Bloodstain Analysis
Calculation of Impact Angles
By Bill Licopoli

Directions: Determine the ‘angle of impact’ for each bloodstain. Show all work.

1.

2.

3.

4.

5.

6.
Answers:
(measurements may be slightly different due to printer quality, size, etc.)
(work is shown for #1 only rounded to two significant figures)

1. \( w \) (width) = 1.0 cm  
   \( l \) (length) = 2.2 cm  
   The equation for the ‘angle of impact’ is:
   
   \[
   \sin \theta = \frac{\text{width}}{\text{length}} 
   \]
   
   \[
   \sin \theta = \frac{1.0 \, \text{cm}}{2.2 \, \text{cm}} 
   \]
   
   \[
   \theta = \sin^{-1} \left( \frac{1.0 \, \text{cm}}{2.2 \, \text{cm}} \right) 
   \]
   
   \[
   \theta = 27 \, \text{degrees} 
   \]

2. \( w \) (width) = .6 cm  
   \( l \) (length) = 4.1 cm  
   angle of impact = 8.4 degrees

3. \( w \) (width) = 1.3 cm  
   \( l \) (length) = 1.6 cm  
   angle of impact = 54 degrees

4. \( w \) (width) = .3 cm  
   \( l \) (length) = 2.9 cm  
   angle of impact = 5.9 degrees

5. \( w \) (width) = 1.3 cm  
   \( l \) (length) = 2.2 cm  
   angle of impact = 36 degrees

6. \( w \) (width) = 1.6 cm  
   \( l \) (length) = 7.6 cm  
   angle of impact = 12 degrees

7. \( w \) (width) = .6 cm  
   \( l \) (length) = 8.3 cm  
   angle of impact = 4.1 degrees

8. \( w \) (width) = 1.9 cm  
   \( l \) (length) = 5.4 cm  
   angle of impact = 21 degrees

9. \( w \) (width) = .9 cm  
   \( l \) (length) = 6.1 cm  
   angle of impact = 8.5 degrees
10. \( w \) (width) = 3.2 cm
    \( l \) (length) = 9.2 cm  \hspace{1cm} \text{angle of impact} = 20 \text{ degrees}