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

Arson

Due Date:

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

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

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

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

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

Arson Investigation

Fire

Fire Triangle

Flash Point

Point of Origin

Burn patterns

Accelerants

Arson

Char Patterns

V-Patterns

Heat Shadows

Chimney Effect

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

Arson Investigation Review

|  |  |  |  |
| --- | --- | --- | --- |
| Fire  | Point of Origin  | Arson  | Heat Shadows  |
| Fire Triangle  | Burn patterns  | Char Patterns  | Chimney Effect  |
| Flash Point | Accelerants  | V-Patterns  |  |
|  |  |  |  |

|  |
| --- |
| 1. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is created by very hot fires that burn very quickly and move fast along its path.
 |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a fire started deliberately.
 |
| 1. Noticeable patterns created by the fire as it burns are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur when heavy furniture shields part of a wall.
 |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are produced when a substance undergoes rapid oxidation involving heat and light.
 |
| 1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shows the three elements needed to produce and sustain a fire.
 |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are substances that speed up the burning process.
 |
| 1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is created when superheated gases rise upward and form a fireball.
 |
| 1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the location where the fire started.
 |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the lowest temperature to which a substance must be heated in order for the substance to give off vapors which will burn when exposed to a flame or ignition source.
 |
| 1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the pattern created when fire burns up.
 |

1. \_\_\_\_\_Narrow v-shape a. slow burning fire
2. \_\_\_\_\_wide v-shape b. pool or origin
3. \_\_\_\_\_u-shape c. hotter than normal fire
4. \_\_\_\_\_origin of a fire a. color of smoke
5. \_\_\_\_\_temperature of the flames b. chimney effect
6. \_\_\_\_\_type of material burning c. color of flames

Determine whether the fire is accidental (A) or on purpose (P).

1. \_\_\_\_\_inverted v-patterns
2. \_\_\_\_\_children playing with matches
3. \_\_\_\_\_two or more points of origin
4. \_\_\_\_\_heating system
5. \_\_\_\_\_locked windows, blocked doors

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

1. \_\_\_\_\_v-patterns determine the type of accelerant used.
2. \_\_\_\_\_Fire will not burn until the fuel reaches a high enough temperature.
3. \_\_\_\_\_Heat shadows help determine the origin of a fire.
4. \_\_\_\_\_Arson investigators work from the most damaged area to the least damaged area.
5. \_\_\_\_\_The location where a fires starts is the flash point.
6. The fire triangle is
	1. Point of origin, burn patterns and accelerants
	2. Heat, fuel and oxygen
	3. Burn patterns, char patterns and v-patterns
	4. Heat, flashpoint and accelerants
7. A dark layer of soot on a window may indicate
	1. A slow fire
	2. A hot fire
	3. A cool fire
	4. The chimney effect
8. Char patterns help investigators determine
	1. The location of a fire
	2. The path of a fire
	3. How fast the fire was moving
	4. All of the above
9. Fire investigators
	1. Interview witnesses
	2. Determine the point of origin
	3. Collect evidence such as accelerants
	4. All of the above
10. Heat shadows help investigators determine
	1. Type of accelerant used
	2. Point of origin
	3. How fast the fire moved
	4. How hot the fire burned
11. The origin of a fire directly below a hole in the ceiling is the
	1. V-pattern
	2. Char pattern
	3. Chimney effect
	4. Heat shadow
12. Fires started in multiple places can be determined by looking at
	1. Trailers
	2. Heat shadows
	3. U-patterns
	4. Inverted v-patterns
13. What is the percentage of oxygen needed for fire to burn?
	1. 70%
	2. 21%
	3. 16%
	4. 10%
14. A pool of accelerant can be determined by looking at
	1. Narrow v-patterns
	2. Wide v-patterns
	3. U-shaped patterns
	4. Heat shadows
15. During a fire light bulbs
	1. Melt toward the fire.
	2. Melt away from the fire.
	3. Explode.
	4. Nothing happens because glass does not burn.

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

Arson Critical Thinking

1. What is necessary for a fire to burn?
2. What is the difference between the point of origin and the flash point?
3. What are three indications that a fire is not accidental?
4. What are three motives a person might have to commit arson?
5. Why isn’t children playing with matches considered arson?

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

Arson Concept Map

Use the following terms to create a concept map: burn pattern, slow burning, wide v-shape, u-shape, pool of origin, hotter than normal, narrow v-shape.

Use the following terms to create a concept map: origin of fire, fire, color of flames, type of material, chimney effect, color of smoke, temperature.

1. What are accelerants?
2. What are char patterns?
3. What can investigators learn from glass?
4. What sort of information do investigators look for after a fire?
5. What are heat shadows?

**Arson Investigation**



Across

1. fire started deliberately

2. Shows the three elements needed to produce and sustain a fire

3. superheated gases rise upward and form a fireball

6. the location where the fire started

8. Noticeable patterns created by the fire as it burns

9. Occur when heavy furniture shields part of a wall

Down

1. substances that speed up the burning process

2. The lowest temperature to which a substance must be heated in order for the substance to give off vapors which will burn when exposed to a flame or ignition source

4. the pattern created when fire burns up

5. Created by very hot fires that burn very quickly and move fast along its path

7. Produced when a substance undergoes rapid oxidation involving heat and light

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

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|  |
| ACCELERANTS | ARSON | BURNPATTERNS |
| CHARPATTERNS | CHIMNEYEFFECT | FIRE |
| FIRETRIANGLE | FLASHPOINT | HEATSHADOWS |
| POINTOFORIGIN | VPATTERNS |  |

