

**Use the word bank to help you fill in the worksheet as you watch the video.**

1. The FBI crime lab is located in \_\_\_\_\_, Virginia. It cost over \$\_\_\_\_\_ million to build.
2. According to the FBI Lab Director the most important quality of the lab is to ensure that the evidence is \_\_\_\_\_ and contamination free.
3. Forensic science is the \_\_\_\_\_ of finding whatever is left at a crime scene, developing it in such a way that it can be used to associate it to the person(s) at the scene ... because you can't \_\_\_\_\_ science.
4. The FBI laboratory is composed of \_\_\_\_\_ different labs, such as \_\_\_\_\_ fingerprints, DNA analysis, \_\_\_\_\_ evidence, and chemistry. It receives over \_\_\_\_\_ pieces of evidence each day from outside agencies.
5. In 1936 the FBI crime lab was among the first labs to test the \_\_\_\_\_ or lie detector.
6. The FBI created a \_\_\_\_\_ unit, which could test for \_\_\_\_\_ blood types.
7. In the mid 1970s the lab became a \_\_\_\_\_ fighting tool. It began to realize that physical evidence is far more \_\_\_\_\_ than any eyewitness description.
8. The FBI was finally \_\_\_\_\_ in 1997 when a larger lab was built in Virginia.

- |            |
|------------|
| 25         |
| 150        |
| 600        |
| 6000       |
| Accredited |
| Accurate   |
| Art        |
| Crime      |
| Firearms   |
| Fool       |
| Grooves    |
| Human      |
| Latent     |
| Polygraph  |
| Quantico   |
| Secure     |
| Serology   |
| Trace      |
| Unique     |

**Firearms & Tool Marks Unit**

9. The \_\_\_\_\_ & tool marks unit examines guns, bullets, cartridges, and other items.
10. When matching a bullet to a gun, examiners examine \_\_\_\_\_ of the gun. Every gun will leave its own \_\_\_\_\_ microscopic mark.
11. The FBI has the largest working firearm forensic collection in the USA with over \_\_\_\_\_ guns.

### Explosive Unit

12. The basic component of a bomb is to have some type of \_\_\_\_\_ material which provides the explosive force.

13. The \_\_\_\_\_ case tackled by the FBI explosive unit was the crash of Pan-Am 103 Scotland in 1988.

14. The explosive unit is more important than ever because of \_\_\_\_\_.

### Personal Identification Unit

15. In the 19th Century the \_\_\_\_\_ system was being used as an identification system until the William West case proved it to be flawed.

16. In \_\_\_\_\_ the first fingerprint files were created and they started being used to support criminal matters in \_\_\_\_\_. Today there are \_\_\_\_\_ processes to develop latent prints from \_\_\_\_\_ (superglue) fuming to alternate light sources.

### DNA - Deoxyribonucleic Acid

17. DNA is the biological equivalent to a person's \_\_\_\_\_.

18. In the 1980s the FBI developed \_\_\_\_\_ technology to solve crimes, such as rapes, \_\_\_\_\_, and other violent crimes.

19. The FBI uses two types of DNA testing: nucleus and \_\_\_\_\_.

20. The National DNA \_\_\_\_\_ system comprised of 170 crime labs sharing DNA information.

### Chemistry & Trace Evidence Unit

21. Evidence often arrives inside or on everyday items, such \_\_\_\_\_ and \_\_\_\_\_.

22. The FBI relies on three forms of instrumentation: spectrophotometry, \_\_\_\_\_ instruments, and mass spectrometry.

23. The \_\_\_\_\_ Materials Response Unit is one of the busiest response units used. One of their first cases involved investigating letters that contained \_\_\_\_\_.

24. The bomb data center provides \_\_\_\_\_ to all public safety agencies and uses bomb-defusing \_\_\_\_\_.

80

1924

1933

Anthrax

Bertillon

Chromatic

Cyanoacrylate

DNA

Energetic

Fibers

Fingerprint

Hairs

Hazardous

Highest

Homicides

Index

Largest

Mitochondrial

Robot

Terrorism

Training

***Want to learn more about the FBI? Go to <http://www.fbi.gov/about-us/history>.***

Use the word bank to help you fill in the worksheet as you watch the video.

1. The FBI crime lab is located in **QUANTICO**, Virginia. It cost over **\$150** million to build.
2. According to the FBI Lab Director the most important quality of the lab is to ensure that the evidence is **SECURE** and contamination free.
3. Forensic science is the **ART** of finding whatever is left at a crime scene, developing it in such a way that it can be used to associate it to the person(s) at the scene ... because you can't **FOOL** science.
4. The FBI laboratory is composed of **25** different labs, such as **LATENT** fingerprints, DNA analysis, **TRACE** evidence, and chemistry. It receives over **600** pieces of evidence each day from outside agencies.
5. In 1936 the FBI crime lab was among the first labs to test the **POLYGRAPH** or lie detector.
6. The FBI created a **SEROLOGY** unit, which could test for **HUMAN** blood types.
7. In the mid 1970s the crime lab became a **CRIME** fighting tool. It began to realize that physical evidence is far more **ACCURATE** than any eyewitness description.
8. The FBI was finally **ACCREDITED** in 1997 when a larger lab was built in Virginia.

**Break #1 @ 10:20 - Discussion Questions**

1. *What is the nickname for the FBI building? Why? Battlestar Galatica due to its layout and function*
2. *How many divisions make up the FBI? There are 13 divisions.*
3. *What types of things do they do to ensure the evidence is secure and uncontaminated? Separate air systems for different evidence rooms, specific areas & types of rooms for different types of evidence, separation of offices and labs*

**Firearms & Tool Marks Unit**

9. The **FIREARMS** & tool marks unit examines guns, bullets, cartridges, and other items.
10. When matching a bullet to a gun, examiners examine the **GROOVES** of the gun. Every gun will leave its own **UNIQUE** microscopic marks or striations on a bullet.
11. The FBI has the largest working firearm forensic collection in the USA with over **6000** guns.

**Break #2 @ 14:53- Discussion Questions**

1. *How are guns in the reference collection used? They are used to compare to guns that have come into the lab as evidence.*
2. *What is a "water tank"? How is it used? It is used to test a gun by shooting it into the 8' long tank of water. The bullet is retrieved from the water and then compared to bullets from a crime scene.*
3. *What are some of the "famous" guns they have in their collection? Dillinger (.45 Smith & Wesson), Pretty Boy Floyd (.45 Colt), & Alvin Creepy Karpis (Semi-automatic)*

### **Explosive Unit**

12. The basic component of a bomb is to have some type of **ENERGETIC** material which provides the explosive force.

13. The **LARGEST** case tackled by the FBI explosive unit was the crash of Pan-Am 103 Scotland in 1988.

14. The explosive unit is more important than ever because of **TERRORISM**.

### ***Break #3 @ 19:22 - Discussion Questions***

*1. What is an IED? Individual explosive device*

*2. Where did they get a lot of the evidence for the Pan-Am investigation? The people in the area contributed a large amount of evidence.*

*3. What was used to connect the suspects to the crash? A small piece of the detonator was used.*

### **Personal Identification Unit**

15. In the 19th Century the **BERTILLON** system was being used as an identification system until the William West case proved it to be flawed.

16. In **1924** the first fingerprint files were created and they started being used to support criminal matters in **1933**. Today there are **80** processes to develop latent prints from **CYANOACRYLATE** (superglue) fuming to alternate light sources.

### ***Break #4 @ 27:15 - Discussion Questions***

*1. What did scientists learn from the William West case? They learned that two people could have the same Bertillon measurements (William West and his brother) for all 22 areas. However, they did have different fingerprints, which is the time fingerprinting became the chosen method for identification.*

*2. Who tried to use acid to get rid of his fingerprints? John Dillinger – He was able to blur the prints at the tip of the finger, but the other parts of the finger provided evidence to make a match.*

*3. What tool was used to find latent prints on the Bishop's postcard? A laser – the beam has a diffracting lens to help diffract the light and allow the print to luminance to see the ridge structures.*

*4. What is the difference between 2-dimensional and 3-dimensional when referring to fingerprints? Today we used 2D prints that just show the ridges and width of valleys for analysis, but the 3D samples could show even more details related to the depth of the valleys between the ridges.*

### **DNA - Deoxyribonucleic Acid**

17. DNA is the biological equivalent to a person's **FINGERPRINT**.

18. In the 1980s the FBI developed **DNA** technology to solve crimes, such as rapes, **HOMICIDES**, and other violent crimes.

19. The FBI uses two types of DNA testing: nuclear and **MITOCHONDRIAL**.

20. The National DNA **INDEX** system comprised of 170 crime labs sharing DNA information.

### ***Break #5 @ 30:20 - Discussion Questions***

- 1. What is the difference between nuclear and mitochondrial DNA? Nuclear DNA is found in the nucleus, while mitochondrial DNA is found outside the nucleus. Mitochondrial DNA has more copies in our cells than nuclear DNA, which makes it more plentiful and easier to use in a wide range of evidence that was more difficult to do with nuclear testing.*
- 2. How many DNA samples (profiles) are in the DNA database? 1.5 million*
- 3. How many cases have been solved based on the DNA database? Over 6000*
- 4. What do you think ... Should everyone submit a sample to the DNA database? Why or why not?*

### **Chemistry & Trace Evidence Unit**

21. Evidence often arrives inside or on everyday items, such **HAIRS** and **FIBERS**.
22. The FBI relies on three forms of instrumentation: spectrophotometry, **CHROMATIC** instruments, and mass spectrometry.
23. The **HAZARDOUS** Materials Response Unit is one of the busiest response units used. One of their first cases involved investigating letters that contained **ANTHRANX**.
24. The bomb data center provides **TRAINING** to all public safety agencies and uses bomb-defusing **ROBOTS**.

### ***Break #6 - END - Discussion Questions***

- 1. What connected the missing persons case in Atlanta, GA? How did this change the suspect's behavior? Cotton fibers were found on the victims, which caused the suspect (Wayne Williams) to begin dumping the bodies without clothing.*
- 2. How did the FBI change after the 911 attack? Specific response teams for different threats, such as hazardous materials response team, bomb data center, and the counter-terrorism research unit.*
- 3. How many employees work in the crime lab? 700*

***Want to learn more about the FBI? Go to <http://www.fbi.gov/about-us/history>.***

### **Sample Questions:**

- 1) Who was the first FBI director? Who is the current director?
- 2) What are the requirements for an FBI agent? A crime lab tech? Other employees?
- 3) Where are the FBI field offices located?
- 4) What are some of the famous cases the FBI has solved?
- 5) What is the FBI's Most Wanted list?
- 6) What does it mean to have "FBI clearance"?