470213-230

Fingerprint Identification Using Magnetic Powder Lab Activity

Aligned With All Published National Standards

ward's science

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overview

In this lab activity, students will learn how to use magnetic fingerprint powder to lift latent fingerprints and identify their characteristics. Students will uncover three types of prints left at a crime scene and lift latent prints using magnetic fingerprint powder. Students will also take a set of their own fingerprints using the traditional ink technique and will learn about the three basic patterns of fingerprints and the eight variations that can occur among them.

materials included:

- 2 Perfect Print® Ink Pads
- 2 Jars, Dual Use (Bichromatic) Magnetic Fingerprint Powder
- 2 Magnetic Fingerprint Applicators
- 1 Pkg. slides (72)
- 1 Fingerprint lifting tabs, pkg. of 60
- 1 Fingerprint backing cards, pkg. of 100
- 12 Ward's magnifiers
- 1 Fingerprint Poster
- 50 Paper Bags

materials not provided:

- Small snack bags (e.g. potato chips, pretzels, etc.)
- Plastic soda bottles
- Paper towels
- Soap and water or moist towelettes
- Highlighter
- Hand lotion
- Paper, white, unlined
- Protective gloves

number of uses:

This lab activity is designed for eight groups and can be successfully performed once with the materials provided.

Visit wardsci.com for replacement materials.

framework for K-12 science education © 2012

* The Dimension I practices listed below are called out as **bold** words throughout the activity.

DIMENSION 1 Science and Engineering Practices

X	Asking questions (for science) and defining problems (for engineering)		Use mathematics and computational thinking
X	Developing and using models	X	Constructing explanations (for science) and designing solutions (for engineering)
X	Planning and carrying out investigations	X	Engaging in argument from evidence
X	Analyzing and interpreting data	X	Obtaining, evaluating, and communicating information

DIMENSION 2 Cross Cutting Concepts

X	Patterns		Energy and matter: Flows, cycles, and conservation
	Cause and effect: Mechanism and explanation	X	Structure and function
	Scale, proportion, and quantity		Stability and change
	Systems and system models		

DIMENSION 3 Core Concepts

Discipline	Core Idea Focus
Life Science	LS4: Biological Evolution: Unity and Diversity

x Indicates standards covered in activity

next generation science standards © 2013

Middle School Standards Covered
MS.LS4-2: Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.

(continued on next page)

standards/learning objectives

national science education standards © 1996

Content Standards (K-12)			
	Systems, order, and organization		Evolution and equilibrium
X	Evidence, models, and explanation	X	Form and Function
X	Constancy, change, and measurement		

Life Science Standards Middle School	
X	Diversity and Adaptations of Organisms
Science in Personal and Social Perspectives Standards Middle School	
X	Science and Technology in Society

x Indicates standards covered in activity

benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1B: Scientific Inquiry
3. The Nature of Technology	3A: Technology and Science
5. The Living Environment	5A: Diversity of Life
6. The Human Organism	6A: Human Identity
11.Common Themes	11B. Models

activity objectives:

- Identify the basic types of fingerprint patterns and characteristics.
- Learn how to ink fingerprints and properly record them on a Fingerprint Record Card.
- Interpret fingerprint characteristics and classify fingerprint patterns.
- Learn to properly dust and lift unknown fingerprints from a non-porous surface.
- Analyze lifted prints and match the prints to an existing fingerprint record.

time requirement:

One class period prior to the lab activities should be devoted to discussion of the background material in fingerprint types and identification.

- Station 1: 10-15 minutes
- Station 2: 20-25 minutes
- Station 3: 15-20 minutes
- Station 4: 20-30 minutes

- Practical Application Exercise: 15-30 minutes (depending upon the number of items selected)

Complete rotation of 8 groups through the entire activity should take two to three 45-50 minute class periods.

general safety:

- Consider establishing a safety contract that students and their parents must read and sign. This is a good way to identify students with allergies (e.g., latex) so that you (and they) will be reminded of specific lab materials that may pose risks to individuals.
- Require students to remove all dangling jewelry and tie back long hair before they begin.
- Remind students to read all instructions before starting the lab activities, and to ask questions about safety and safe laboratory procedures.

at the end of the lab:

- Remind students to wash their hands thoroughly with soap and water before leaving the laboratory.

teacher notes

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