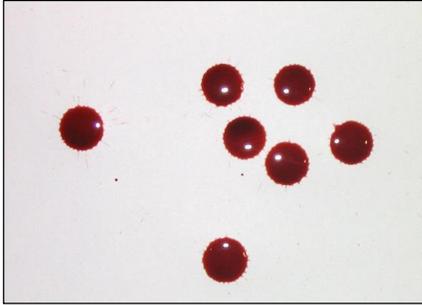


**BLOODSTAIN ANALYSIS**

The bloodstain shown in the picture below would be labeled as a \_\_\_\_\_ type blood stain.

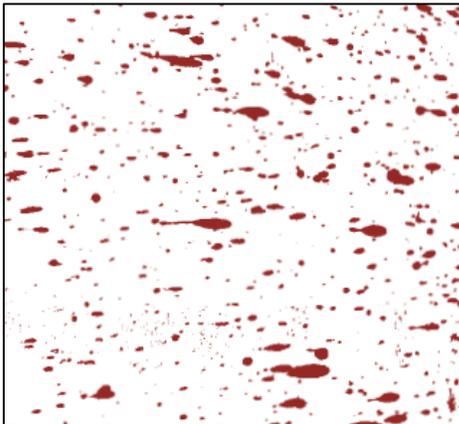


- a) passive
- b) impact
- c) active
- d) transfer

When analyzing impact type of bloodstains (blood spatter shapes), the direction in which the blood traveled can be determined by ...

- a) counting the number of stains produced that are over 4 mm in width.
- b) measuring the width of the bloodstains.
- c) noticing which direction the pointed ends of the blood stains face
- d) measuring the angles of impact the blood stains make with the wall.

Based on the photograph below, where did the impact of the bullet that caused this blood spatter come from?



- a) From the top
- b) From the left
- c) From the right
- d) From below

Passive bloodstains are usually \_\_\_\_\_ wide.

- a) ... smaller than 1 mm
- b) ... smaller than 4 mm
- c) ... greater than 4 mm

- d) ... greater than 4 cm

## DNA PROFILING

**How many DNA markers do forensic biologists use to compare DNA samples?**

- a) 7
- b) 10
- c) 13
- d) 21

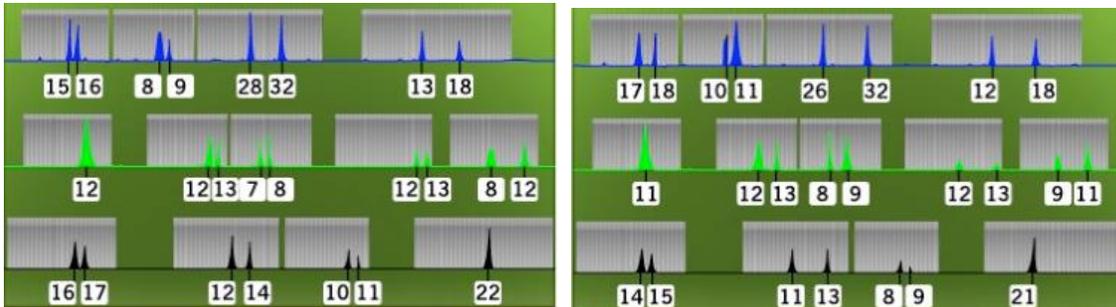
**The PCR (polymerase chain reaction) technique:**

- a) Makes DNA grow a lot faster than it usually does
- b) Makes millions of copies of the DNA markers
- c) Uses a machine to match two DNA profiles
- d) Is part of the Extract step of DNA analysis

**The four steps of DNA processing are:**

- a) Extract, Sort, Analyze, Compare
- b) Extract, Amplify, Assemble, Compare
- c) Duplicate, Separate, Analyze, Sort
- d) Extract, Amplify, Separate, Analyze

**What do forensic scientists compare to establish if two DNA profiles such as the ones below match?**

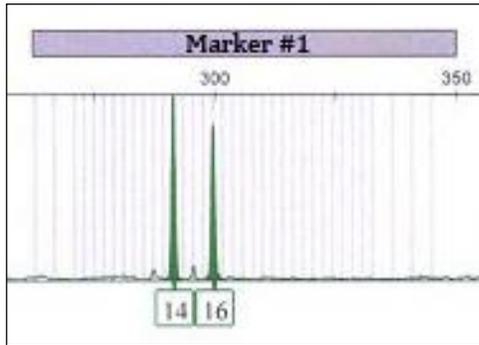


- a) The number of DNA markers.
- b) The pattern of the peaks.
- c) The color of the peaks.
- d) The order or the markers.

**What is the first step when extracting DNA from a blood sample?**

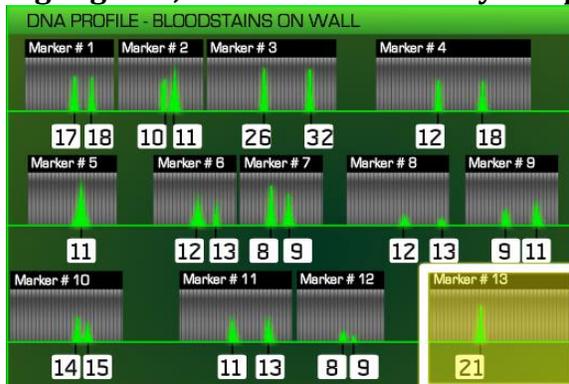
- a) Centrifuge the sample to separate the DNA from the cells.
- b) Filter the sample to separate the cells from the fluid.
- c) Break the blood cells apart to release the DNA.
- d) Perform a PCR to make copies of the DNA.

The picture below is a part of a real DNA profile, showing one marker. Why does this marker have two different peaks?



- The marker was amplified twice.
- Each peak is from a different DNA sample.
- The person has different copies of the marker.
- Each peak is a fragment of the same marker.

Why do markers in a DNA profile, like the one show below with marker #13 highlighted, sometimes have only one peak?



- The person inherited the same marker from BOTH parents.
- The person is missing a marker.
- The PCR was done incorrectly and needs to be repeated.
- The person has a genetic disease.

## MEDICAL EXAMINATION

In an external autopsy, a gunshot wound with abrasions and blackening can be classified as a \_\_\_\_\_ wound.

- distant range
- contact
- perforating
- penetrating

**During an external autopsy of a shooting victim, the medical examiner finds small abrasions, also called powder tattooing, on the victim's skin around the gunshot wound. What can you deduce from this finding?**

- a) The gun was held directly against the skin when fired.
- b) The gun was fired from a near-contact range (up to 1 cm).
- c) The gun was fired from an intermediate range (1 cm to 4 m).
- d) The gun was fired from a distant range (more than 4 m).

**Fingernail swabs collected during an autopsy are used to \_\_\_\_\_**

- a) streak an agar plate to obtain bacteria cultures.
- b) determine fingerprint characteristics.
- c) perform a toxicology analysis for drug testing.
- d) extract DNA to identify potential suspects.

## BALLISTICS

**In an external autopsy, a gunshot wound with abrasions and blackening can be classified as a \_\_\_\_\_ wound.**

- a) distant range
- b) contact
- c) perforating
- d) penetrating

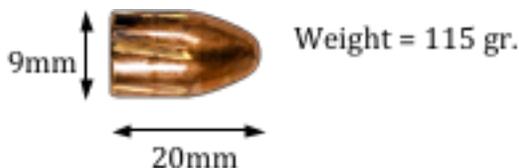
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**Fingernail swabs collected during an autopsy are used to \_\_\_\_\_**

- a) streak an agar plate to obtain bacteria cultures.
- b) determine fingerprint characteristics.
- c) perform a toxicology analysis for drug testing.
- d) extract DNA to identify potential suspects.

**What is the caliber of the bullet below?**



- a) 9 mm
- b) 20 mm
- c) 115 gr.

d) 180 mm<sup>2</sup>

**Where do investigators test fire a suspected gun?**

- a) In an iron box.
- b) In a water tank.
- c) In a sand sack.
- d) In a steel tube.

**What equipment do investigators use to analyze striations on bullets?**

- a) Light table
- b) Magnifying glass
- c) Comparison microscope
- d) Super-glue fuming chamber

**A 9 mm bullet was collected from the victim. Both guns found at the crime scene use 9 mm bullets. How can the investigators determine which gun fired the bullet?**

- a) Compare the fingerprints on the bullet collected from the victim with those found on both guns.
- b) Identify the rifling pattern on the bullet collected from the victim and match it to both guns.
- c) Determine if one of the crime scene guns were from the same manufacturer as the bullet collected from the victim.
- d) Compare the bullet striations from the crime scene guns to the bullet collected from the victim.

**Rifling is one characteristic forensic scientists compare to see if two bullets come from the same gun. Conventional type rifling means the grooves on the surface of a bullet are \_\_\_\_\_**

- a) wide and flat in shape
- b) deep, easy to see
- c) superficial, not very distinct
- d) not present