



Unit 1: Forensics Basics



Date	Classwork	Homework
Wednesday, January 25	Introduction to Course Notes: Individualized v. Identified Evidence (p.2) Watch: CSI NY: "Blood, Sweat & Tears" (p.3)	Syllabus page due Friday Information form due Wednesday (Google form)
Thursday, January 26	Activity: Observation Challenge Forensics A to Z Challenge (p.4) Notes: Physical Evidence (p.5-6)	Syllabus page due Friday Information form due Wednesday (Google form)
Friday, January 27	Watch: Value of Evidence Video (p.7-8) TV Show Analysis #1--turn in today!	
Monday, January 30	Watch: Bill Nye Forensics (p.9) Watch: Catching Killers "Trace Evidence" (p.10-11)	
Tuesday, January 31	Forensic Techniques Poster Projects Research & Begin Poster Creation	
Wednesday, February 1	Finish Poster & Present Posters Logic Puzzle #1	
Thursday, February 2	Activity: CSI Online-Eye Witness Basics (p.12) Memory Activities	
Friday, February 3	TV Analysis #2 Power of Evidence Crossword (p.13) Watch: Forensic Files-"If I Were You" (p.14 & 15)	
Monday, February 6	Reading: CSI Effect Articles Unit 1 Assessment	

Individualized vs. Identified Evidence Notes

Observation Skills Questions

1.

2.

3.

4.

Commercial Activity

Individualized Evidence:

Examples:

Identified Evidence:

Examples:

TV Show Examples:

Individualized Evidence	Identified Evidence

Forensic Science A to Z Challenge

Name _____

Twenty-six words are hidden in the puzzle along with a mystery word. Use the clues provided to figure out each word and then find it in the puzzle. The words will all have at least one bend, they do not go diagonally, and no letters will be used more than once. When you are done, unscramble the letters that were not used to identify the mystery word.

A _____ Might be used to destroy evidence	B L S N U G R I R A P H F	N _____ Dogs may use these to find accelerants
B _____ A, B, AB, O	M O H W O E P N G Q U E S	O _____ Investigators make these at a crime scene
C _____ You might find evidence here.	I O O G U U T T Y O N I T	P _____ Might be used to find the truth
D _____ Person who investigates a crime	C D T D N D O Y L B N E I	Q _____ These need to be answered to solve a crime
E _____ A person who saw something	R X R E S I O C O S O T O	R _____ Something you analyze in a fingerprint sample
F _____ This might match someone's shoe	O R V E R D F H P E C E N	S _____ Documents evidence at a crime scene
G _____ This may show if someone shot a gun	S A Y R T I N R E R H N S	T _____ Evidence in small amounts
H _____ May link a suspect to a crime scene	C O N A T C O O M V A T I	U _____ Type of light that helps us find evidence
I _____ Not guilty	C P R C A R S M O A I R S	V _____ Guilty or not guilty
J _____ Decides the outcome of a case	R E I E S S E O S T S O N	W _____ Might be matched to a weapon
K _____ Taking a person against their will	I A P P J U N E T I E S U	X- _____ Helps you take a closer look inside a body
L _____ You don't want to break these	M N S I N R T K C O L A L	Y- _____ Males have this in their DNA
M _____ Instrument used to analyze evidence	E D D N G Y I S H N S W T	Z _____ Hopefully you have more evidence than this!
	S I E E Y E W E R O R S R	
	C K T E R I D G T P E Z A	
	E N E C T I V E E L O I V	

What is the mystery word? _____.

Physical Evidence Notes

Name _____

1. The value of trace forensic evidence was first recognized by Edmund _____ in 1910. The Locard's Exchange Principle states that "with _____ between two items, there will be an _____."

2. Complete each section below as you discuss the notes in class.

Paint

What is an example of a "class" characteristic? _____

What is an example of an "individual" characteristic? _____

Glass

What are three characteristics of glass that could be used to match glass from a crime scene to a suspect?

Explosives

How do scientists match bombs and other explosive devices to suspects? _____

Ballistics

What does the abbreviation GSR represent? _____

What is rifling? _____

What does the acronym IBIS mean? _____

Dust & Dirt

How could dust or dirt be used in an investigation? _____

Fingerprints

What are the 3 main types of fingerprints? _____

What does the acronym AFIS mean? _____

Impression Evidence

Give 3 examples of impression evidence. _____

Fractures Matches

What are fracture lines? _____

Give an example of a type of evidence that might be identified using a fracture match. _____

Wounds

What information can be learned from a wound? _____

Documents

Besides handwriting, what else could an investigator use to match a ransom note to a suspect? _____

Insects

What type of insects are helpful in a murder investigation? _____
What is PMI? _____

DNA

What types of tissues might be used for DNA testing? _____
What does the acronym CODIS mean? _____

Skeletal Remains

What 4 things can be determined from skeletal remains? _____
What type of scientist studies skeletal remains? _____

Body Fluids

What type of clues could investigators get from body fluid samples? Give two examples.

Hairs & Fibers

How can hairs and fibers be used in an investigation? _____

What must be present in a hair sample to test for DNA? _____

Complete this worksheet as you watch the video.

Word Bank

- Carpet
- Casts
- Chemist
- Conviction
- Evidence
- Fibers
- Hair
- Individual
- Light
- Orange
- Pattern
- Photographed
- Physical
- Pitches
- Sites
- Source
- Tools
- Wavelengths

1. The job of the Forensic Science Unit is to collect _____ evidence.
2. To document a tire track, it is first _____ and then _____ are made using dental cement that is poured into a metal form.
3. Investigators use a high-powered _____ to trace the path to the victim. The light shines at _____ that cause materials to fluoresce and _____ goggles help make evidence stand out sharply.
4. Evidence that is collected at a crime scene is sent to the Department of Law Enforcement and is analyzed by a _____, who goes through the debris that is collected at a crime scene.
5. _____ fibers are valuable clues because they can link suspects to a specific location.
6. The tire track expert studies the photographs taken at the crime scene to examine the tread _____ to determine what kind of vehicle uses that kind of a tire.
7. Tire treads are made up of geometric shapes called _____. The key to tire identification is to match differences in pitches. They also examine tiny cuts on the surface called _____ that were molded into the tire by small metal teeth.
8. The final pieces of _____ needed for an airtight case was obtained by investigators offering a dog bathing service. During the bath, investigators gathered some dog _____ and also got carpet _____ from the living room, which matched those found at the crime scenes.
9. Forensic science has become one of the justice system's most powerful _____, but can do great harm if they are misused. In one case, hairs from a crime scene lead to the _____ of an innocent man.
10. Hairs are not distinct enough to be linked to an _____. The most investigators could ever say are that "hairs could have come from the same _____", but can never say that hairs come from a given individual.

11. To compare hair samples, investigators examine the hair's _____ to see pigment distribution. Investigators also examine the outer sheath, called the _____, which grows in overlapping scales. Some hairs have a visible inner shaft, called a _____. In other hairs, the medulla appears cracked or _____ or they have no medulla.

Word Bank

Authentic
Broken
Carbon Dating
Color
Cuticle
DNA
Holes
Innocence
Linseed
Medium
Medulla
Microscope
Paint
Patterns
Rungs
Scholars
Tissues
Walnut

12. Each cell in the body contains _____, which is shaped like a twisted ladder with rungs. The sequence of the _____ is unique for each individual. Scientists can remove DNA from body _____ and fluids and make it key segments of it visible on x-ray film. The _____ produced in the films can positively link a suspect to DNA from a crime scene or exclude a suspect. DNA evidence was able to exclude an ex-boyfriend as well as the suspect, which proved his _____.

13. Forensic scientists and scholars can study a painting to determine if it is _____ or a forgery. A forensic scientist can try to determine the painting's age by taking samples of the _____ and placing them on a microscope slide. Each color is made from a different mineral or vegetable base and gives it a unique appearance under a polarizing light _____.

14. Investigators can also analyze the _____, which is a substance that suspends the pigment and allows painters to use it on a canvas. The most common medium is _____ oil, but Leonardo da Vinci also used _____ oil.

15. Samples of the canvas can be removed for _____ to reveal the age of the canvas itself.

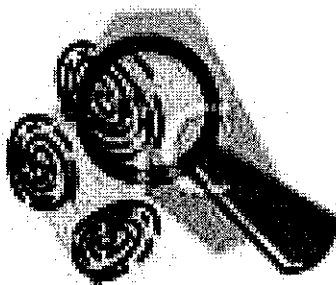
16. The test results could not rule out the possibility that the painting was created by Leonardo da Vinci, so the painting's owner turned to _____ to help him. The scholars noticed the _____ in Christ's wrist, which DaVinci did in his paintings.



BILL NYE: FORENSICS

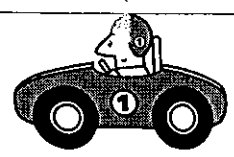
1. Scientists learn things by studying the _____ around us.
2. The first thing you do at the scene of a crime is _____.
3. _____ are a pattern of oily ridges and no two people have the same.
4. _____, _____, and _____ are types of fingerprints.
5. The most important thing an investigator can do when arriving at the scene of a crime is to _____ it.
6. The place with the most _____ is where the fire has been burning the longest or where it started.
7. If scientists can get hold of piece of someone, like hair, blood, skin, saliva, they can identify them using a chemical called _____.
8. No two people have the same _____, unless they are identical twins.
9. When someone dies, scientists perform an _____ to reconstruct the cause of death.

CRIME SCENE DO NOT CROSS





Catching Killers: Trace Evidence



1. Who was the victim?
2. What clues did they find at the crime scene?
3. What was the cause of death?
4. List 3 examples of trace evidence
 - a.
 - b.
 - c.
5. How can they tell if the hair was pulled out or fell out?
6. What does texture of hair tell about the person?
7. What happened in 1912 in Lyon, France?
8. What did Locard find on the victim?
9. Why did Locard scrape the fingernails of their suspect?
10. What does PLM allow analyst to determine about fibers?
11. What were the fibers found on Darcy's dress made of?
12. For what are the fibers used?

13. Why was the connection to the car carpet fibers not good enough?
14. What kind of microscope did they use to identify the unknown specks?
15. What are the red specks that were found on Darcy's dress?
16. What were the brown specks?
17. What did Locard find under the fingernails of his suspect?
18. What is the dust?
19. How did the suspect trick his friends into providing him an alibi?
20. In your own words, what is Locard's Exchange Principle?
21. What year were hairs and fibers first used to link to a murderer suspect?
22. How did they finally convict Roger Kibbe?
23. What was his sentence?

CSI Online: Eyewitness Basics

Name _____

Go to <http://sciencespot.net/>, click the icon for the *Kid Zone*, and click *Forensic Science* to find the links for this assignment.

► Site #1: The Art of Crime Detection (HINT: Look in the Eyewitness Basics section for the link!)

Part A: Read the information provided and answer these questions.

1. What are the two halves of the brain? _____
2. The left brain sees and interprets the world as _____ and _____.
3. The right brain sees and interprets the world as _____ and _____.
4. Visual artists train themselves to "turn off" the _____ brain and use just the _____ brain to draw and sketch.
5. Just as your left brain learns more vocabulary the more you _____, your right brain learns more images and how to draw those images the more you _____. This becomes sort of like a "_____ vocabulary".
6. A police sketch artist has the special ability to use both their visual vocabulary and descriptive words to produce _____.

Part B: Click the link to begin your first assignment. Read the directions provided to learn how to use the software and then try to create a composite.

After you have finished all THREE activities, rate yourself on your efforts.



► Site #2: Spot the Differences

Compare the two photographs and click on the differences you see. Can you find all 5? List them below.

- 1 - _____ 2 - _____ 3 - _____
4 - _____ 5 - _____

► Site #3: Powers of Observation

Watch the video and then answer the questions.

1. How many times was the basketball passed? _____
2. What was the answer to the second question? _____

► Site #4: FBI Games – Choose the "Matching Game".

Try the matching game at least 4 times. Record your number of tries for each time in the space below.

1st Try = _____ 2nd Try = _____ 3rd Try = _____ 4th Try = _____

► Site #5: QUIA: Crime Scene basics

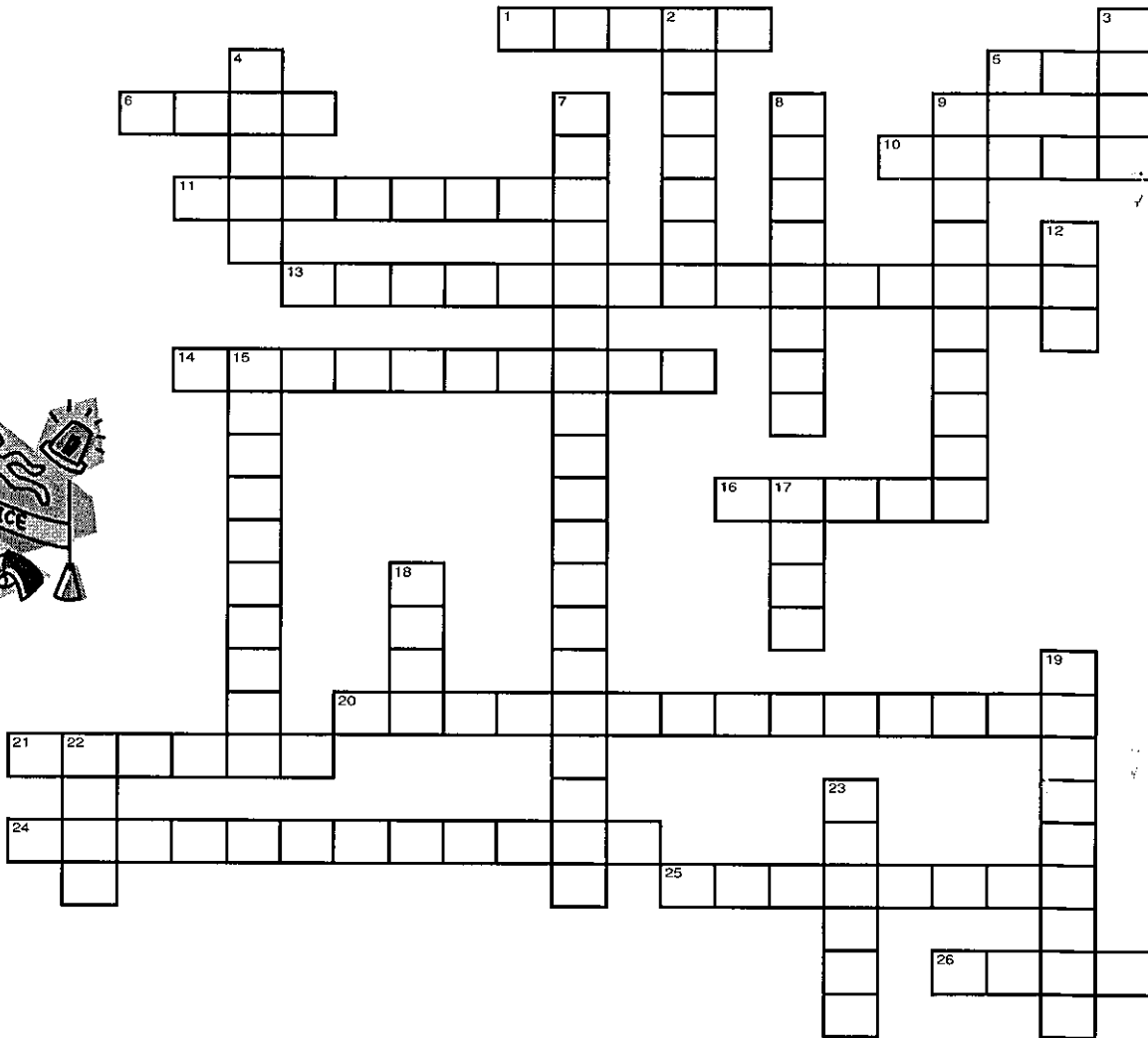
Try the matching game at least 3 times. How did you do?



Done? Turn in your worksheet and then you may visit any of the sites listed on the Forensic Science page of the Kid Zone.

Power of Evidence Unit Review

Name _____



Across

1. Can be matched to a weapon and analyzed to determine a weapon's size, shape, or length as well as clues about the victim or suspect
5. Genetic material that can be extracted from body tissues and used to create a profile to identify a victim or suspect
6. Bottom portion of hair in which nuclear DNA can be found
10. The universal solvent
11. Points on a fingerprint where the ridge structure changes, such as forks, bridges, and deltas
13. Can be analyzed to determine the sex, stature, age, and race of a victim
14. Instrument used to examine hairs & fibers in detail
16. Can be analyzed to determine its properties, such as color, tint, thickness, density, chemical composition, and refractive index (RI).
20. Process of separating a mixture into its individual components, such as determining the compounds in gasoline
21. Type of print left on a surface at a crime scene, such as a tool handle, glass, door, etc.
24. Can be classified as loops, whorls, and arches
25. Forms when an object is torn or broken; edges can be examined to see if they match
26. Database used to find matches to bullets or firearms found at a crime scene

Down

2. Type of fiber made from plants or animals
3. Substance made of keratin and is composed of the cuticle, cortex, and medulla
4. Database that is used to find matches for DNA evidence gathered from a crime scene or victim
7. Examiners may analyze a this type of evidence to determine the type of paper used, printing method, handwriting style, or type of ink to find a match to a suspect
8. Substances that give color to objects, such as paint, hair, and fibers
9. Study of firearms and ammunition
12. Abbreviation for gunshot residue
15. Evidence that is formed as an object leaves a "mark" on another one, such as tire tracks, toolmarks, & bitemarks
17. Most common type of fingerprint pattern
18. Least common type of fingerprint pattern
19. Type of fiber that is man-made
22. Database that can be used to find matches for fingerprints found at a crime scene
23. Principle that states "with contact between two items, there will be an exchange."

3. Which pieces of evidence were most important? Why?

4. What was the outcome of the case?