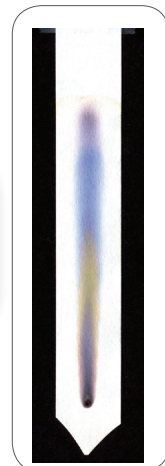
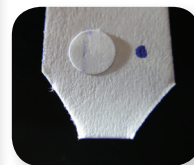


Ink Chromatography and Forensics STEM Kit

NEW

**Includes
Activity
Guide**

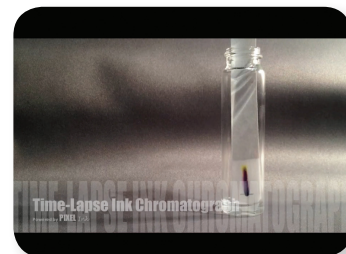
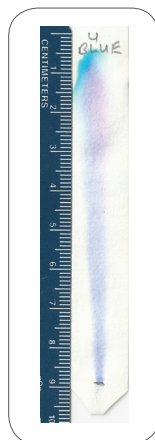

Inks	
Ink Type	Composition
Iron Gallbladder	WATER BASED
Carbon (India Ink)	WATER BASED
Blue-black (Permanent pens)	WATER BASED
Ballpoint	ORGANIC BASED
Pen Tip	WATER BASED
Roller Ball	WATER BASED
Quill	WATER BASED
drawing / markers	most colorants are dyes (gel inks & ballpoint inks have pigments) vehicles are non-water soluble
premixing	most colorants are dyes most vehicles are non-water soluble



Use this kit to introduce your students to ink chromatography and its application in solving forensics cases. Students gain experience in creating ink databases, identifying 'ink tags' to 'date' various inks and then use them (as professional document examiners do) in solving two mysteries involving document inks - an apparent suicide note and a forgery case. Includes materials for three detailed activities (with 'model' and 'inquiry' investigational paths - a total of four investigational activities), which can accommodate up to 40 students. Also contains a DVD with PDF Teacher and Student Guides and other digital content.

Covered concepts include: data analysis, chromatographs, inks and their composition, mixtures, compounds, molecules, solubility, affinity, polar substances, Rf values, capillary action, light energy, fluorescence, and hypothesis testing.

Item No.	Description
AISCRKIT	Ink Chromatography and Forensics STEM Kit


Activity Summaries
Activity 1 - Working with Ink Lines and an Ink Database

(GUIDED - MODEL EXPERIMENT)

(BEGINNER - INTERMEDIATE)

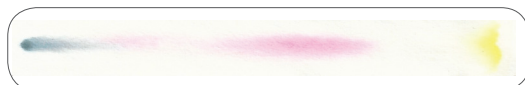
OVERVIEW: In this STRUCTURED INVESTIGATION, student teams are assigned a writing instrument and are asked to create ink lines. Later, they evaluate these ink lines for instrument type, and ink composition using chromatographic separation techniques. Students then use these data to identify ink brands from an ink database.

OBJECTIVES: Students will...

- ✓ Learn about writing instruments (e.g. pen nibs).
- ✓ Learn how to perform a chromatographic analysis.
- ✓ Analyze a chromatograph, determine R_f values.
- ✓ Identify an unknown ink based on its R_f value from an ink database.

INDEPENDENT INQUIRY

Student teams function as 'independent laboratories' to identify a particular ink and instrument used to create an ink line.


Activity 2 - Case of the Quivering Line

(GUIDED - MODEL EXPERIMENT)

(INTERMEDIATE - ADVANCED)

OVERVIEW: In this STRUCTURED INVESTIGATION student teams examine evidentiary material for analysis concerning the type of writing instrument and the type of ink recovered from a pen at the scene.

OBJECTIVES: Students will...

- ✓ Develop an informed opinion from evidentiary material regarding the ink and the instrument used to create a document.
- ✓ Submit a formal forensics report to the local sheriff's office.

Activity 3 - Case of the Crossed Four

(GUIDED - MODEL EXPERIMENT)

(INTERMEDIATE - ADVANCED)

OVERVIEW: In this STRUCTURED INVESTIGATION, student teams examine evidentiary material for possible alteration of a check. They determine if the ink(s) used are identical, or different - indicating fraudulent intent.

OBJECTIVES: Students will...

- ✓ Develop an informed opinion from evidentiary material regarding the ink and the instrument used to create a document. Was this check altered?
- ✓ Submit a formal forensics report to the local sheriff's office.