Name: _____ Group: _____ Date: _____

REAL JUICE OR SWEETENED FRUIT-FLAVOURED WATER?

STUDENT BOOK:	**Chapter 1, pp. 10–14**
CONCEPTS:	HOMOGENEOUS AND HETEROGENEOUS MIXTURES CONCENTRATION
METHOD:	EMPIRICAL

What is in the fruit juices and beverages we drink? Small or large format, natural ingredients or not, sugar added or not—these are just some of the things that may differ from one drink to another. Do all juices have the same sugar content? We can figure out the amount and concentration of sugar in what we drink by making comparisons and calculating concentrations based on the nutrition facts on product labels.

IDENTIFYING THE RESEARCH TOPIC

Read pp. 10–14 in your student book for help in answering the following questions:

1. Are fruit juices homogeneous or heterogeneous mixtures?

_____

_____

2. Are fruit juices that contain pulp homogeneous or heterogeneous mixtures?

_____

_____

3. Do you check the sugar content of the fruit juice or other beverage you are drinking?

_____

_____

4. What are some possible solutes among the ingredients commonly found in juices and other beverages?

_____

_____

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5. What is the probable solvent among the ingredients commonly found in juices and other beverages?

_____

_____

6. What types of beverages do you think contain the most sugar?

_____

_____

7. What types of beverages do you think contain the least amount of sugar?

_____

_____

PLANNING YOUR RESEARCH

8. On the label shown on the right, circle the information that provides the sugar content in one cup of fruit juice.

9. What unit of measurement is used on this label to indicate the amount of sugar? Relative to what volume?

_____

_____

_____

10. It is better to use the concentration factor for comparing sugar contents.

What formula will you use to calculate the sugar concentration for the different types of juices and other drinks?

_____

_____

Nutrition Facts Per cup (250 mL)	
Amount	**% DV***
Calories 120	
Fat 0 g	**0%**
Saturates 0 g + Trans 0 g	**0%**
Cholesterol 0 mg	
Sodium 25 mg	**1%**
Potassium 420 mg	**12%**
Carbohydrate 28 g	**9%**
Fibre 1 g	**4%**
Sugars 23 g	
Protein 1 g	
Vitamin A	0%
Vitamin C	100%
Calcium	2%
Iron	0%
* DV = Daily Value	

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CONDUCTING YOUR RESEARCH

11. Look up the amounts of sugar and volumes of drinks listed in the table on page 5, and record them in the appropriate spots on each of the following labels.

a) Pure fruit juice

Nutrition Facts Per cup	
Amount	**% DV***
Calories 120	
Fat 0 g	**0%**
Saturates 0 g + Trans 0 g	**0%**
Cholesterol 0 mg	
Sodium 25 mg	**1%**
Potassium 420 mg	**12%**
Carbohydrate 28 g	**9%**
Fibre 1 g	**4%**
Sugars	
Protein 1 g	
Vitamin A	0%
Vitamin C	100%
Calcium	2%
Iron	0%
* DV = Daily Value	

b) Fruit juice made from concentrate

Nutrition Facts Per cup	
Amount	**% DV***
Calories 90	
Fat 0 g	**0%**
Saturates 0 g + Trans 0 g	**0%**
Cholesterol 0 mg	
Sodium 25 mg	**1%**
Carbohydrate 23 g	**8%**
Fibre 0 g	**0%**
Sugars	
Protein 0 g	
Vitamin A	0%
Vitamin C	30%
Calcium	2%
Iron	2%
* DV = Daily Value	

c) Fruit punch

Nutrition Facts Per	
Amount	**% DV***
Calories 140	
Fat 0 g	**0%**
Sodium 10 mg	**0%**
Carbohydrate 35 g	**12%**
Sugars	
Protein 0.2 g	
Vitamin C	100%
Not a significant source of other nutrients.	
* DV = Daily Value	

d) Clear carbonated drink

Nutrition Facts Per	
Amount	**% DV***
Calories 160	
Fat 0 g	**0%**
Sodium 65 mg	**3%**
Carbohydrate 43 g	**14%**
Sugars	
Protein 0 g	
Not a significant source of saturated fat, trans fat, cholesterol, fibre, vitamin A, vitamin C, calcium or iron.	
* DV = Daily Value	

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e) Diet soda

Nutrition Facts Per	
Amount	**% DV***
Calories 4	
Fat 0 g	**0%**
Sodium 65 mg	**3%**
Carbohydrate 0 g	**0%**
Sugars	
Protein 0 g	
Not a significant source of saturated fat, trans fat, cholesterol, fibre, vitamin A, vitamin C, calcium or iron.	
* DV = Daily Value	

f) Sports drink

Nutrition Facts Per bottle	
Amount	**% DV***
Calories 250	
Fat 0 g	**0%**
Saturates 0 g + Trans 0 g	**0%**
Cholesterol 0 mg	
Sodium 90 mg	**4%**
Potassium 100 mg	**3%**
Carbohydrate 65 g	**22%**
Fibre 0 g	**0%**
Sugars	
Protein 0 g	
Vitamin A	0%
Vitamin C	0%
Calcium	0%
Iron	0%
* DV = Daily Value	

g) Light fruit drink

Nutrition Facts Per	
Amount	**% DV***
Calories 50	
Fat 0 g	**0%**
Sodium 30 mg	**1%**
Carbohydrate 12 g	**4%**
Sugars	
Protein 0 g	
Calcium	2%
Not a significant source of saturated fat, trans fat, cholesterol, fibre, vitamin A, vitamin C, calcium or iron.	
* DV = Daily Value	

h) Apple juice made from concentrate

Nutrition Facts Per	
Amount	**% DV***
Calories 90	
Fat 0 g	**0%**
Saturates 0 g + Trans 0 g	**0%**
Cholesterol 0 mg	
Sodium 20 mg	**1%**
Carbohydrate 21 g	**7%**
Fibre 0 g	**0%**
Sugars	
Protein 0 g	
Vitamin A	0%
Vitamin C	100%
Calcium	2%
Iron	2%
* DV = Daily Value	

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12. What formula should you use to find the concentration of a drink in g/L? Calculate the concentration for each type of drink mentioned in question 11. Write out a sample calculation in the space below and record your result in the appropriate column of the table at the bottom of this page.

13. Now calculate the percentage concentration of each drink. Write down a sample calculation in the space below and record your result in the appropriate column of the table at the bottom of this page.

Sugar concentration of the drinks studied

Type of drink	Amount of sugar	Volume	Concentration	Concentration in %
	(g)	(mL)	(g/L)	(mass/volume)
a) **Pure fruit juice**				
b) **Fruit juice made from concentrate**				
c) **Fruit punch**				
d) **Clear carbonated drink**				
e) **Diet soda**				
f) **Sports drink**				
g) **Light fruit drink**				
h) **Apple juice made from concentrate**				

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REFLECTING ON YOUR APPROACH

14. Based on your results, rank the drinks by increasing order of sugar concentration.

1. _____ **5.** _____

2. _____ **6.** _____

3. _____ **7.** _____

4. _____ **8.** _____

15. Are you surprised at the results? Why?

_____

_____

_____

_____

_____

16. Do you think that sugar concentration is the only factor in making a healthy choice? Explain your answer.

_____

_____

_____

_____

_____

17. How could you improve your method to learn more about the sugar concentration of fruit juices and other drinks?

_____

_____

_____

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