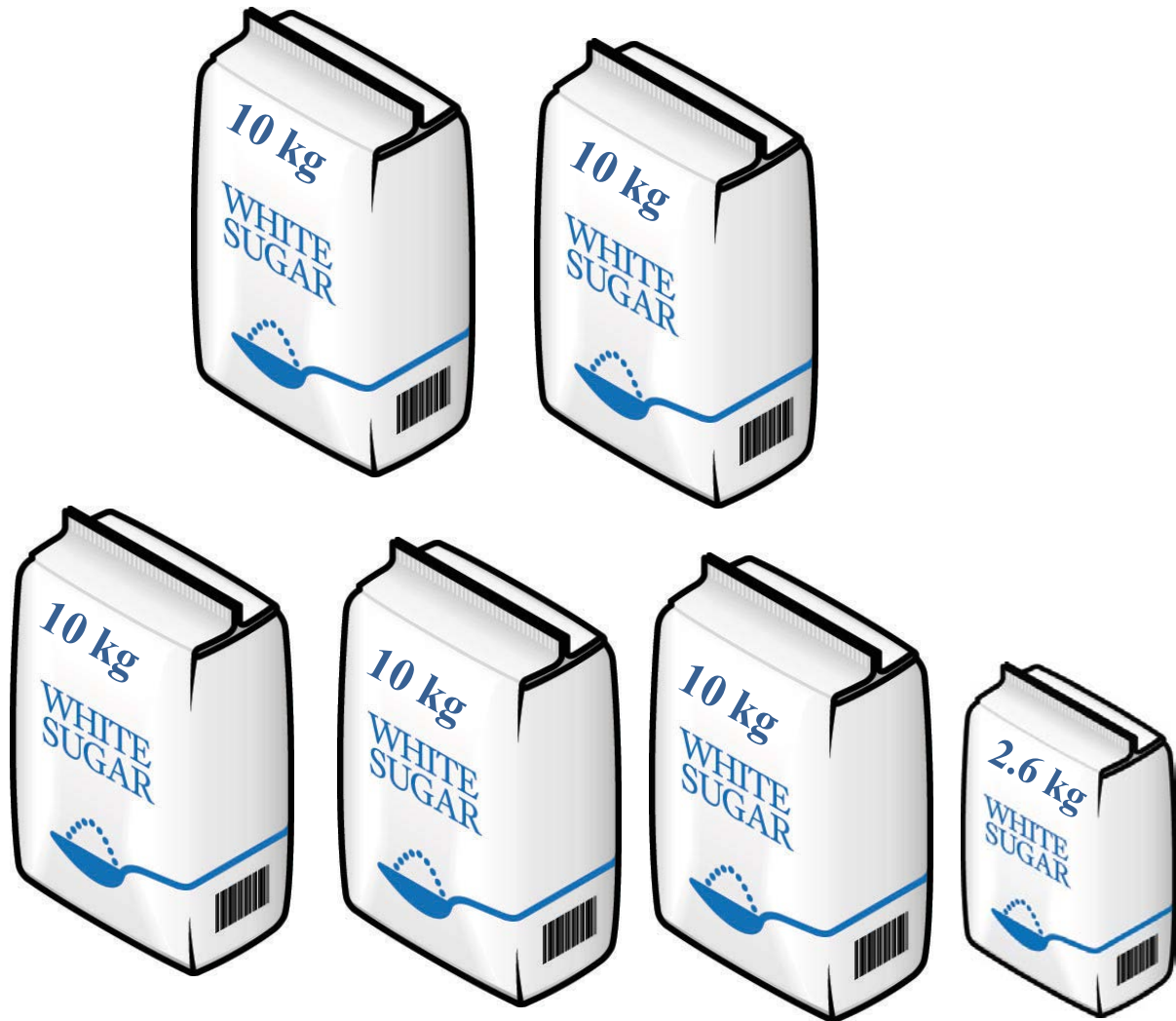
Iced Slush – Large (1.18 L)





Large Iced Slush – 1.18 L

36 teaspoons added sugar



Iced Slush Every Day For One Year

Total: 52.6 kg sugar



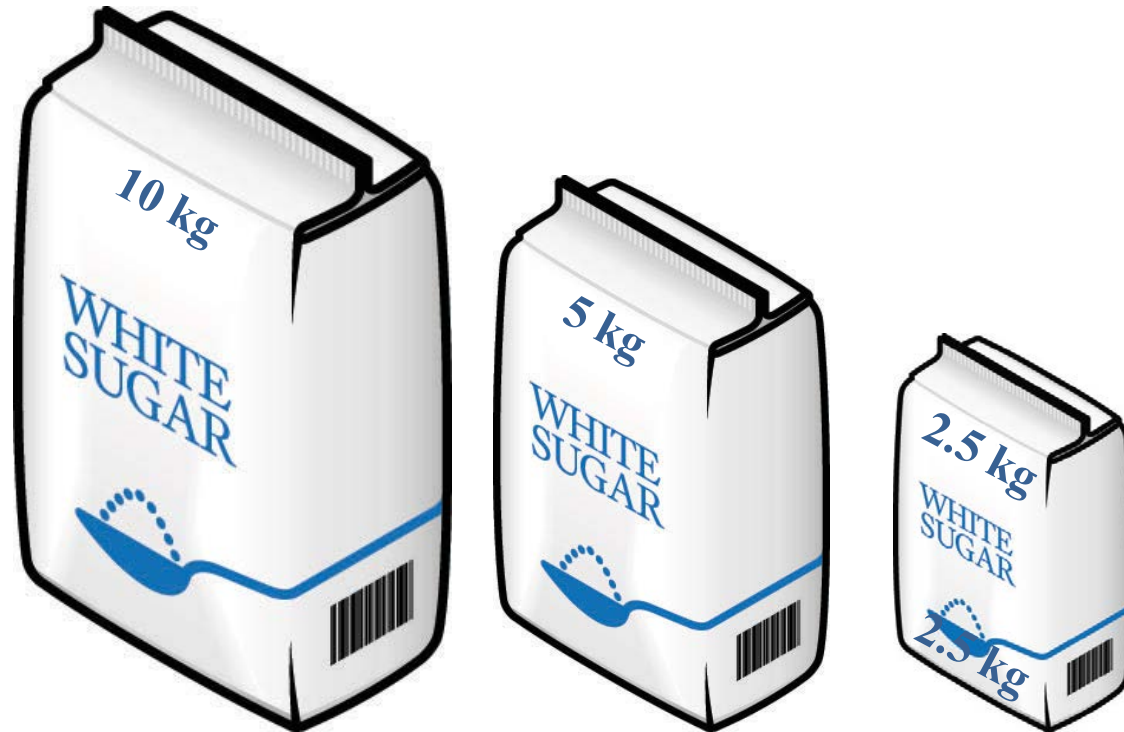
Iced Coffee Slush – 414 mL





Iced Coffee Slush - 414 mL

12 teaspoons added sugar



Iced Coffee Slush Every Day For One Year

Total: 17.5 kg sugar



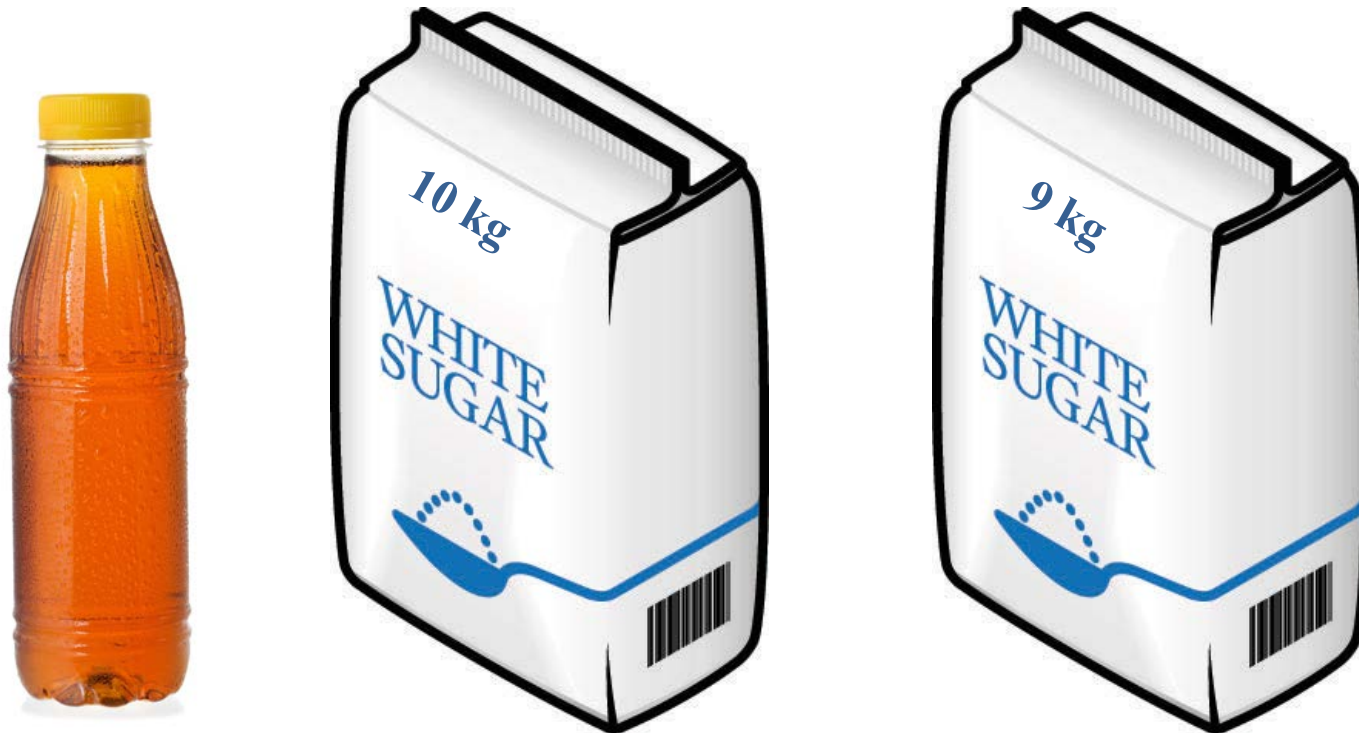
Sweetened Iced Tea – 1 bottle (591 mL)



Sweetened Iced Tea – 1 bottle (591 mL)

13 teaspoons added sugar





Sweetened Iced Tea Every Day for a Year
Total: 19 kg of sugar



Sugar Sweetened Pop – 1 can (355 mL)



Sugar Sweetened Pop – 1 can (355 mL)

10 teaspoons added sugar



Sugar Sweetened Pop Every Day For A Year

Total: 14.6 kg added sugar



Sugar Sweetened Pop – 1 bottle (591 mL)





Sugar Sweetened Pop – 1 bottle (591 mL)
18 teaspoons added sugar



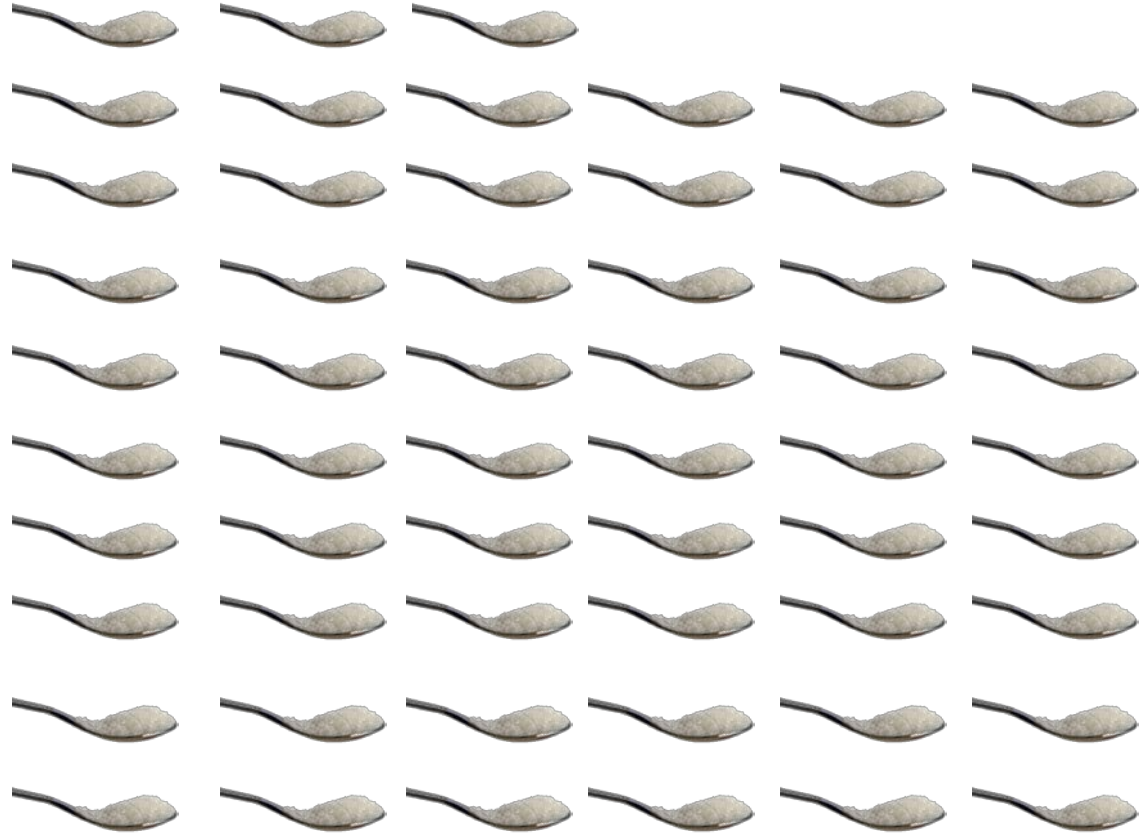
Sugar Sweetened Pop Every Day For A Year

Total: 26.3 kg sugar



Sugar Sweetened Fountain Pop – Large (1.9 L)





Sugar Sweetened Fountain Pop – Large (1.9 L)

57 teaspoons of added sugar



Large Fountain Pop Every Day For A Year

Total: 83.2 kg sugar

10 tsp added sugar



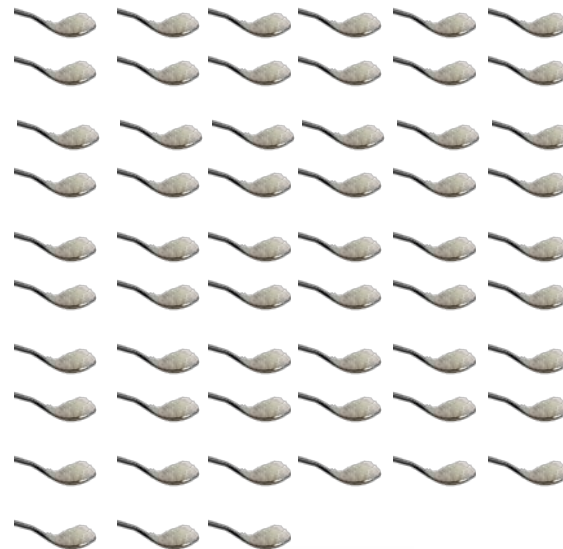
1 can

18 tsp added sugar



1 bottle

57 tsp added sugar



Large Fountain

Sugar Sweetened Pop



Sports Drink – 1 bottle (710 mL)

10 teaspoons sugar



Sports Drink – 1 bottle (710 mL)

10 teaspoons added sugar



Sports Drink Every Day For A Year

Total: 15 kg of sugar



Energy Drink – 473 mL



Energy Drink – 473 mL

14 teaspoons added sugar





Energy Drink Every Day For A Year

Total: 20.5 kg of sugar



Vitamin Enhanced Water – 1 bottle (591 mL)



Vitamin Enhanced Water – 1 bottle (591 mL)

6 teaspoons added sugar



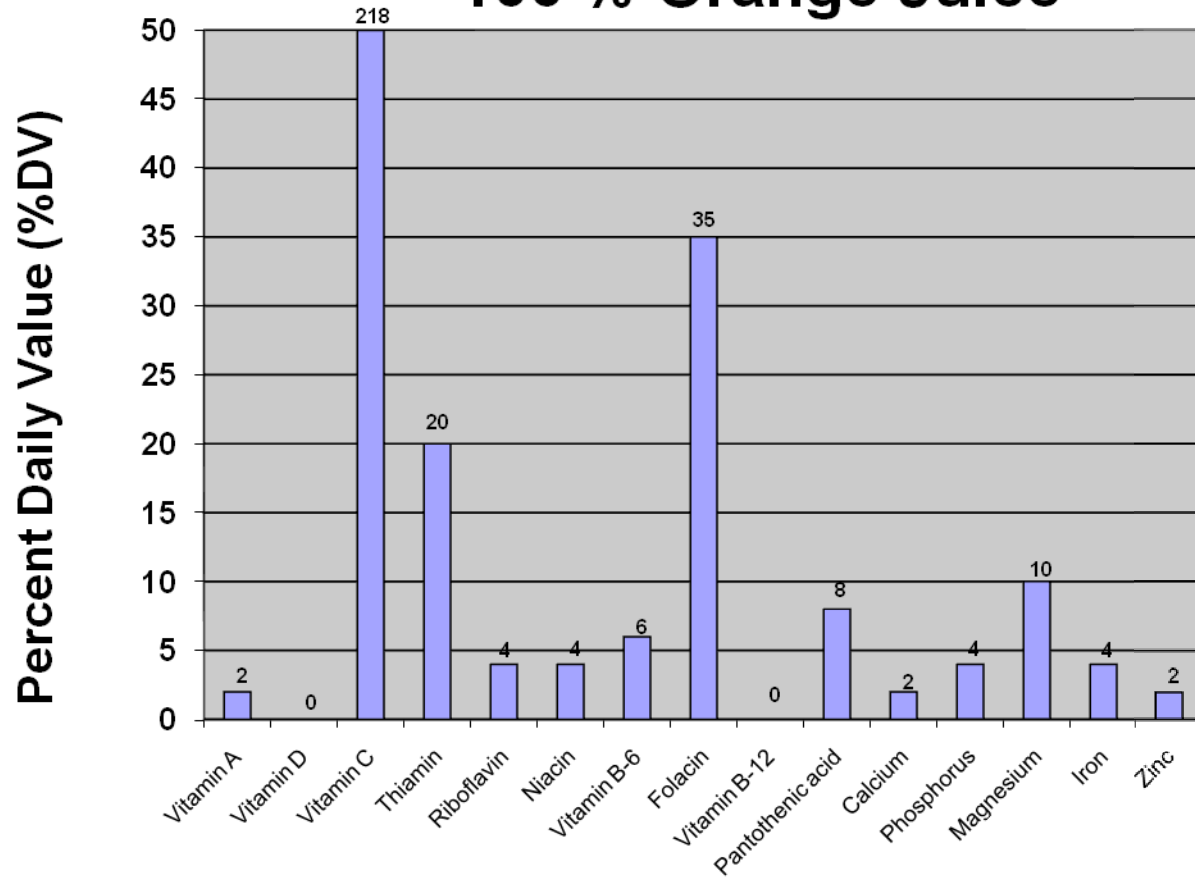
Appendix 3: A Comparison of Nutrients in Drinks

100% Orange Juice
Fruit Flavoured Drink
Milk
Chocolate Milk
Sugar Sweetened Pop
Sports Drink



125 mL

100 % Orange Juice



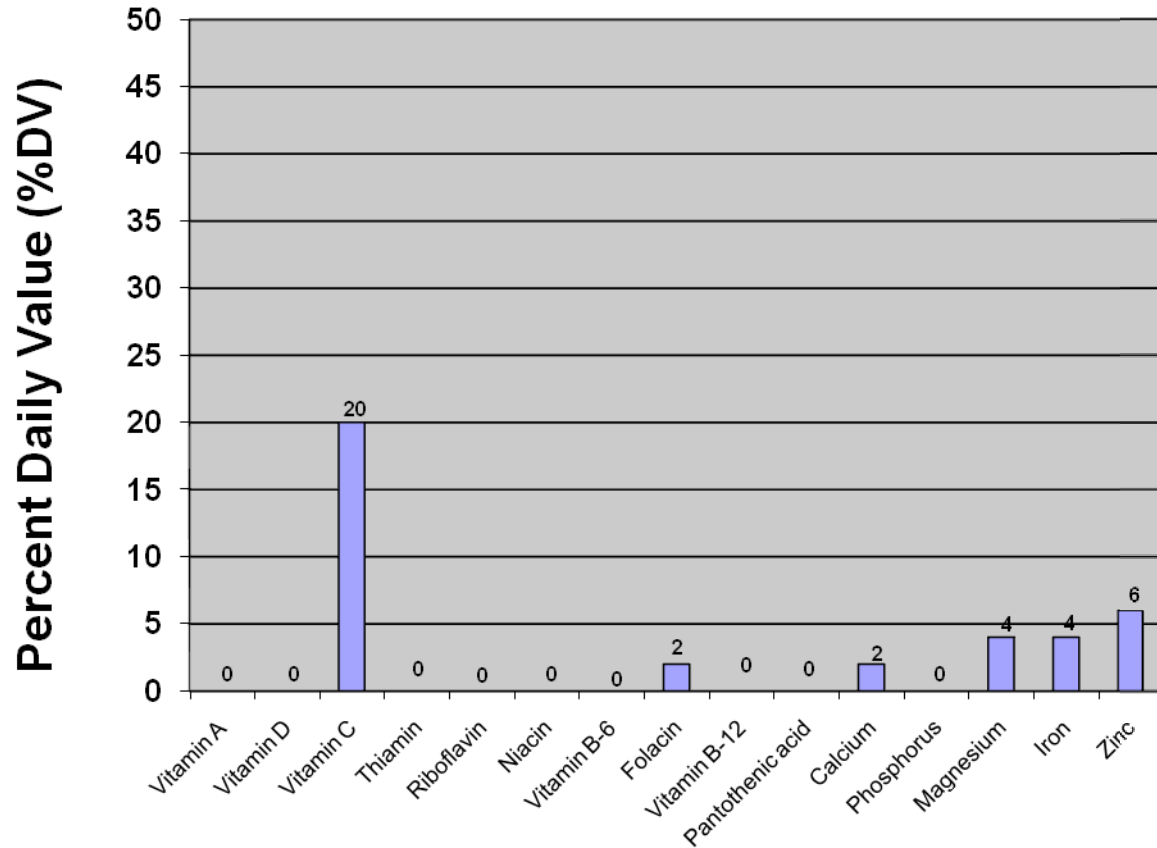
Nutrients Based on 250 mL Serving Size





591 mL

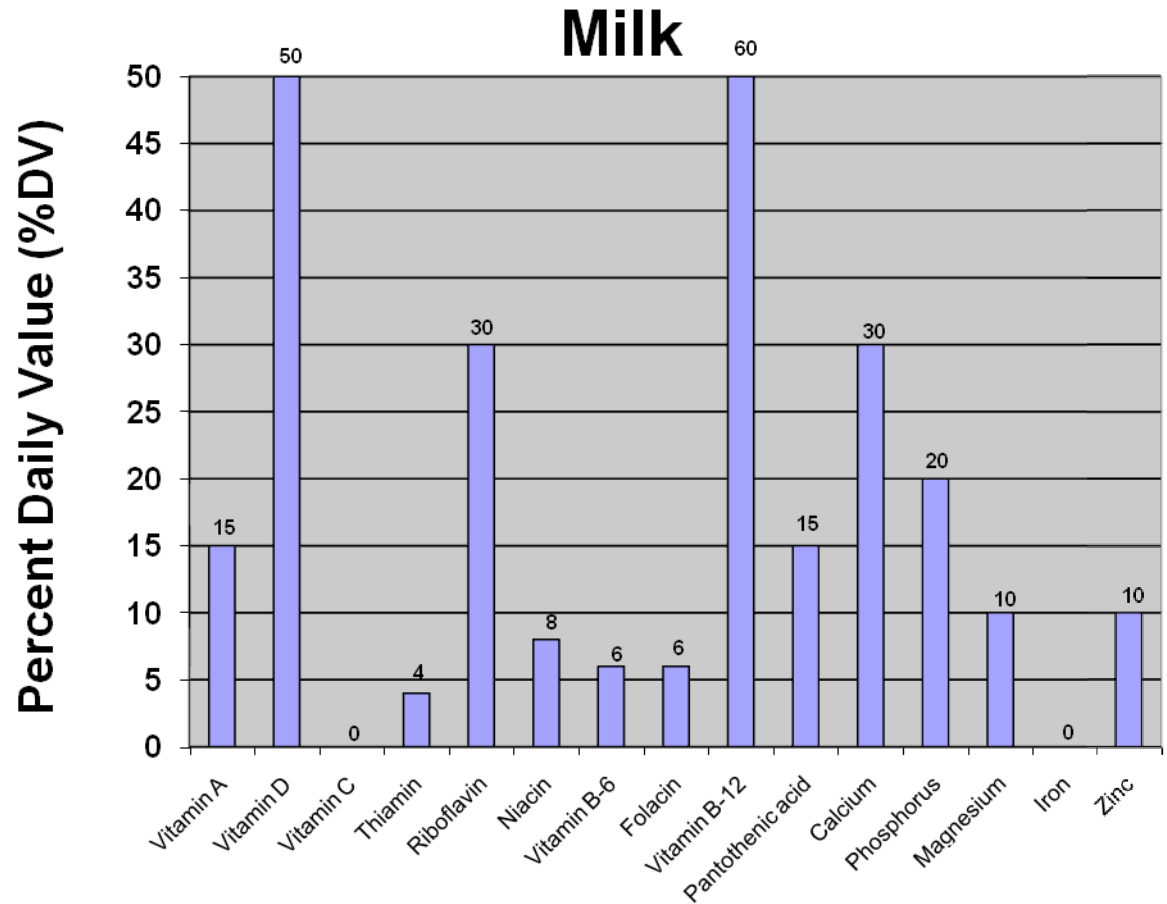
Fruit Flavoured Drink



Nutrients Based on 250 mL Serving Size



250 mL

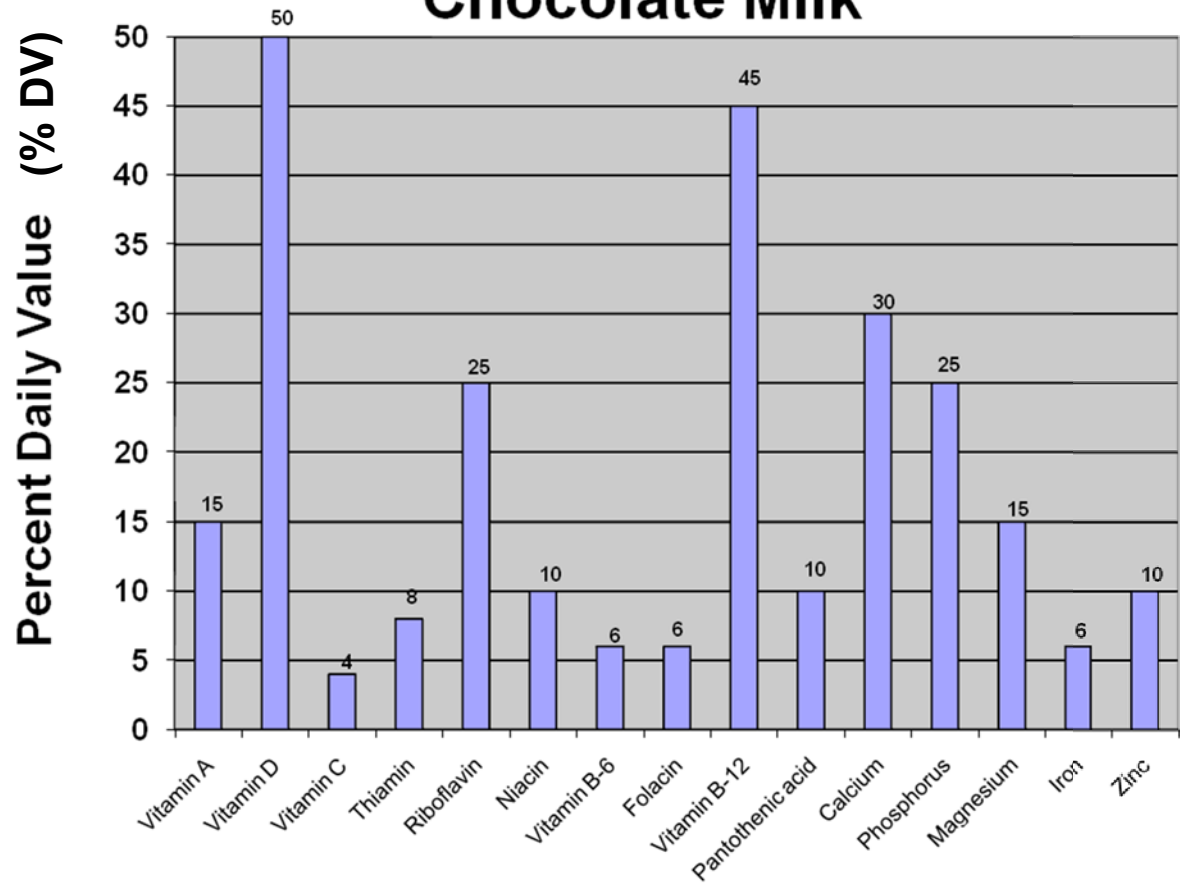


Nutrients Based on 250 mL Serving Size



250 mL

Chocolate Milk

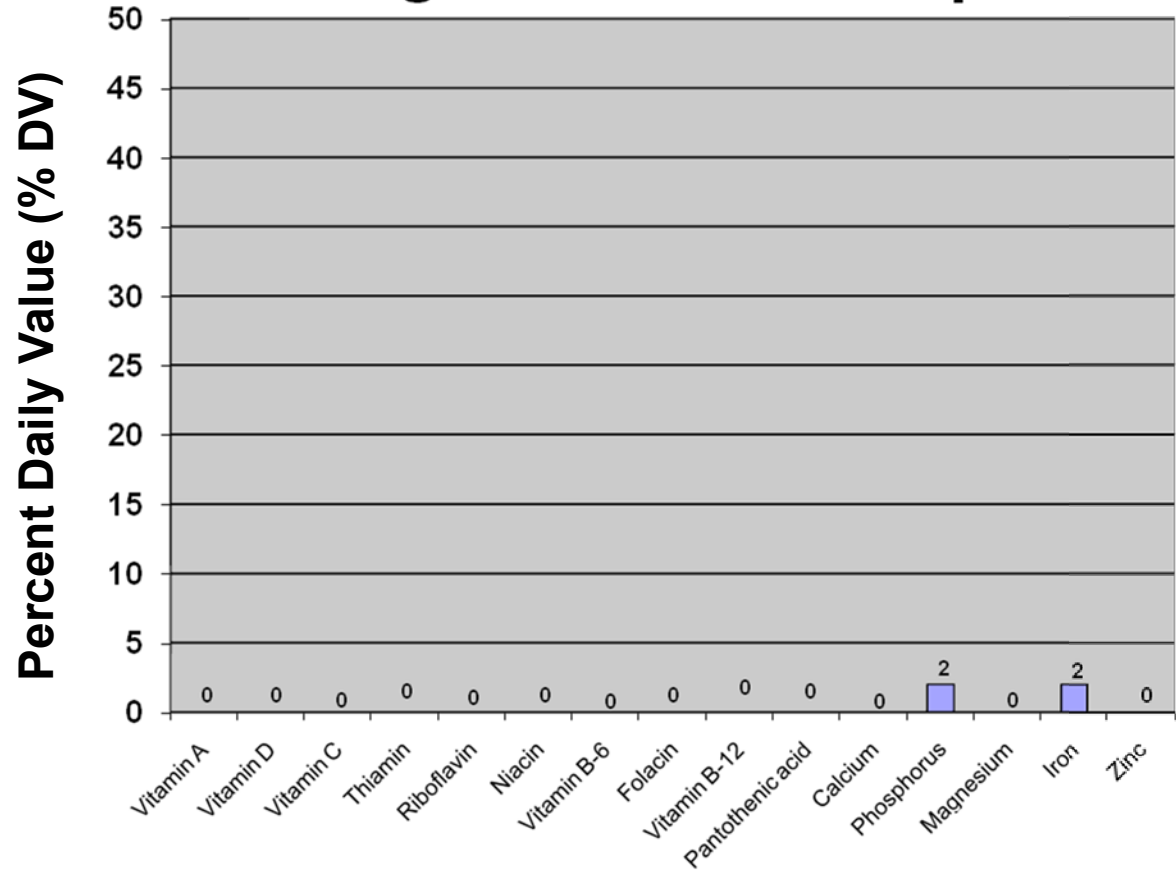


Nutrients Based on 250 mL Serving Size



355 mL

Sugar Sweetened Pop



Nutrients Based on 250 mL Serving Size

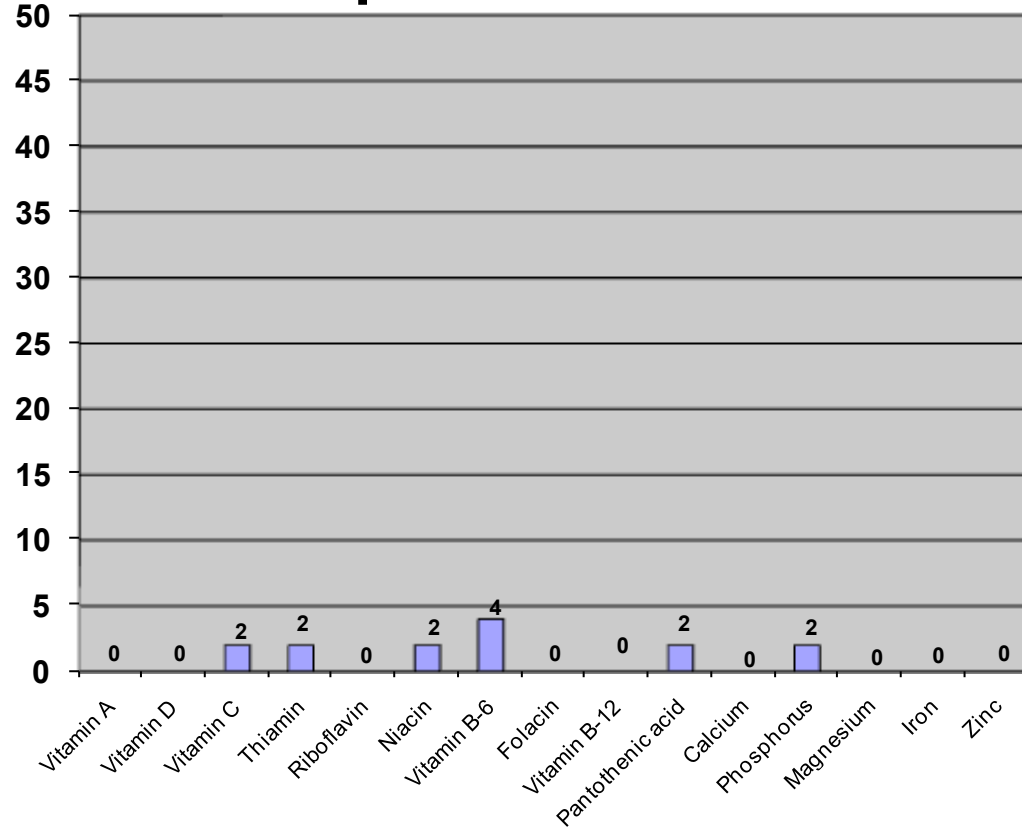




591 mL

Sport Drink

Percent Daily Value (%DV)



Nutrients Based on 250 mL Serving Size





Appendix 4: A set of Go, Yield, Stop Signs











References

References

- 1 Government of Alberta: Education. Health and life skills guide to implementation: kindergarten to grade 9. [document on the internet]. 2002 [cited 2011 Feb 15]. Available from: <http://education.alberta.ca/teachers/program/health/resources/k-9health.aspx>
- 2 Shields, M. Overweight Canadian children and adolescents. Findings from the Canadian community health survey. Statistics Canada [document on the internet]. 2008 Nov 16. [cited 2011 Jan 27]. Available from: <http://www.statcan.gc.ca/pub/82-620-m/2005001/article/child-enfant/8061-eng.htm>
- 3 REAL kids Alberta. Population Health Intervention Research Unit. Summary of results for REAL kids Alberta 2012. [document on the internet]. No date. [cited 2013 Nov 21]. Available from: <http://www.realkidsalberta.ca/research>
- 4 Government of Canada. Healthy Canadians- childhood obesity. [Online] 2013 Mar 4 [cited 2013 Nov 21]. Available from: <http://www.healthycanadians.gc.ca/kids-enfants/obesity-obesite/risks-risques-eng.php>
- 5 Vartanian L., Schwartz M., Brownell K., Effect of soft drinks on nutrition and health: a systematic review and metanalysis. American Journal of Public Health. [serial on the internet] 2007 [cited 2011 Jan 27]; 97(4): 667-675. Available from: <http://ajph.aphapublications.org/cgi/reprint/97/4/667>
- 6 Institute of Medicine. Dietary reference intakes: energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein ad amino acids. Chapter 6: Dietary Carbohydrates: sugars and starches. Washington, DC: National Academies Press. [document on the internet] 2002 [cited 2011 Jan 25]; 265-338. Available from: http://www.nap.edu/openbook.php?record_id=10490&page=265
- 7 Drewnowski A, Bellisle F. Liquid calories, sugar, and body weight. Am J Clin Nutr . [serial on the internet] 2007 [cited 2011 January 25]; 85:651-61. <http://www.ajcn.org/content/85/3/651.full>
- 8 Vasanti SM, Matthias BS, Frank BH. Intake of sugar-sweetened beverages and weight gain: a systemic review. Am J Clin Nutr 2006; 84:274-88.
- 9 Chen L. Chen L., Appel L., Loria C., Lin P., Champagne C., Elmer P., et al. Reduction in consumption of sugar-sweetened beverages is associated with weight loss: the PREMIER trial. Am J Clin Nutr [serial on the internet] 2009 [cited 2011 Jan 25]; 89(5):1299–1306. Available from: <http://www.ajcn.org/content/89/5/1299.full.pdf+html>
- 10 Health Canada. Heart Disease – heart health: it’s your health. [document on the internet] 2010 02 09 [cited 2011 Jan 27]. Available from: <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/heart-coeur-eng.php#risk>
- 11 Howard B, Wylie-Rosett J. Sugar and cardiovascular disease: a statement for healthcare professionals from the committee on nutrition of the council of nutrition, physical activity, and metabolism of the American heart association. Circulation [serial on the internet] 2002 [cited 2011 Dec 29];106:523-7. Available from: <http://circ.ahajournals.org/cgi/reprint/106/4/523>
- 12 Canadian Diabetes Association. Canadian diabetes association 2013 clinical practice guidelines for the prevention and management of diabetes in Canada. Can J Diabetes [document on the internet] 2013 Sept. [cited 2013 Nov 21]. 37: Supplement 1:S1-S212. Available from: <http://www.guideline.diabetes.ca/Browse.aspx>

- 13 Canadian Dental Association. Oral health – good for life. [Online] 2005 Nov 4 [cited 2011 Jan 11]; Available from: http://www.cda-adc.ca/en/oral_health/oral_health_life.asp
- 14 Canadian Sugar Institute. Sugar and health: behaviour. [Online] no date [cited 2011 Jan 28]. Available from: <http://www.sugar.ca/english/healthprofessionals/behaviour.cfm>
- 15 Position of the Academy of Nutrition and Dietetics: Use of Nutritive and Nonnutritive Sweeteners. J Acad Nutr Diet. 2012;112:739-758.
- 16 Canadian Sugar Institute. Estimates of added sugar consumption in Canada. [document on the internet] 2006 [cited 2011 Feb 2]. Available from: http://www.sugar.ca/english/pdf/healthprofessionals/FactSheet_E4_nov14_06.pdf
- 17 Katamay S., Esslinger K., Vigneault M., Johnston J., Junkins B., Robbins L., et al., Eating well with Canada's food guide (2007): Development of the food intake pattern. Nutrition Reviews. Special Article. [serial on the internet] 2007 [cited 2011 Jan 4]; 65(4): 155-66. Available from: http://www.hc-sc.gc.ca/fn-an/alt_formats/hpfb-dgpsa/pdf/pubs/fd_int_pat-ela_mod_alim-eng.pdf
- 18 Reedy, J, Krebs-Smith, S. 2010. Dietary sources of energy, solid fats, and added sugar among children and adolescents in the United States. Journal of the American Dietetic Association. [serial on the internet] 2010 [cited 2011 Feb 3]; 110(10): 1477-84. Available from: <http://www.mdconsult.com/das/article/body/231341527-2/jorg=journal&source=&sp=23648528&sid=0/N/766829/s0002822310011892.pdf?issn=0002-8223>
- 19 World Health Organization, Food and Agriculture Organization of the United Nations. World Health Organization Technical Report Series 916 Diet, nutrition and the prevention of chronic diseases. [document on the internet] 2003 [cited 2011 Feb 9]. Available from: http://whqlibdoc.who.int/trs/WHO_TRS_916.pdf
- 20 World Health Organization. WHO/FAO release independent expert report on diet and chronic disease. [Online] 2003 [cited 2011 Feb 9]. Available from: <http://www.who.int/mediacentre/news/releases/2003/pr20/en/>
- 21 Government of Alberta. Alberta nutrition guidelines for children and youth. [Online] 2010 [cited 2011 Jan 25]. <http://www.healthyalberta.com/NutritionGuidelines-Sept2012.pdf>
- 22 Institute of Medicine of the National Academies. Dietary reference intakes for water, potassium, sodium, chloride, and sulfate. Washington: National Academies Press. [document on the internet] 2004. [cited 2011 Feb 3]; Available from: http://www.nap.edu/openbook.php?record_id=10925&page=R1
- 23 Dietitians of Canada. Fuelling the young athlete. [document on the internet] 2010 Sept [cited 2010 Dec 29]; Available from <http://www.dietitians.ca/getattachment/b1399d82-da71-46e2-b19f-28eb0203468b/Factsheet---Fuelling-the-Young-Athelete.pdf.aspx>
- 24 American College of Sports Medicine. Exercise and fluid replacement position stand. Medicine & Science in Sports and Exercise 2007; 377-90.
- 25 Graham, T. Caffeine and exercise: metabolism, endurance and performance. Sport Med. 2001;31(11);785-807.

- 26 Health Canada. It's your health: caffeine. [document on the internet] 2010 Mar 29 [cited 2010 Dec 30]; Available from: <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/food-aliment/caffeine-eng.php>
- 27 Health Canada. Caffeine in food [document on the internet] 2010 Mar 3 [cited 2011 January 11]; Available from: <http://www.hc-sc.gc.ca/fn-an/securit/addit/caf/food-caf-aliments-eng.php>
- 28 Health Canada. Canadian nutrient file of some common foods [document on the internet]. 2008. [cited 2011 Jan 12]; Available from: http://www.hc-sc.gc.ca/fn-an/alt_formats/pdf/nutrition/fiche-nutri-data/nvscf-vnqau-eng.pdf
- 29 Tim Horton's. Canadian nutrition calculator. [Online] 2010 [Cited 2011 Jan 12]; Available from: <http://www.timhortons.com/ca/en/menu/nutrition-calculator.html>
- 30 Kavita M., Church RJ., Lewander W. Energy Drinks: The New Eye-Opener for Adolescents. Clinical Pediatric Emergency Medicine. [serial on the internet] 2008 [cited 2014 Jan 2]; 9:35 – 42. Available from: <https://com-emergency.sites.medinfo.ufl.edu/files/2013/02/energy-drinks.pdf>
- 31 Health Canada. Harper Government Announces New Measures to Support Families - New Approach on Energy Drinks. [Online] 2011 Oct 6 [cited 2013 Dec 13]; Available from: http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/_2011/2011-132-eng.php
- 32 Health Canada. Food and Nutrition. Category Specific Guidance for Temporary Marketing Authorization - Caffeinated Energy Drinks. [Online] 2012 April 10 [cited 2013 Dec 13]; Available from: <http://www.hc-sc.gc.ca/fn-an/legislation/guide-ld/guidance-caf-drink-boiss-tma-amt-eng.php>
- 33 Health Canada. Food and Nutrition. Caffeinated Energy Drinks. [Online] 2012 May 11 [cited 2013 Dec 13]; Available from: <http://www.hc-sc.gc.ca/fn-an/prodnatur/caf-drink-boissons-eng.php#a2>
- 34 Health Canada. Food and Nutrition. Information for Parents on Caffeine in Energy Drinks. [Online] 2012 May 10 [cited 2013 Dec 13]; Available from: <http://www.hc-sc.gc.ca/fn-an/securit/addit/caf/faq-eng.php>
- 35 Health Canada. Drug and Health Products. Report by the Expert Panel on Caffeinated Energy Drinks. [Online] 2011 Sept 14 [cited 2013 Dec 19]; Available from: http://www.hc-sc.gc.ca/dhp-mps/prodnatur/activit/groupe-expert-panel/report_rapport-eng.php
- 36 Position of the American Dietetic Association, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and athletic performance. JADA. 2000;100 (12):1543-56.
- 37 Dietitians of Canada. Function and food sources of some common vitamins. [document on the internet] 2010 Sept 1 [cited 2011 Feb15]. Available from: [http://www.dietitians.ca/Nutrition-Resources-A-Z/Fact-Sheet-Pages\(HTML\)/Vitamins/Functions-and-Food-Sources-of-Common-Vitamins.aspx](http://www.dietitians.ca/Nutrition-Resources-A-Z/Fact-Sheet-Pages(HTML)/Vitamins/Functions-and-Food-Sources-of-Common-Vitamins.aspx)
- 38 Dietitians of Canada. Practice-Based Evidence in Nutrition. Natural health product evidence summary.[document on the internet] 2010 Nov 11 [cited 2011 Feb 17]. Available from: <http://www.pennutrition.com/KnowledgePathway.aspx?kpid=755&trid=16702&treatid=42> Access only by subscription
- 39 Dietitians of Canada. Sports drinks: Their role in hydration for athletic performance. [document on the internet] 2009. [cited 2010 Dec 29]; Available from: <http://www.dietitians.ca/getattachment/2361599d-2095-4d24-9ff6-ee0bf21158f7/FactSheet---Sport-Drinks.pdf.aspx>

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- 40 Alberta Health Services. Nutrition guideline. Vitamins and minerals. [Online] 2013 Jan. [cited 2013 Nov 21]; Available from: <http://www.albertahealthservices.ca/hp/if-hp-ed-cdm-ns-3-2-5-vitamins-and-minerals.pdf>
 - 41 Health Canada. Nutrition. Labeling. [Online] 2010 Jul 29 [cited 2011 Jan 13]. <http://www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/cons/ingredients-eng.php>
 - 42 Eat Right Ontario. The truth about sugar FAQ. [Online] 2013 [cited 2013 Nov 20]; Available from: <http://www.eatrightontario.ca/en/Articles/Carbohydrate/The-Truth-about-Sugar---FAQs.aspx>
 - 43 Health Canada. Food and Nutrition. The % Daily Value [Online]. 2013 Feb 21 [cited 2013 Oct 30]. Available from: <http://www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/cons/dv-vq/index-eng.php>