

# Crime Scene Science

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## Teaching Supplies and Notes:

This Crime Scene Science Lab is to teach kids basic forensic skills while solving problems through scientific observations and investigations. There is no specific crime being solved, however all of the items could be used to create any storyline desired. Use this printable pack to create your own crime scene.

This Crime Scene Science Lab includes instructions for the following activities:

1. Shoe Print Analysis
2. Blood Spatter Analysis
3. Handwriting Analysis
4. Facial Recognition
5. Fabric Testing
6. Dusting for Fingerprints

Needed Supplies:

Corn syrup, water, food coloring, eye dropper, fabric swatches, metal tweezers, metal pan or tin cans, cocoa powder and a brush for dusting,

## Shoe Print Analysis

Print copies of the different shoe prints to leave around on the floor. Have kids compare, measure and take note of what shoe prints they find. You could also use regular shoes to make prints with paint on paper or a large sheet if desired.









## **Blood Spatter Analysis**

Create your own blood by mixing equal parts corn syrup and water plus red food coloring. Use an eye dropper to drip drops of the “blood” on paper or a sheet that you are using for the crime scene.

Drip it from varying heights and angles to make it look different. You could also smear some to leave fingerprints in the blood.

Have the students conduct their own experiments to determine where the blood spread or splattered from (distance, angles, etc).

You can decide if there will be a lot of blood or only a small amount depending upon the crime scenario you are creating.

## **Fabric Analysis**

Leave a small torn fabric sample at the crime scene. Have kids test the fabric to determine the type of fabric through this analysis. If you do not want to do the burn test, it can be analyzed just by appearance and feel, too.

Fabric, when burned can be identified by the way they burn and the ashes left behind. They will also have identifiable smells when burned.

Caution: This will need to be done outside or in a safe lab setting to prevent fire accidents! Do it over a metal tray or can. Use a pair of metal tweezers to hold the fabric and light with a match or a lighter.

See handout on the following page of the reactions of fabrics to the burn test. Due to the hazardous smoke of some of the synthetic fabrics, I recommend using a natural one for this lab or having masks for the students.

### **Reactions of Different Fabrics to the Burn Test:**

**Cotton:** A natural (cellulose) fiber. It burns and may flare up when initially lit. There are no melted beads when burning or left behind. After burning, it continues to glow. It gives out a smell like that of a burning paper. The smoke is gray or white. The remaining ash is fine and soft and can be easily crumbled.

**Linen (Flax):** A natural cellulose fiber, it takes longer to ignite. It is easily extinguished by blowing on it. It leaves no melted bead and after burning no sign of flame is seen. It smells like burning leaves or wood. The ash is gray and smoke has no fume hazard.

**Rayon:** A manufactured cellulose fiber. It burns without flame or melting and may flare up. Unless there is a fabric finish, it doesn't leave any bead. After the flame is removed, it may glow a bit longer than cotton. It smells like burning paper and leaves soft, gray ash. Its smoke is a little hazardous.

**Silk:** A protein fiber which burns slowly and curls away from the flame. It leaves a dark bead which can be easily crushed. It is self-extinguishing and leaves ash that is a dark, gritty, fine powder. It smells like burned hair or charred meat. It gives out little or no smoke and the fume has no hazard.

**Wool:** A protein fiber which burns slowly. It sizzles and curls away from flame and may curl back onto fingernail. It leaves beads that are brittle, dark, and easily crushed. It is self-extinguishing and leaves harsh ash from crushed bead. It gives out a strong odor of burning hair or feathers. It gives out dark smoke and moderate fume.

**Acetate:** A synthetic protein fiber which burns quickly and can flare even after flame is removed. The bead is hard, brittle, and can't be crushed. It melts into a very hot bead and drips very dangerously. No ash is left by it and the smell is like hot vinegar or burning pepper. It gives out black smoke and the fume is hazardous.

**Nylon:** Is a synthetic fabric made from petroleum. Due to the fabric finish, it quickly burns and shrinks to flame. The beads are hard, grayish and uncrushable. After the flame, it burns slowly and melts. It is self-extinguishing but drips dangerously. The odor is like celery and it leaves no ash but the fume is very hazardous.

**Polyester:** A synthetic polymer produced from coal, air, water, and petroleum products. It burns quickly and shrinks away from flame, may also flare up. It leaves hard, dark, and round beads. After the flame, it burns slowly and is not always self-extinguishing. It has a slightly sweet chemical odor. It leaves no ash but its black smoke and fume are hazardous.

**Acrylic:** A synthetic fabric made from natural gas and petroleum, they flare up at match-touch, shrink from flame, burn rapidly with hot sputtering flame and drip dangerously. Beads are hard, dark, and with irregular shapes. It continues melting after flame is removed and is self-extinguishing. When burning, it gives out a strong acrid, fishy odor. Although no ash is left, the black smoke and fume are hazardous.

## Handwriting Analysis

Use these samples to find the person who wrote the note at the crime scene.  
There is another version in the student packet. **The answer is #4.**

### Sample #1

Groceries-  
milk  
eggs  
bread  
juice

### Sample #2

Went to the store to get some groceries.  
Be home soon! Do your chores while I am  
gone. Don't forget to do your homework,  
too.

### Sample #3

To Do:  
Walk the Dog  
Pay the phone bill  
Write thank you card to Mary  
Wash the Car  
Take package to post office  
Weed the vegetable garden

### Sample #4

Hey!  
I just wanted to stop by and say hello.  
Sorry I missed you. I will try calling you  
tonight.

### Sample #5

Weekly Meal Plan:  
Monday: Chicken Tacos  
Tuesday: Spaghetti with meatballs  
Wednesday: Baked potato bar  
Thursday: Vegetable soup & bread  
Friday: Pizza night  
Saturday: Leftovers  
Sunday: Grilled steaks & veggie kabobs

### Sample #6

I went to John's house for the  
party. I should be back before dark.  
I started the laundry already.

### Sample #7

friends invited to the Party

Amy	Lisa
Jamie	Robert
Mike	Michelle
Cara	Kate
Chris	Amber
Zack	Tami

### Sample #8

Dear Eliza,  
Happy Birthday! Hope it was a  
great one!

### Note Found at Crime Scene

Follow these instructions carefully if you ever want to see your daughter again.

Bring \$1 million in un-marked bills to the park on the corner by 5pm tonight. Drop the bag under the park bench.

Once the money has been received and counted, she will be returned to you.

## Dusting for Fingerprints

To set up the fingerprint portion of the crime scene, lotion your hands so they are moist, Leave visible fingerprints on a glass, a jar or a tabletop.

For kids to analyze the fingerprints, they will need some type of powder for dusting. You can use cornstarch or cocoa powder, a small brush (make up brush or paint brush), and clear tape.

If you use cocoa powder, you can place the tape onto white paper, but if you use corn starch you will need black paper for it to show up.

Use the following chart to teach about the different types of fingerprints:



Whorl



Arch



Loop

# Crime Scene Science Lab Notebook

Instructions: Analyze the crime scene and fill out your observations in the notebook.



## **Full Crime Scene Observation**

1. What do you notice first at the scene of the crime? \_\_\_\_\_

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2. What is your initial idea of what happened here? \_\_\_\_\_

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3. Who are the possible suspects of this crime? \_\_\_\_\_

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4. What is a possible motive of this crime? \_\_\_\_\_

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5. What other thoughts or observations do you think are important?

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## Shoe Prints Analysis:

Analyze the shoe prints you see around the crime scene. Measure their length and the distance between them. Draw a sketch of the shoe print you notice. Compare it to shoes in the closet of your person of interest. There may be a few different styles of shoe prints. You will want to determine which one is important to the scene of the crime.

Length of shoe print: \_\_\_\_\_

What style of shoe do you think it is? \_\_\_\_\_

Sketch the shoe print.



Notes and Observations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Blood Spatter Analysis:**

Observe the blood spatter on the floor or wall near the crime scene.

Was there a lot of blood lost from the victim? \_\_\_\_\_

How far away do you think the victim was from the blood spatter? \_\_\_\_\_

How will you determine this? \_\_\_\_\_

Conduct tests to determine the distance and angle from which the blood was splattered.

What did you learn? \_\_\_\_\_

\_\_\_\_\_

Sketch the blood spatter you observed.



Notes and Observations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Dusting for Prints:

Search the crime scene for objects with visible fingerprints. Use your dusting powder and brush to make them more visible. Cover the dusted fingerprints carefully with a piece of clear tape. Place the tape onto the paper below to preserve them and study them. Use the chart to determine the style of print. Compare them against the suspects you have in the case.



Whorl



Arch



Loop

Attach your fingerprints below.

Do you think they are adult or child size? \_\_\_\_\_

Male or female? \_\_\_\_\_

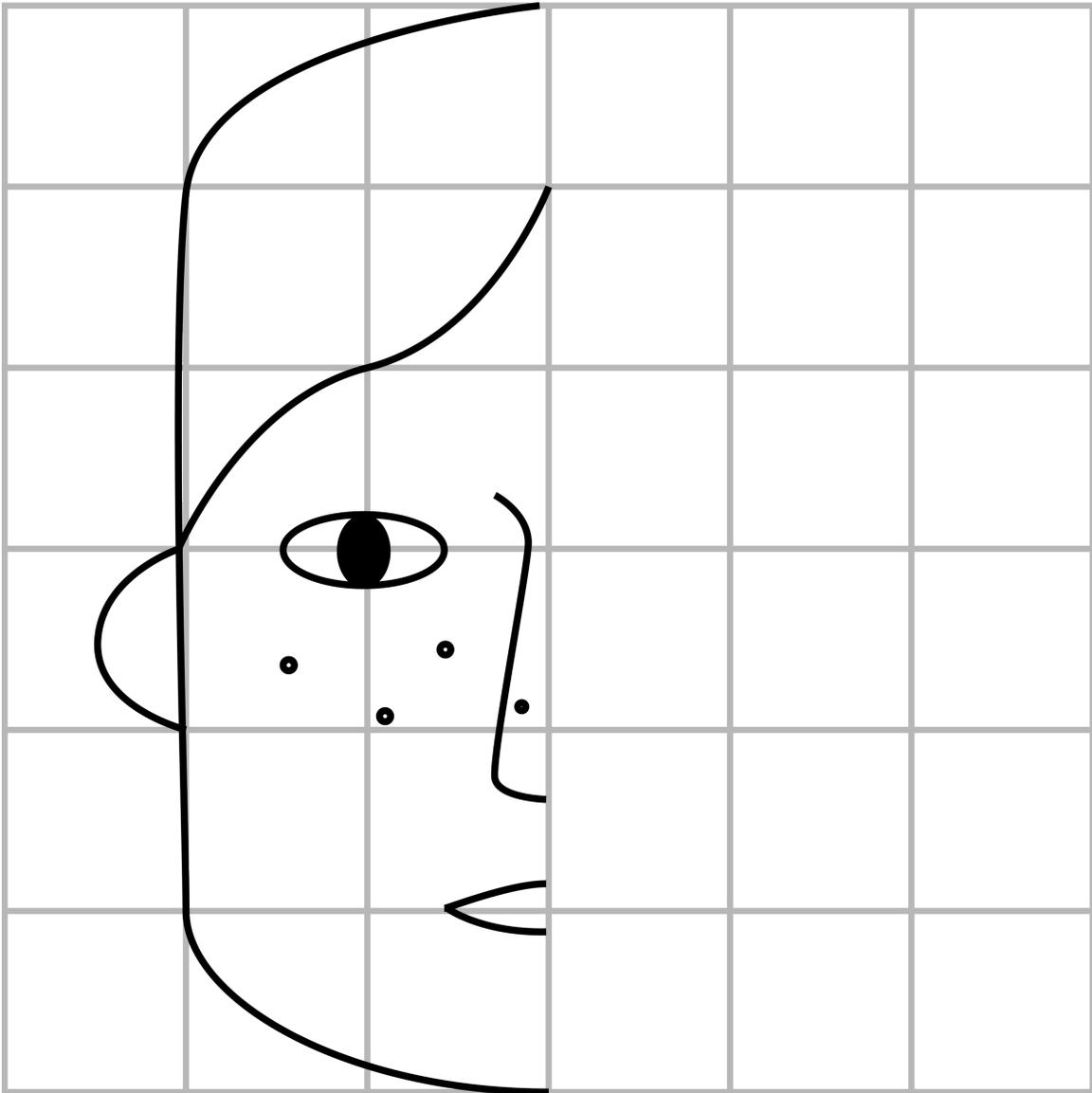
Notes or Observations: \_\_\_\_\_

\_\_\_\_\_

## Facial Recognition

A witness gave a sketch of a possible suspect. Use the portion drawn already to finish the drawing. Follow the guidelines to determine the following characteristics of the suspect.

1. Measure the distance between the eyes. \_\_\_\_\_
2. Measure the width of the nose. \_\_\_\_\_
3. Measure the length of the jaw bone. \_\_\_\_\_
4. What shape are the cheekbones? \_\_\_\_\_
5. Measure the length of the mouth. \_\_\_\_\_



## Handwriting Samples

Compare 8 handwriting samples to determine which one matches the writing sample found at the crime scene.

Which sample number do you think is the correct match? \_\_\_\_\_

### Sample #1

Groceries-  
milk  
eggs  
bread  
juice

### Sample #2

Went to the store to get some groceries.  
Be home soon! Do your chores while I am  
gone. Don't forget to do your homework,  
too.

### Sample #3

To Do:  
Walk the Dog  
Pay the phone bill  
Write thank you card to Mary  
Wash the Car  
Take package to post office  
Weed the vegetable garden

### Sample #4

Hey!  
I just wanted to stop by and say hello.  
Sorry I missed you. I will try calling you  
tonight.

### Sample #5

Weekly Meal Plan:  
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Friday: Pizza night  
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### Sample #6

I went to John's house for the party.  
I should be back before dark. I  
started the laundry already.

### Sample #7

friends invited to the Party  
Amy Lisa  
Jamie Robert  
Mike Michelle  
Cara Kate  
Chris Amber  
Zack Tami

### Sample #8

Dear Eliza,  
Happy Birthday! Hope it was a  
great one!

## Fabric Analysis

Was any fabric left behind at the crime scene?

Did you know that if you burn fabric, the way it burns and the ashes left behind can help you determine what type of fabric it is? There are also identifiable smells when fabric is burned.

Do the burn test to analyze what type of fabric it is. Be sure to save an unburned piece of the fabric for your lab notebook as well.

This is a more dangerous activity, so make sure there is adult supervision with it. It will need to be conducted outside or in a lab with ventilation.

Be sure to do the burn test over a metal tray or can. Use a pair of metal tweezers to hold the fabric and light with a match or a lighter.

Use the handout describing the way various fabrics burn to determine which fabric was left behind.

1. What does the fabric piece look like? \_\_\_\_\_

2. Before doing the burn test, what is your guess about the type of fabric?  
\_\_\_\_\_

3. After doing the burn test, what is your guess about the type of fabric you discovered?  
\_\_\_\_\_

4. What happened to the fabric as it burned? \_\_\_\_\_  
\_\_\_\_\_

5. What was left behind once the flame burned out? \_\_\_\_\_  
\_\_\_\_\_

6. How does knowing the fabric type help with solving the crime? \_\_\_\_\_  
\_\_\_\_\_

Attach the remaining (unburned) portion of the fabric here.