

Identifying substances with chemical tests

Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

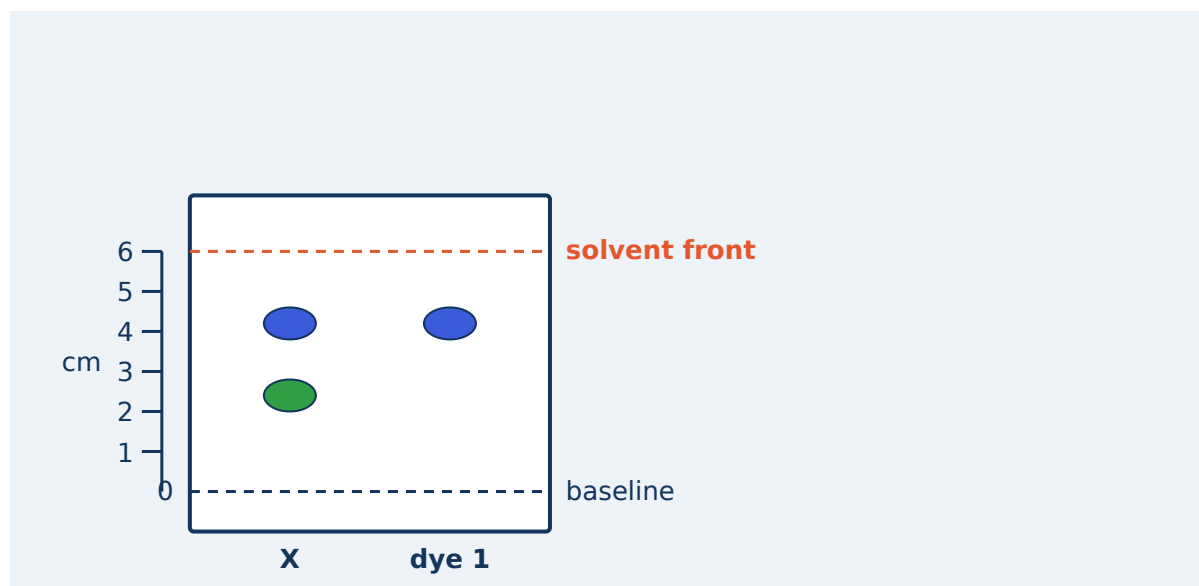
This test covers chromatography and R_f values, flame tests, precipitate tests, gas tests and the tests for negative ions. Answer all questions. Show the equation or the working that supports each conclusion, and use the chromatogram to answer the first question.

Level: Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · **Curriculum:** GCSE C8

Time: 40 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 Chromatogram (3 marks)

The chromatogram shows a sample X and a reference dye 1. The solvent front moved 6.0 cm.



Chromatogram of sample X and dye 1.

- Calculate the R_f of the upper spot in X. (1 mark)
- State whether X contains dye 1 and give a reason. (1 mark)
- State whether X is pure. (1 mark)

Question 2 Flame tests (2 marks)

- Name the metal ion that gives a lilac flame. (1 mark)
- Name the metal ion that gives an orange-red flame. (1 mark)

Question 3 Sodium hydroxide tests (3 marks)

Sodium hydroxide solution is added to three solutions. Solution 1 gives a red-brown precipitate. Solution 2 gives a white precipitate that dissolves in excess.

- Identify the metal ion in solution 1. (1 mark)
- Identify the metal ion in solution 2. (1 mark)
- Write an ionic equation for the reaction of solution 1. (1 mark)

Question 4 Gas tests (2 marks)

- Describe the test for hydrogen and the result. (1 mark)
- Describe the test for oxygen and the result. (1 mark)

Question 5 Testing for sulfate (3 marks)

A student tests a solution for sulfate ions.

- Name the two reagents used, in order. (1 mark)
- State the positive result. (1 mark)
- Explain why the first reagent is needed. (1 mark)

Question 6 Purity (2 marks)

Describe how the melting point of a pure substance differs from that of a mixture.

Question 7 Testing for bromide (2 marks)

Describe how to test for bromide ions and give the result and an ionic equation.

Question 8 Unknown white solid (3 marks)

A white solid dissolves in water. Its flame test is yellow. Adding nitric acid then silver nitrate gives a white precipitate. Identify the solid, and write an ionic equation.