The Bloodstain Pattern Analysis event tasks competitors with deciphering the origin of a simulated bloodstain. Participants will employ calculations and stringing techniques to determine direction, area of convergence, and angle of impact.

Entry Requirements

- Teams must be composed of 3 members.
- Chapters can only register 1 teams to compete.

Materials

Competitors can/should provide the following materials. Competitors are only permitted to bring in the below materials to the competition. TPSA does not provide the below materials.

- **Photo Identification** Reference the rulebook (https://tpsa.info/rulebook) for details
- **Gloves**
- **Pen** Blue or Black Ink
- **Dry Erase Marker**
- **Erasable marker/Cleaning Cloth or water/spray**
- **Clipboard**
- **Measuring Device** Tool for measuring distance (ex: meter stick, tape measure)
- **Angle Tool** Tool for measuring blood drops to calculate angle of impact (ex: calipers, ruler)
- **Magnifier**
- **Tape**
- **String**
- **Scissors**
- **Calculator**
- **Protractor**
- **String support pole or tripod**

Supplemental Documents

- BPA Answer Document

Procedures and Timeline

- **Check In (10 min Time Limit)** Competitors must check in to their event at their designated **check-in time**. Competitors that arrive **ten (10) minutes** after their designated check-in time will be marked as no-shows and not be allowed to compete out of respect for the time commitment made by our Judges and Volunteers.
- **Pre-Event Briefing (5 min Time Limit)** After check-in, Competitors will be guided to the designated event area. Once there, the Moderator will provide a comprehensive briefing, detailing the event's instructions, rules, and procedures. This briefing ensures that each Competitor is well-informed and prepared for the subsequent stages of the competition.
- **Skill Assessment (30 min Time Limit)**
    1. When the moderator starts the timer and calls "Start," the team will don gloves and approach the spatter pattern.
    2. Use the spatter pattern to reconstruct the area of origin by: choosing 5 drops to analyze, determine the directionality of the selected drops, draw lines of convergence, calculate the angle of impact, calculate the area of origin (using the average of the 5 drops analyzed), and utilize stringing to create a 3D representation of the area of origin.
    3. Upon completion, the team leader will submit their answer document to the judge.
    4. The moderator will call time when the 30-minute timer sounds. If the team has not finished, they will place their hands in the air and back away.
    5. Teams that do not finish will submit their answer document to the judge for scoring "as is."
    6. The competitors will leave the event room, leaving their work for the judges to reveiw.
    7. Once the judges have completed their review, the competitors will be called back into the event room to clean up.
- **Evaluation and Scoring (5 min Time Limit)** After the completion of the event, the Judges will convene to assess each Competitor's performance based on a standardized rubric. This stage is conducted without the presence of the Competitor. Judges will evaluate the criteria outlined in the rubric to ensure a fair and objective scoring process. Once all assessments are finalized, scores will be recorded for each Competitor.

Professional Dress Guidelines

To secure professionalism points, competitors should dress in attire that accurately reflects what professionals in the respective public safety careers would wear while performing the tasks associated with the event. Competitors are also expected to consult and follow the professional dress guidelines in the rulebook to qualify for points. Additionally, participation is contingent upon meeting all prescribed safety protocols.

Safety Protocols

- **Long Pants** Long pants must be worn secured at the waist and shall not extend past the sole of the shoe. No portion of the leg shall be visible.
- **Jewelry** Rings must feature a continuous, even, and unadorned exterior surface. Necklaces must not be visible from the outside of the uniform. Bracelets may not be worn. If competitors have piercings beyond a single stud in each ear, they must cover these additional piercings with band-aids or wear clear studs to maintain a professional appearance.
- **Hair** All hair must be secured out of the eyes for the duration of the event. Competitors with hair extending past the top of the shoulder shall wear their hair secured neatly in a bun or ponytail ensuring that no hair extends below the collar of the uniform. It is not an exception to the rule that a Competitor's chosen hair style is too thick to be secured above the collar.
- **Shoes** Competitors must wear low-heeled, closed-toed footwear for this event.
- **Fingernail Length** Competitors' fingernails shall not extend past the tip of the finger and shall be free of any/all adornments. Color is not a factor.
- **Shirt Sleeves** IF Long sleeve shirts are worn, they shall fit closely at the wrist and not extend past the wrist.
- **Pant Length** Pants shall not extend past the sole of the shoe.

Judge Qualifications

- Experience working with blood spatter patterns and finding area of origin through trigonometric calculations.

Criteria	Unattempted	Unsatisfactory	Satisfactory	Proficient	Exemplary	Points
Professionalism						
Professionalism This criterion evaluates the appropriateness of attire and the level of professional behavior displayed, considering industry standards relevant to the event.		2 Attire is inappropriate for the event and does not meet industry standards. Professional behavior is inconsistent.	5 Attire is mostly appropriate but may not fully meet industry standards. Professional behavior is generally acceptable.	8 Attire meets industry standards and is appropriate for the event. Professional behavior is consistent.	10 Attire meets industry standards and is appropriate for the event. Professional behavior is outstanding and goes above and beyond expectations. Attire quality is not a factor between Proficient and Exemplary.	
Blood Drop Selection						
Blood Drop Selection 5 appropriate drops selected and numbered to be used for measurements and calculations	0 Selected 0 appropriate drops; no drops numbered	1 2 Selected and numbered 1 or 2 appropriate drops	3 Selected and numbered 3 appropriate drops	4 Selected and numbered 4 appropriate drops	5 Selected and numbered 5 appropriate drops	
Directionality						
Directionality Arrows drawn next to each selected drop indicating the direction the blood was traveling.	0 No arrows drawn or all are incorrect	2 4 1 or 2 arrows drawn correctly	7 3 arrows drawn correctly	8 4 arrows drawn correctly	10 All 5 arrows drawn correctly	
Angle of Impact						
Angle of Impact Angle calculations are correct within +/- 10 degrees	0 Did not attempt or correctly calculate the angle of impact for any drops	4 8 Correctly calculated angle of impact for 1 or 2 drops	13 Correctly calculated angle of impact for 3 drops	15 Correctly calculated angle of impact for 4 drops	20 Correctly calculated angle of impact for all 5 drops	
Area of Convergence						
Area of Convergence Circled, correct, and no larger than 4 inches in diameter	0 Did not circle area of convergence	5 Circled an area of convergence, but more than 8 inches from the correct location	10 The center of the circled area is not overlapping, but less than 8 inches from the correct location	15 Circled areas overlap the correct area of convergence.	20 The center of the circled correct area of convergence +/- 3 inches from the center of the actual.	
Area of Origin						

Criteria	Unattempted	Unsatisfactory	Satisfactory	Proficient	Exemplary	Points
Area of Origin Use proper calculations to determine the area of origin, averaging the calculations of the 5 selected drops	0 Did not attempt	5 Identified area of origin that was more than 10 inches from the correct area	10 Identified area of origin that was more than +/- 7 inches from the correct area	15 Identified area of origin that was more than +/- 5 inches from the correct area	20 Identified area of origin that was more than +/- 3 inches from the correct area	
Stringing						
Demonstrate by Stringing Create a 3D representation using a stringing method to demonstrate the calculated area of origin	0 Did not attempt stringing	2 Representation matches neither calculated nor actual area of origin	4 Matches the actual area of origin, but not the calculated area of origin	6 Matches calculated area of origin, but not actual area of origin	10 Matches calculated and actual area of origin	
Gloves and Clean Up						
Gloves and clean up Dons gloves, cleans up work area, making sure to erase all markings	0 Did not wear gloves or clean up work area	2 Did not wear gloves and attempted to clean the work area, but did not clean completely	3 Did not wear gloves but cleaned up the work area completely	4 Did wear gloves and attempted to clean the work area, but did not clean completely	5 Did wear gloves and cleaned the work area completely	
						Total Score: **0** /100 pts