**Role of forensic expert**

The experts on examination of firearms, ammunitions and target determine the following questions-

* Whether the cartridge cases/ projectiles recovered from the scene of crime/ victim/accused have been fired from the suspected firearm?
* Which type of firearm has been used in the commission of crime? What are the caliber, make, model and type of action of the firearm used?
* Whether the firearm is in proper functioning condition? Whether the firearm is capable of being accidentally discharged?
* Whether a criminal case is a case of accidental firing?
* The serial no. and other details on the firearm on the firearm might have been erased. Then we may have to restore the serial number.
* What was the range of firing?
* Who had fired the gun?
* What was the direction of firing?
* Whether an alleged firearm has been fired or not?
* Whether a firearm is a firearm as defined in Indian arms act?
* What time has elapsed since last firing?
* Whether the given firearm – cartridge combination can prove lethal at a given distance or not?
* How many firearms have been used in the crime?
* What number of shots have been fired and how many had hit the victim?
* There may be a case of plantation of pellets in the body. It may be alleged that so and so has fired these shots. In such a case we can tell whether the pellets are fired ones or not.
* Whether the injuries have been caused by gun fire? If so what type of projectile may have caused these injuries?
* Which is the entrance wound and which is the exit wound?
* Whether the multiple wounds could have been produced by one bullet?
* What was the course of projectiles in the body?
* Which one of the wounds was fatal?
* Was there any activity performed by the victim after being shot?
* How long the victim could have survived after being shot?
* What was the relative position of the firer and the victim?
* Whether the suspected firearm has been used in the past for commission of any crime?
* Detection and characterization of gunshot residues on garments and around the wound.

**History of Forensic Ballistics**

* In 1400, Matchlock guns appeared
* In 1493-1508, Emperor Maximilian of Germany invented the rifling of guns in order to impart the rotatory motion to the projectile during the firing
* 1498 rifling principle is discovered by August Kotter
* In 1509 wheel lock was invented
* In 1540 rifling appeared in firearms
* In 1630 flintlock guns appeared
* In 1637 first use of firearms proof marks
* In 1750 pistols came into fashion
* In 1817, John Hall of the US created 2 advances. First one was the breech loaders and second was the use of assembly lines (interchangeable parts) for manufacturing, standardizing the industry.
* In 1822, percussion caps were invented
* In 19th century, cartridge was developed with primer, powder, and ball all in one package.
* In 1836, Samuel Colt, a gun maker from Connecticut was granted a U.S. patent for a revolver mechanism that allowed numerous shots to be fired without reloading.
* In 1840, pinfire cartridges were used for first time.
* In 1850, shotguns were used widely
* In 1860, the case of Regina v Richardson made the early application of firearm identification. In this case, major evidence was newspaper wadding. The wadding was placed in the two-barreled muzzle loading piston recovered from the murder site that matched the wadding discovered from the victim’s body. The same wadding was also discovered at the suspect’s home, and made up of the same material (London Times Newspaper) as the waddings recovered begore.
* In 1861, breech-loaded firearms were widely used.
* In 1920, with the help of Calvin Goddard, Philip O. Gravelle created the comparative microscope for use in firearm investigations.
* In 1925, Calvin Goddard used the comparison microscope to examine the bullets in a murder case.
* The first documented case of success in forensic ballistics occurred in 1835. Henry Goddard, a member of the bow street runner in London matched a recovered bullet from a murdered victim to a specific mold in a suspect's home. This confirmed that the suspect made the bullet.