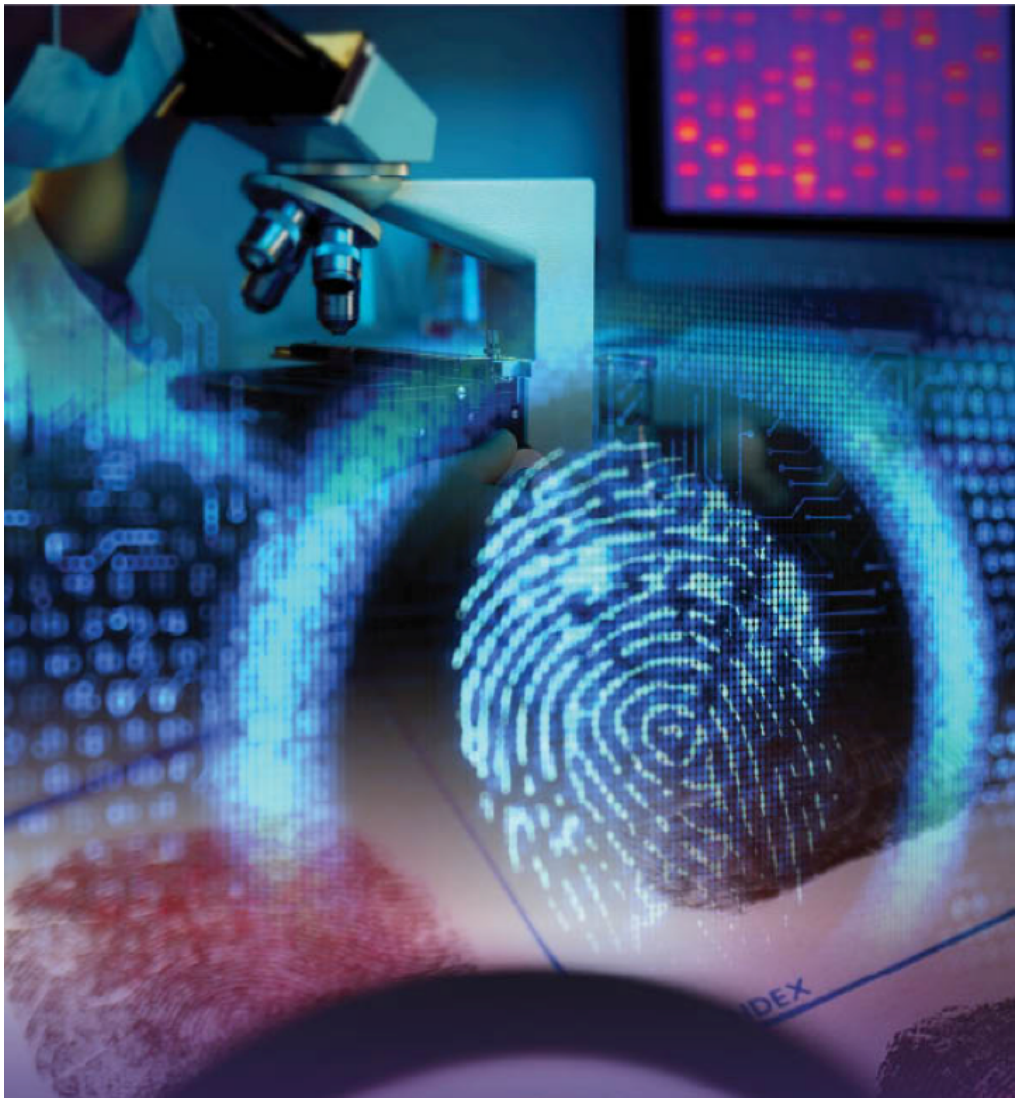
HOWARD B. OWENS SCIENCE CENTER



PUTTING THE SCIENCE IN CSI

Post-Program Activities

PUTTING THE SCIENCE IN CSI POST-PROGRAM ACTIVITY A
(Logical Reasoning Practice for Forensic Science)

At the Owens Science Center's Putting the Science in CSI program, you learned that forensic scientists analyze evidence toward supporting or rejecting theories about whether crimes were committed and by whom. To do this, they must make deductions about what is likely or even possible.

Using your iPad or cell phone, you can load the Color Code app that we used in class, and practice trying to crack secret codes.

- First use the settings that we used:
  - Code Size = 4
  - Repeat Colors Off
  - Maximum Number of Tries = 12.
- Write down the number of tries it takes to guess the code. If you fail after 12 tries, write down 13 tries.
- Reset the secret code and try to guess another code.
- Do this one more time
- Take the average of the three games. As your skills in deduction improve, you should be able to crack the code no more than 6 tries, and your should get faster. Is your average below or pretty close to 6?

First Code – Basic	Second Code – Basic	Third Code – Basic	TOTAL	AVERAGE – Basic (TOTAL ÷ 3)

- Now change your settings to make the game more difficult, either
  - increasing the Code Size to 5, or
  - turning on Repeat Colors.
- Then try to break 3 codes and average the number of tries that it takes.

First Code – Advanced	Second Code – Advanced	Third Code - Advanced	TOTAL	AVERAGE – Advanced (TOTAL ÷ 3)

Did your average number of tries increase? Was it below 12? Explain the difference. We established that there were only 360 possible codes or permutations with the basic settings. Show mathematically, that the advanced settings produce at least doubled the number of possible codes. If this is true, how much do you believe that your average number of tries should have increased from basic to advanced code cracking? What does this exercise teach us about repeating characters in our passwords or making them longer?

PUTTING THE SCIENCE IN CSI POST-PROGRAM ACTIVITY B
(Comprehensive Review)

Reflecting on what you learned and did during the Owens Science Center's Putting the Science in CSI program, answer the following questions:

1. What **new tool or skill** did you use that you did not know could be used in forensic science?

2. What is **DNA**?
   Why is it useful in forensic science?
   Describe an example of how it could be misused and lead to a mistake in a forensic investigation.

3. What makes it possible for chemists and forensic scientists to identify and **distinguish chemicals** that look alike? Give an example of how we distinguished similar white powders.

4. How are each of the **STEM** components (Science, Technology…) used in forensic science?

5. Why do we need **strong passwords**?
   Give an example of a way to make a password stronger.

6. In a tv show or movie that you watched about investigations of crimes, what did you observe that may have **biased** forensic scientists or otherwise caused them to make mistakes?