Name

Period _

_____ Date

STEM Sims



Lesson 2: Finding a Match

There are several large databases for national and international use that hold records of fingerprints, and they are used to identify unknown fingerprints. Fingerprints are matched by comparing the fingerprints found at a crime scene to the fingerprints of suspects or to the fingerprints in the database. Can you use your skills and help match fingerprints?

Doing the Science

- 1. Start the Fingerprint Simulation by clicking on the "Sim" tab.
- 2. Record the ID number in Table 1 below.
- 3. Click on each of the fingerprints from the left and right hands to get a closer look at the fingerprint.
- 4. Identify which of the fingerprints are whorls and record the finger number (1-10) in the table under "Finger Numbers with Whorls". Use the "Background" tab to refer to the finger numbers.
- 5. Using the "Finger Numbers with Whorls" column, find the value of the fingerprints with whorls and record the numbers under "Finger Number Whorl Values". Refer to the background to find the values.
- 6. Sum the whorl values of the odd finger numbers and record in the table.
- 7. Sum the whorl values of the even finger numbers and record in the table.
- 8. Calculate the primary group ratio: $\frac{1+(\text{sum of whorled, EVEN finger value})}{1+(\text{sum of whorled, ODD finger value})}$. This is done by adding 1 to both the "Sum of Even Whorl Values" and to the "Sum of Odd Whorl Values". Now divide the new sum of even whorl values by the new sum of odd whorl values. Record the ratio in the table.
- 9. In the "Fingerprint Database" section, click on the tab that corresponds to the primary group ratio found. (The numerator of the ratio should be used to determine which tab to click. For example, if the numerator was 10, click on the green tab because 10 is between 9 and 16.)
- 10. Further narrow down the database search by clicking on one of the blue boxes that has the numbers that the primary group ratio goes into. (Look at the numerator to determine which blue box to click.)
- 11. Using the denominator of the primary group ratio now, click on the blue box that has the primary group ratio that you found.
- 12. Compare the fingerprints of the left and right hands to determine if there is a match between the suspect and the fingerprints in the database. Click on "Select as Match" to check to see if the match was correct. Click on "Back" to return to the database.
- 13. If a match is found, record the Fingerprint Database ID# in the table.

Table	1.
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	Finger Numbers with Whorls	Finger Number Whorl Values	Sum of Odd Whorl Values	Sum of Even Whorl Values	Primary Group Ratio	Fingerprint Database ID#
ID #						

Do You Understand?

1. Is the Henry Classification System an effective way of identifying fingerprints? Explain.