

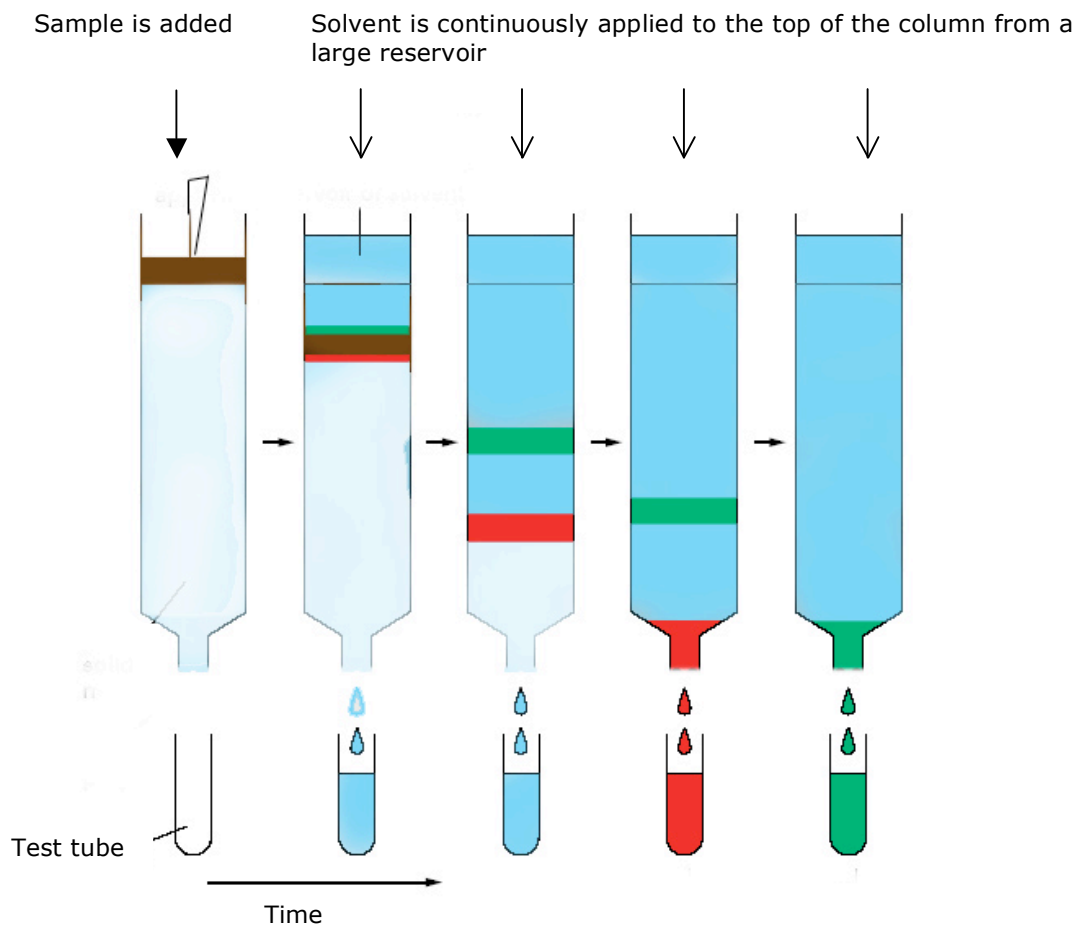
Test for **Chromatography** activity

Name \_\_\_\_\_ Teacher \_\_\_\_\_  
 Date \_\_\_\_\_ Class \_\_\_\_\_

Check one:

- Pretest  
 Posttest

1. A lab technician added a sample containing different molecules to the top of the chromatography column. It was brown in color (the dark band at the top of the test tube). She continuously added solvent to the top of the column from a large reservoir (not shown).



Explain:

**1a.** Why do two bands (of different color) eventually appear?

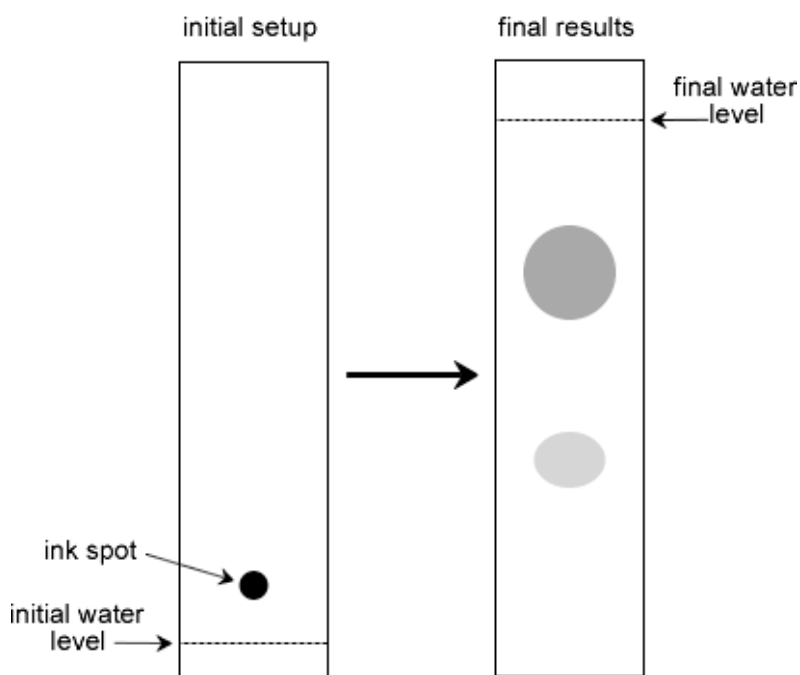
The mixture is composed of two types of molecules.	1
Other	0

1b. Why are the two bands moving down the column at different speeds?

Response includes...	
The bands move down the column at different speeds because the molecules have different properties (e.g. some are hydrophobic others are hydrophilic) and attract differently to the solvent and the column..	2
Response states the molecules have “different properties” but doesn’t explain how this is responsible for separation.	1
Other	0

2. The picture below shows the results of a paper chromatography experiment. In this experiment a lab technician has placed an ink spot on the paper and used water (a hydrophilic substance) as the solvent. Look at the results and answer the questions that follow.

### Chromatography Results



- 2a. Many inks are mixtures of several pigments. These pigments can be separated using paper chromatography by using variations in:
- the solubility of the pigments in the solvent
  - the depth of the paper in the solvent cup
  - the adsorption of the pigments to the paper

- d. both A and B
- e. both A and C
- f. both B and C

Answers E	1
Other	0

2b. Is the ink that moved the furthest up the paper hydrophilic or hydrophobic? Explain your answer.

<b>Response includes...</b>	
The ink that moved the furthest up the paper is hydrophilic; the ink is attracted to water more than to the paper.	2
The ink is hydrophilic. Response includes no explanation.	1
Other	0

2c. What results might the technician have expected if he used a solvent such as benzene, a hydrophobic substance?

<b>Response includes...</b>	
The results would have been expected to show that the hydrophilic components remained where placed on the paper and the hydrophobic components traveled a distance up the paper. (The results would have been opposite to the above illustration.)	2
The results would have shown that the ink doesn't move. (The response does include a reason.)	1
Other	0