

T-Model Fingerprint Calculator v. 9.9

Updated: August 10, 2013

Procedure

1. Use these information sheet and the Legend to learn how to operate the calculator.
2. Input the conservative (upper bound) Relevant Fingerprint Population for the case at hand (located 2 spaces above the red conclusion field). Example #1: A latent "hits" on an exemplar the California Automated Fingerprint Identification System. The database contains 10 million ten-print records. As a result the relevant fingerprint population is 100 million. Example #2: The crime scene is a house in a small remote village in the mountains of Iraq. The town population is 750. As a result the relevant fingerprint population is 7,500.
3. Use the information in the Legend to determine the discriminating value for each individual fingerprint ridge feature shape and position, the reduction factor for reduced levels of clarity, and the reduction factor for reduced levels of quality of agreement.
4. Under "Shape" for Fingerprint Analysis for Latent Print Ridge Feature, click on the drop down menu for the #1 ridge feature and then click on the appropriate discriminating value. Example #1: Ending Ridge Unit in a Funnel = 10.
5. Under "Position" for Fingerprint Analysis for Latent Print Ridge Feature, click on the drop down menu for the #1 ridge feature and click on the appropriate discriminating value. Example: A ridge feature type has 3 intervening ridges to its nearest neighbor. As a result the discriminating value for the position of this ridge feature = 4.
6. Under "Clarity" for Fingerprint Analysis for Latent Print Ridge Feature, click on the drop down menu for the #1 ridge feature and click on the appropriate Reduction Factor for the Level of Distortion. Example: A ridge feature appears visually clear and reliable. As a result the reduction factor for this feature = 1 (i.e. there is no reduction in value).
7. Repeat steps 1-4 for the mated ridge feature under Exemplar Print Ridge Feature.
8. Under "Quality of Agreement" for Fingerprint Comparison, click on the drop down menu for the #1 mated ridge feature and click on the appropriate Reduction Factor for the level of agreement. Example: Ridge type, ridge path, and spatial relationship to nearest neighbor agree = 1.
9. Repeat the above steps for each fingerprint ridge feature present in the latent and exemplar fingerprints.
10. After all of the "matching" ridge features present in the latent and exemplar print have been analyzed and compared, the calculator estimates the conservative (upper bound) number of close matches (i.e. look-alikes) likely to be present in the given Relevant Fingerprint Population and Fingerprint Populations ranging from 100 to 1 trillion.
11. The results from the calculation may be used to support or challenge the findings by a latent print examiner.

NOTE: The user should *calibrate* the calculator prior to each use. Example: 3 clear, reliable ending ridges in a funnel with 0-1 intervening ridges to each nearest neighbor present in a latent print, and all are in excellent agreement with the same ridge features in an exemplar print, should calculate a conservative (upper bound) number of 40 close matches (look-alikes) in a fingerprint population of 1000.