Name: _____ Group: _____ Date: _____

LAB 3 EXPERIMENT

THE EFFECT OF CONCENTRATION ON THE COLOUR OF A SOLUTION

STUDENT BOOK	Chapter 1, page 13
TOOLBOX	Page 28

Goal

Determine the effect of concentration 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
- test-tube rack
- 3 test tubes (18 mm × 150 mm) and stoppers (No. 1)
- balance (accurate to 0.01 g)
- weighing pan
- spatula
- 10 g of coloured solid soluble in water
- 25-mL graduated cylinder
- wash bottle of distilled water
- glass stirring rod
- 50-mL graduated cylinder

Procedure

1. Number the test tubes from 1 to 3 with the marker.
2. Weigh and record the mass of the weighing pan.
3. Add to the weighing pan exactly 1.00 g of coloured solid.
4. Place the solid into the 25-mL graduated cylinder.
5. Add about 15 mL of distilled water.
6. Mix with the glass stirring rod until dissolution is complete.
7. Add distilled water to obtain a total volume of 20 mL.
8. Mix again with the stirring rod.
9. Pour the solution into test tube 1.

Name: _____ Group: _____ Date: _____

10. Rinse and dry the graduated cylinder.

11. Repeat steps 3 to 8 using the 50-mL graduated cylinder and double the amount of solute (2.00 g instead of 1.00 g) and double the volume of solution (40 mL instead of 20 mL).

12. Pour the solution into test tube 2.

13. Repeat steps 3 to 8 using the 25-mL graduated cylinder and reduce by half the amount of solute (0.50 g instead of 1.00 g) but do not modify the volume of solution (20 mL).

14. Pour the solution into test tube 3.

15. Compare the colour of the solutions and record your results.

16. Clean up and put away materials.

Results

Record your results in the table below. Give the table a title.

Title:

Mass of solute (g)	Total volume of solution (mL)	Concentration of solution (g/L)	Colour of solution

Analysis of the results

1. Does the volume of a given concentration affect the colour of a solution? Explain your answer.

2. How does colour vary according to concentration of a solution?

3. If the same mass of solute is dissolved in a greater volume of solvent, what will happen to the colour of the solution? Explain your answer.

Name: _____ Group: _____ Date: _____

4. What are the possible sources of error in this lab?

5. How could you improve the protocol for this lab?

Conclusion

1. Complete the following sentences:

a) The colour of a solution depends on the _____

b) The higher the _____, the _____ the colour. Similarly, the lower the _____, the _____ the colour.

c) The colour of a given concentration does not depend on the _____ of the solution.

2. Was your hypothesis confirmed or not? Explain your answer.

Application

How could the taste of soup that is too salty be improved?