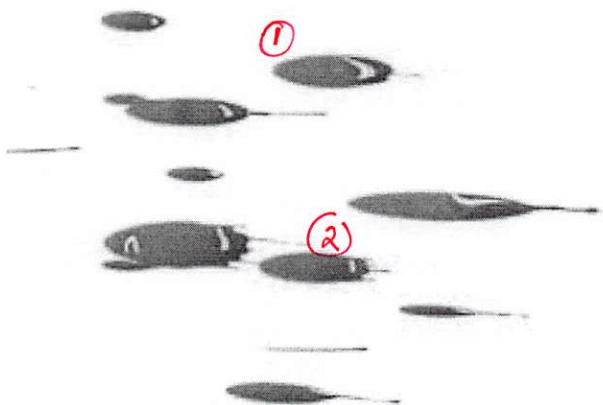


# Blood Spatter Math Practice

**YOU MUST SHOW ALL WORK- EVEN IF YOU PUT IT IN THE CALCULATOR OR DO IT IN YOUR HEAD**

1. Practice picking GOOD drops. Pick 3 GOOD drops from the diagram below. Label the drops 1, 2, 3. Fill in the data table for the drops you chose.



Drop	Width	Length	Width/ Length	Angle of Impact
1				
2				
3				

## Angle of impact

- 1.) measure width of drop at widest point
- 2.) measure the length of drop w/o the tail

3) use:  $\sin^{-1}\left(\frac{w}{l}\right) = \angle$   
 $\nwarrow$  angle

①  $w = .4 \text{ cm}$

$l = 1.6 \text{ cm}$

$\angle = \sin^{-1}\left(\frac{.4}{1.6}\right) = 14.5^\circ$

②  $w = .4 \text{ cm}$

$l = 1.5 \text{ cm}$

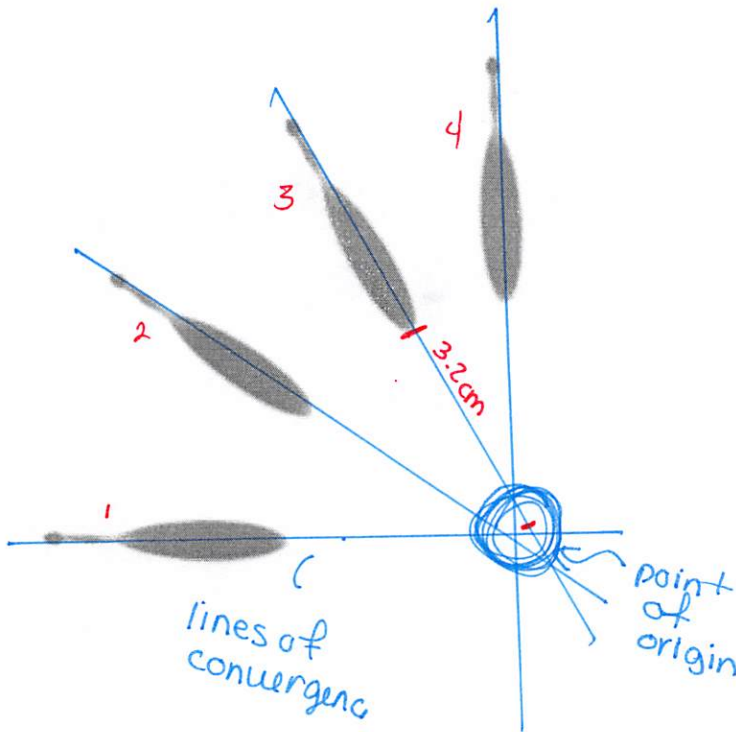
$\angle = \sin^{-1}\left(\frac{.4}{1.5}\right) = 15.5^\circ$

## Assignment

Due Thur., 4.16.20 at 11:59pm

1. Choose 3 new drops & find the angle ( $\angle$ ) of impact.
2. Complete #3 & 4 on the last page. - see #2 for example
  - a. Find angle of impact for drop 1.
  - b. Find distance
  - c. Calculate height blood dropped.

2. The blood spatter pattern was found at a crime scene. There had been a breaking and entering. Two individuals broke into Mrs. Potts' home late Tuesday night. Mrs. Potts is a light sleeper and woke up when she heard noise in her kitchen. Mrs. Potts reacted quickly and shot the two intruders. One of the intruders had been shot in the head and was dead on arrival, and another intruder had been injured but managed to get away. Determine if the blood spatter below came from the intruder who had been shot in the head OR the one who got away. IF this pattern is from the man who got away, where do you believe the individual was shot?



~~Distance: 17 mm~~

~~Width: 4.5 mm~~

~~Length: 8 mm~~

~~Conversion: 1 mm = 0.2 ft~~

#### To Do:

- ☒ Draw Lines of Convergence
- ☐ Determine Distance (info given)
- ☐ Convert Distance (info given)
- ☒ Determine AOI from Blood Drop (info given)
- ☐ Determine Height
- ☐ Determine who started the fight and explain how you know

# 3

$$\angle = \sin^{-1} \left( \frac{.6 \text{ cm}}{2.2 \text{ cm}} \right) = 15.8^\circ$$

$$\text{distance} = 3.2 \text{ cm}$$

$$\begin{aligned} \text{height} &= 3.2 \text{ cm} \cdot \tan 15.8^\circ \\ &= .9 \text{ cm} \end{aligned}$$

$$\text{convert to feet: } .9 \text{ cm} \cdot \frac{5 \text{ ft}}{1 \text{ cm}}$$

$$= \underline{4.5 \text{ ft}}$$

To calculate the height the blood fell from:

- 1) find  $\angle$
- 2) measure distance from the head of drop to the point of origin (middle)
- 3)  $\text{height} = \text{distance} \cdot \tan \angle$
- 4) convert cm to ft.  

$$1 \text{ cm} = 5 \text{ ft}$$

3. You arrive on scene to find that two men have been fighting. Devin has been slashed with a knife across his cheek. The other man, Bryan, has been stabbed in the leg. The blood spatter pattern below has been determined to be from the FIRST incident. Who started the fight?

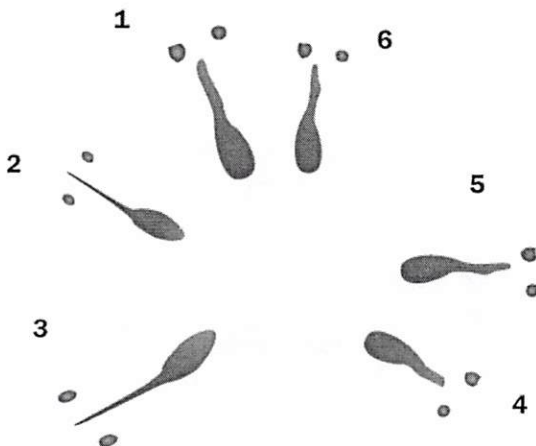
Use Drop #1 for Angle of Impact  
 $1 \text{ cm} = 10 \text{ mm}$   $1 \text{ mm} = 0.95 \text{ ft}$

**To Do:**

- ☐ Draw Lines of Convergence
- ☐ Determine Distance
- ☐ Convert Distance
- ☐ Determine AOI from Blood Drop #1
- ☐ Determine Height
- ☐ Determine who started the fight and explain how you know



4. Determine where on the body this blood spatter came from. Use drop #1 for your angle of impact.



Blood droplets are drawn to scale but length of adjacent side is scaled to  $1 \text{ mm} = 1.5 \text{ feet}$

