

**Background**

Three of the important ingredients found in soft drink are water, sugar and carbon dioxide gas. In this experiment you will look at some characteristics of these ingredients.

**Equipment available**

- granulated sugar
- sugar cube
- large plastic syringe
- 2 x 100 mL beakers
- 2 x 100 mL conical flasks
- balloon

**Method**

**Part A: compressibility**

1. Put your finger over hole in syringe then pour some sugar into syringe. Press down on plunger and try to squeeze it. Write your observation, then tip sugar out.
2. Put some water in beaker and suck some up with syringe. Put your finger over hole then try to squeeze water with plunger. Write your observations, then tip water out.
3. Blow out into syringe (you will be producing some carbon dioxide). Put your finger over hole and try to squeeze carbon dioxide-air mixture with plunger. Write your observations.

**Part B: changing shape and volume**

1. Blow up balloon about half way (remember gas you breathe out contains some carbon dioxide). Tie off balloon. Squeeze with your hands. Write your observations.
2. Put 50 mL of water into beaker. Pour into conical flask. Write down your observations.
3. Put sugar cube into dry beaker. Pour into dry conical flask. Write down your observations.
4. Put small amount of granulated sugar into dry beaker. Pour it into dry conical flask. Write down your observations.

**Results**

Write down your observations as you do the experiment.

INGREDIENT	Is it compressible? (can be squeezed)	Does it change shape?	Does it change volume? (size)
sugar (granulated)			
sugar (cube)			
water			
carbon dioxide			

## Questions

1. Why do you think you were able to change the shape of the balloon of gas when you squeezed it, but the sugar cube stays the same when you poke it?

.....  
.....  
.....

2. Explain what would happen to the gas if the balloon popped?

.....  
.....  
.....

3. When water is poured from one place to another it flows into the bottom of the container. Why do you think this is?

.....  
.....  
.....

4. When a sugar cube is poured from one container to another it stays the same shape, but granulated sugar moves into the shape of the container. Does this mean that they are different substances?

.....  
.....  
.....

5. Look carefully at just one grain of sugar. Does it change shape when it is poured?

.....  
.....  
.....

6. Which test would be best to find the difference between a solid and a liquid? Why?

.....  
.....  
.....

7. Which test would be best to find the difference between a solid and a gas? Why?

.....

.....

.....

8. Which test would be best to find the difference between a liquid and a gas? Why?

.....

.....

.....

9. How do the different properties of sugar, water and carbon dioxide help us to separate a soft drink into its ingredients?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....