

TLC & Rf — Answer Key

Ten carefully checked problems • Lab Skills • Instructor copy

INSTRUCTOR ANSWER KEY — Correct answers and explanations appear in red.

1. A spot travels 2.5 cm and solvent 5.0 cm. Find Rf.

Answer: $R_f = 2.5/5.0 = 0.50$.

2. A spot travels 1.2 cm and solvent 6.0 cm. Find Rf.

Answer: $R_f = 1.2/6.0 = 0.20$.

3. A spot travels 4.8 cm and solvent 6.0 cm. Find Rf.

Answer: $R_f = 4.8/6.0 = 0.80$.

4. Why use pencil for the TLC baseline?

Answer: Pencil graphite generally does not dissolve and travel with the mobile phase.

5. What is the stationary phase in common silica TLC?

Answer: A thin layer of polar silica gel.

6. Which of $R_f = 0.20$ and 0.75 is more strongly retained on the same silica plate?

Answer: $R_f 0.20$ is more strongly retained under those same conditions.

7. What happens to many Rf values when mobile-phase polarity increases on silica TLC?

Answer: They often rise because the mobile phase competes more strongly for silica binding sites.

8. Where must both distances begin for an Rf calculation?

Answer: At the same pencil baseline.

9. Why mark solvent front immediately?

Answer: The volatile solvent can evaporate, hiding where the front reached.

10. Are Rf values from different mobile phases directly comparable?

Answer: Not reliably; solvent composition and stationary phase must be matched.