

37 R_f values and GLC – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

*Write each word three times.***English****Write it 3 times** (English)gas/liquid chro-
matography

Recall

Each substance in a TLC plate has its own R_f value, which helps identify it.

New ideas

Read these first, then do the Practice.

■ 1 The R_f value

$$R_f = \frac{\text{spot distance}}{\text{solvent distance}}$$

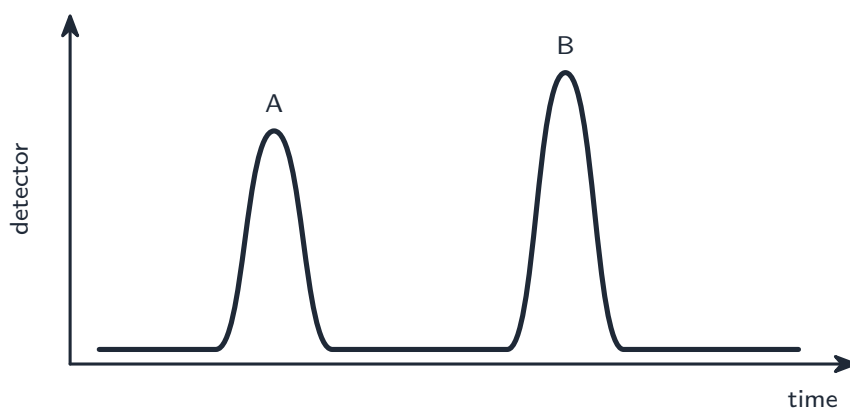
always between 0 and 1

sticks more $\Rightarrow$ moves less $\Rightarrow$ smaller R_f

R_f = (distance moved by the spot) $\div$ (distance moved by the solvent front). It is always 0–1. A substance that sticks more to the stationary phase moves less, so it has a *smaller* R_f .

Worked example. A spot moves 3.0 cm while the solvent front moves 6.0 cm, so $R_f = 3.0/6.0 = 0.50$.

■ 2 Gas/liquid chromatography



each peak = a component, at its retention time

In **gas/liquid chromatography** (GLC), a carrier gas moves the sample; each component leaves at its own *retention time*, giving a peak.

Watch out: R_f is always between 0 and 1 (a spot cannot move further than the solvent). A substance that sticks *more* to the stationary phase moves *less*, giving a *smaller* R_f .

Practice

Try these in order.

37.6 Write the formula for the R_f value. [1]

37.7 What range is the R_f always in? [1]

37.8 A substance that *sticks more* has a larger or smaller R_f ? [1]

37.9 In *GLC*, what moves the sample along? [1]

37.10 In a GLC trace, what does each peak represent? [1]

37.11 Challenge. On a TLC plate, substance X has $R_f = 0.8$ and substance Y has $R_f = 0.3$. State which sticks more strongly to the stationary phase, and explain. [2]
