Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Blood Evidence

Due Date:

**Guide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Review \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Critical Thinking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Concept Map \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Crossword \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Blood Basics Guide

erythrocytes

leukocytes

plasma

thrombocytes

agglutinogens

spatter

Origin/Source

Angle of Impact

Parent Drop

Satellite Spatters

Spines

Passive Bloodstains

Projected Bloodstains

Contact Bloodstains

wipe pattern

swipe pattern

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_

Blood Basics Review

|  |  |  |  |
| --- | --- | --- | --- |
| erythrocytes | agglutinogens | Parent Drop  | Projected Bloodstains |
| leukocytes | spatter | Satellite Spatters  | Contact Bloodstains |
| plasma | Origin/Source  | Spines  | wipe pattern  |
| thrombocytes | Angle of Impact  | Passive Bloodstains | swipe pattern  |
|  |  |  |  |

1. Bloodstains created from the application of force to the area where the blood originated is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ carry oxygen to cells.
3. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is created from an object leaving a bloodstain.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is created from an object moving through a bloodstain.
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ destroy pathogens in the body.
6. The liquid portion of the blood is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are part of the blood involved with clotting.
8. Patterns created from the force of gravity are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are patterns that occur when a force is applied to the source of the blood.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are proteins on the surface of red blood cells.
3. Small drops of blood that break of from the parent spatter when the blood droplet hits a surface create \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. The angle at which a blood droplet strikes a surface is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the droplet from which a satellite spatter originates.
2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the place from where the blood spatter came from or originated.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the pointed edges of a stain that radiate out from the spatter.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are patterns created when a wet, bloody object comes in contact with a target surface.
5. \_\_\_\_\_Immune system a. red blood cells
6. \_\_\_\_\_Blood clotting b. platelets
7. \_\_\_\_\_Carry oxygen c. white blood cells
8. \_\_\_\_\_Electrolytes and nutrients d. plasma

Determine whether the blood type is A, B, AB or O.

1. \_\_\_\_\_BB
2. \_\_\_\_\_OO
3. \_\_\_\_\_AB
4. \_\_\_\_\_AA
5. \_\_\_\_\_BO
6. \_\_\_\_\_AO
7. \_\_\_\_\_Fine stains or smears. a. Leuco Crystal Violet
8. \_\_\_\_\_Blue-green color in the presence of hemoglobin. b. luminol
9. \_\_\_\_\_Pink color in the presence of hemoglobin. c. phnolphalein
10. \_\_\_\_\_Finds blood that has been removed. d. HemaStix
11. \_\_\_\_\_Makes blood evidence more visible. e. Fluorescein
12. \_\_\_\_\_Force of gravity. a. Projected blood stains
13. \_\_\_\_\_Moving through a blood stain. b. Wipe pattern
14. \_\_\_\_\_Force applied to the source of blood. c. Passive blood stains.
15. \_\_\_\_\_Object leaves a blood stain. d. Swipe Pattern
16. \_\_\_\_\_Bloody object touches a target surface. e. Transfer blood stains.

Determine whether the statement is true (T) or false (F).

1. \_\_\_\_\_The most common type of blood cells are platelets.
2. \_\_\_\_\_AB positive means a person is positive for the Rh factor and has type AB blood.
3. \_\_\_\_\_Blood splatter analysis can determine whether death was immediate or delayed.
4. \_\_\_\_\_Presumptive blood tests analyze blood spatter evidence.
5. \_\_\_\_\_All chemicals used to detect blood leave the crime scene undamaged.
6. Blood detecting chemical that uses UV light.
	1. HemaStyx
	2. Phenolphthalein
	3. Fluorescein
	4. Luminol
7. Blood spatter can tell investigators
	1. Whether the assailant was right or left handed.
	2. How long ago the crime was committed.
	3. Which wounds were inflicted first.
	4. All of the above.
8. Clues to the location of a crime and the movement of the victim can be found with
	1. Blood samples
	2. Blood droplets
	3. Blood splatter
	4. Blood stains
9. Blood stains formed when blood flows or pools are
	1. Projected bloodstains
	2. Transfer bloodstains
	3. Passive bloodstains
	4. Swipe pattern bloodstains
10. Spines help investigators determine
	1. The direction blood traveled.
	2. The angle at which blood strikes the surface.
	3. The area where the blood originated.
	4. The identity of a suspect.
11. The purpose of hemoglobin is to
	1. Carry oxygen to cells.
	2. Carry nutrients and electrolytes.
	3. Fight infections.
	4. Clot bleeding wounds.
12. Blood that comes forcefully out of the nose, mouth or wound creates
	1. Wipe patterns
	2. Swipe patterns
	3. Projected bloodstains
	4. Transfer/contact blood stains
13. When investigators want to photograph and analyze blood evidence, they use
	1. Leuco crystal violet
	2. Luminol
	3. Fluorescein
	4. Phenolphthalein
14. When you consider the Rh factors how many possible blood types are there?
	1. 6
	2. 12
	3. 8
	4. 16
15. Blood is produced in the
	1. Liver
	2. Bone marrow
	3. Arteries
	4. Heart

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_

Blood Evidence Critical Thinking

1. What are the parts of human blood?
2. What makes blood?
3. What are blood reagent tests?
4. What is one problem with using liminal to detect blood?
5. What can blood droplets tell investigators?
6. What is the difference between passive and projected bloodstains?
7. What is the function of blood?
8. What are transfer bloodstains?
9. If a person has blood type A positive, what does “positive” refer to?
10. What are presumptive tests?

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_

Blood Evidence Concept Map

Use the following terms to create a concept map:Immune system, platelets, Carry oxygen,red blood cells,Blood clotting,white blood cells,plasma,Electrolytes, blood.

1. What can spines tell investigators?
2. What is the difference between a wipe pattern and a swipe pattern?
3. What can an investigator learn from the analysis of a blood spatter?
4. What does it mean when a blood type is Rh positive?
5. What is the probability of a genetic cross between a mother with type AA and a father with type AB? Make a Punnett square.

**Blood Evidence**

Across

2. created from an object moving through a bloodstain

3. The angle at which a blood droplet strikes a surface

4. The pointed edges of a stain that radiate out from the spatter

7. The droplet from which a satellite spatter originates

9. destroy pathogens in the body

12. part of the blood involved with clotting

13. Small drops of blood that break of from the parent spatter when the blood droplet hits a surface

14. proteins on the surface of red blood cells

15. bloodstain patterns that occur when a force is applied to the source of the blood

16. bloodstain patterns created from the force of gravity

Down

1. The place from where the blood spatter came from or originated

5. created from an object leaving a bloodstain

6. Bloodstains created from the application of force to the area where the blood originated

8. liquid portion of the blood

10. carry oxygen to cells

11. These bloodstain patterns are created when a wet, bloody object comes in contact with a target surface



|  |
| --- |
|  |
| AGGLUTINOGENS | ANGLEOFIMPACT | CONTACTBLOODSTAINS |
| ERYTHROCYTES | LEUKOCYTES | ORIGINSOURCE |
| PARENTDROP | PASSIVEBLOODSTAINS | PLASMA |
| PROJECTEDBLOODSTAINS | SATELLITE | SPATTER |
| SPATTERS | SPINES | SWIPEPATTERN |
| THROMBOCYTES | WIPEPATTERN |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S | N | I | A | T | S | D | O | O | L | B | D | E | T | C | E | J | O | R | P |
| N | N | Y | N | V | Q | P | K | N | F | G | K | S | C | R | Q | S | Q | U | S |
| I | Z | I | X | R | L | B | T | P | Y | Y | N | O | V | G | Z | P | N | Z | E |
| A | Y | T | A | A | E | A | N | G | L | E | O | F | I | M | P | A | C | T | T |
| T | F | H | S | T | C | T | J | N | G | G | Z | O | O | P | G | T | T | N | Y |
| S | I | M | U | O | S | S | T | O | H | P | S | R | N | V | C | T | E | A | C |
| D | A | E | B | H | D | D | N | A | O | O | I | J | Z | F | Z | E | G | W | O |
| O | E | N | R | O | N | I | O | R | P | G | D | N | O | Y | Q | R | P | N | K |
| O | P | L | I | Y | T | S | D | O | I | E | E | E | A | T | U | F | S | T | U |
| L | J | A | N | U | T | T | P | N | L | A | P | J | R | Y | Z | C | A | H | E |
| B | Q | B | L | S | N | H | S | A | W | B | F | I | C | E | Q | M | S | R | L |
| T | L | G | V | E | C | O | R | O | T | Y | E | N | W | V | I | E | J | O | R |
| C | G | R | R | V | U | U | Q | O | K | T | V | V | E | L | F | Y | S | M | R |
| A | E | A | G | R | F | B | Z | L | C | S | E | N | I | P | S | D | Z | B | B |
| T | P | R | C | G | O | E | G | Y | J | Y | E | R | F | S | K | B | Z | O | J |
| N | P | E | V | S | A | T | E | L | L | I | T | E | S | W | S | K | S | C | F |
| O | Z | L | S | F | D | Q | J | R | U | G | J | E | Q | G | S | A | O | Y | O |
| C | N | R | E | T | T | A | P | E | P | I | W | S | S | J | F | U | P | T | Y |
| D | H | R | B | T | X | U | G | X | M | A | W | I | N | F | K | L | F | E | D |
| S | M | L | O | P | U | X | N | U | C | Q | H | T | R | T | X | I | Y | S | H |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

