# THE EFFECT OF DILUTION ON THE COLOUR OF A SOLUTION

STUDENT BOOK	Chapter 1, page 13
TOOLBOX	Page 29

### Goal

Determine the effect of dilution on the colour of a solution.

- 1. What is the independent variable in this lab?
- 2. What is the dependent variable in this lab?

# **Hypothesis**

I think that	
because	

### **Materials**

- marker
- 4 test tubes (18 mm × 150 mm) and stoppers (No. 1)
- test-tube rack

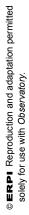
- 50-mL graduated cylinder
- container of given solution with 10 g/L concentration
- · 25-mL graduated cylinder
- · wash bottle of distilled water

# **Procedure**



- 1. Number the test tubes from 1 to 4 with the marker.
- **2.** Measure into the 50-mL graduated cylinder 50 mL of the given solution (concentration of 10 g/L).
- 3. Pour the solution into test tube 1 and record the volume.
- 4. Measure into the 25-mL graduated cylinder 10 mL of the given solution.
- 5. Pour the solution into test tube 2 and record the volume.
- 6. Measure into the 50-mL graduated cylinder 40 mL of distilled water.
- 7. Pour the water into test tube 2 and record the volume of solvent added.
- 8. Stopper test tube 2 and shake to mix the solution.
- 9. Calculate the concentration of solution in test tube 2.
- **10.** Prepare a solution in test tube 3 of a different total volume and the same concentration as the solution in test tube 2. Write down your calculations.

Name:		Gr	oup:	Date:			
<ul> <li>11. Prepare a solution in test tube 4 of a different volume of distilled water and the same volume of given solution as in test tube 2. Write down your calculations.</li> <li>12. Compare the colour of the four solutions and record your results.</li> <li>13. Clean up and put away materials.</li> </ul>							
Results							
Record your results in the table below. Give the table a title.							
Title:							
Test tube	Volume of given solution (mL)	Volume of water added (mL)	Total volume of prepared solution (mL)	Concentration of prepared solution (g/mL)	Colour of prepared solution		
					_		
Calculation	S						
Write down you	r calculations belo	W.					
Calculation of concentration or volume of prepared solutions							





Observatory/Guide 11071-B

ann	e: Date:
na	alysis of the results
1. [	Does the colour of a solution of the same final concentration change according to volume? Explain your answer.
- 2. \ -	What happens to the colour of a solution when distilled water is added?
- 3. H -	How is the concentration of a solution affected by the adding of distilled water?
- \	What are the possible sources of error in this lab?
- 5. H	How could you improve the protocol for this lab?
01	nclusion
	Complete the following sentence: When a solution is diluted, concentration
2. \	Was your hypothesis confirmed or not? Explain your answer.
-	
_	
-	
_	

Name:	Group:	Date:				
Application						
To prepare fruit juice from a concentrate of 250 mL, you need to pour the concentrate into a large container, then add four times the volume of water and mix well. How would you prepare a glass of fruit juice (250 mL) of the same concentration?						