

FIRING PIN MATCH

Objectives:

By the end of this activity, you will be able to:
Compare firing pin impressions from different sources.

Time Required to Complete Activity:

20 minutes

Introduction:

When cartridge shell casings are recovered from a crime scene, they are photographed and compared to NIBIS records to determine if these casings match any found at previously committed crimes. This allows investigators to link a series of crimes to the same perpetrator. Shell casings can demonstrate certain identifying markings, such as ejector marks, breech marks, and firing pin impressions. In this activity, you will compare the firing pin impressions. Your comparison should include:

- Caliber of the cartridge
- Headstamp marking of the manufacturer
- Location of the firing pin strike
- Description of the unique firing pin characteristics

Materials:

(per student working in pairs)
pencil
lab sheet of firing pin photographs
hand lens
stereomicroscope (optional)

Safety Precautions:

None

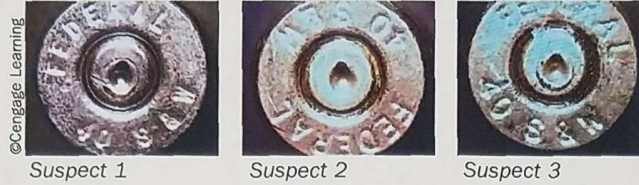
Scenario:

Three suspects were apprehended and accused of robbery. Empty shell casings were found at two different crime scenes during the past month. They are labeled A through L. Police test-fired firearms belonging to the suspects and compared firing pin impression marks made by those found on crime-scene casings.

Procedure:

1. View each shell casing with a hand lens or stereomicroscope to determine each of the following: the caliber, headstamp, location of firing pin strike (center or rim), and description of firing pin marks. Record your data on Data Table 1.
2. Using a pencil, pencil, and sharpener, make the unique patterns on each casing.
3. Using the three cartridge casings from the three suspects and your information from Data Table 1, determine if any of the crime-scene casings match casings from the suspects.

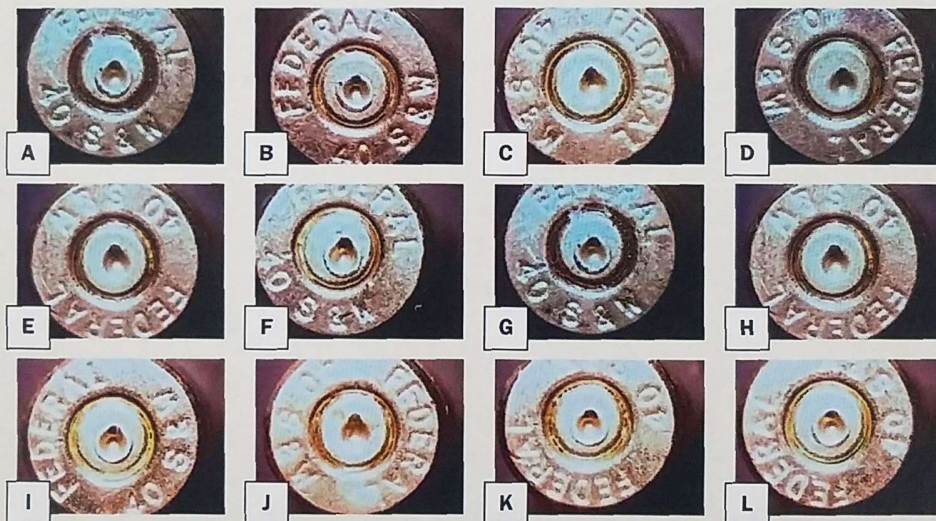
Cartridge shell casings made from test firing guns from the three suspects.



Data Table: Comparison of casings

	Suspect 1	Suspect 2	Suspect 3
Caliber			
Headstamp marking			
Firing pin strike (center or rim)			
Description of mark			

Evidence cartridge shell casings recovered from previous robberies.



Final Analysis:

1. Of the three suspects, which one(s) could you link to the crimes?
2. Based on the shell-casing matches, which of the three suspects could *not* be linked?
3. Describe specific (unique) characteristics that linked one of the suspect's casings to the crime-scene casings.
4. If you were a prosecuting attorney, what argument could you provide to the defense's claim that "if a suspect's cartridge shell casings were *not* found at a crime scene, he must be innocent"?
5. Crime labs today are better able to compare and analyze ballistic evidence. Describe two advances in technology that have enabled a better use of ballistics evidence in solving crime.

Further Study:

Research the Washington, D.C. sniper case mentioned at the beginning of the chapter. Explain how ballistics evidence was used to link the two suspects to the serial killings.