

## Forensic Science

# Objectives, Skills, and Vocabulary

UNIT	CASE INVESTIGATION	OBJECTIVES
Unit 1: Fingerprint Evidence	The Solitary Fingerprint The Forged Fingerprint The Paper Mark The Confusing Fingerprint The Black Plastic Bag	Understand and implement the scientific method.
		Practice problem-solving skills through forensics.
		Perform fingerprint analysis.
		Become proficient in the following fingerprint analysis skills. Taking a direct fingerprint, Classifying a fingerprint, Identifying fingerprint ridge details, Lifting latent fingerprints, Identification of a latent fingerprint.
Unit 2: DNA Evidence	The Questioned Parentage The Uncommon Outlaw - <i>Thomas Howard</i> The Telling Tissue The Second Examination	Simulate forensic DNA RFLP and STR analysis procedures.
		Construct autoradiograms and determine inheritance relationships.
		Interpret and compare various DNA profiles.
		Calculate probability and range values for acceptable results.
Unit 3: Blood Evidence	The Stain in Question The Glowing Light The False Positive The Telling Blood Group The Telling Trap Door	Determine a crime scenario through blood spatter analysis.
		Determine if a stain is real blood.
		Determine the blood group (ABO, Rh) of a simulated human blood stain.
		Determine the probability of occurrence within a population.
		Detect minute quantities of blood.
Unit 4: Trace Evidence - Particles, Fibers, and Marks	The Artist's Brush The Unusual Fragment The Incriminating Headlamp The Torn Sleeve The Fraudulent Thread	Understanding and implement the scientific method.
		Practice problem-solving skills through forensics.
		Perform trace evidence analysis skills: Prepare microscope slides, Learn microtechnique identification skills, Make impression casts, Interpret trace evidence characteristics, Examine paint chip layers, Conduct density analysis.
Unit 5: Questioned Document Evidence	The Curious Line The Peculiar Letter 7 The Questioned Lottery Ticket The Careless Forger The Hudson Doggerel	Understanding and implement the scientific method.
		Practice problem-solving skills through forensics.
		Paper analysis.
		Handwriting analysis.
		Document and ink analysis.
Unit 6: The Case of the Silent Sentinel	Toxicology Analysis Chromatographic Analysis Fingerprint Analysis Document Analysis Blood Analysis	Understanding and implement the scientific method.
		Practice problem-solving skills through forensics.
		Fingerprint and blood group analysis.
		Document analysis.
		Toxicological and chromatographic analysis.

UNIT	CASE INVESTIGATION	CONCEPTS & SKILLS	VOCABULARY
Unit 1: Fingerprinting Evidence	The Solitary Fingerprint The Forged Fingerprint The Paper Mark The Confusing Fingerprint The Black Plastic Bag	Scientific method, problem-solving skills, skin structure, fingerprinting, classification, microscopy, analytical thinking, making observations, drawing conclusions	Friction ridge, direct print, ninhydrin, arch pattern, accomplice, latent fingerprint, whorl pattern, loop pattern, iodine vapor
Unit 2: DNA Evidence	The Questioned Parentage The Uncommon Outlaw - <i>Thomas Howard</i> The Telling Tissue The Second Examination	DNA and its structure, scientific method, problem-solving skills, genetics and inheritance, probability calculations, analytical thinking, making observations, drawing conclusions	Autosome, base, amino acid, allele, adenine, electrophoresis, FBI, guanine, inclusion, genome, genotype, polymorphism, RFLP, STR DNA analysis, thymine, VTNR analysis, cytosine
Unit 3: Blood Evidence	The Stain in Question The Glowing Light The False Positive The Telling Blood Group The Telling Trap Door	Blood analysis, measurement, blood spatter analysis, math analysis, drawing conclusions, analytical thinking, scientific method, observation, problem-solving skills, experimental design	Kastle-Meyer test, Precipitin test, point of origin, serology, blood group, antigen, passive bloodstain, impact angle
Unit 4: Trace Evidence - Particles, Fibers, and Marks	The Artist's Brush The Unusual Fragment The Incriminating Headlamp The Torn Sleeve The Fraudulent Thread	Analytical thinking, making observations, particle analysis, hair and fiber analysis, density analysis, paint chip analysis, scientific method, Locard's Principle, microscopy	Medulla, macroscopic, cortex, dye, distal end, comparison, bleaching, cuticle, mongoloid, melanin, tape lift, proximal end, root, trichology, trace evidence, shaft
Unit 5: Questioned Document Evidence	The Curious Line The Peculiar Letter 7 The Questioned Lottery Ticket The Careless Forger The Hudson Doggerel	Fiber analysis, chromatographic analysis, transmitted and reflected light, microscopy, analytical thinking, scientific method, problem-solving skills, drawing conclusions, making observations	Autopen, adsorption, colorant, document, flowback, forger, hesitation stroke, optical brighteners, original document, soluble, rag paper, provenance
Unit 6: The Case of the Silent Sentinel	Toxicology Analysis Chromatographic Analysis Fingerprint Analysis Document Analysis Blood Analysis	Physical evidence examination, scientific method, blood groups, fingerprinting, poisons, chromatography	Punnett square, retention factor, organelle, expert witness, experiment, chain lines, sample, pretrial report, watermark, microscopic examination