Fire Basics

1. Identify the following terms used in fire investigations.

_________ - Produced when a substance undergoes rapid oxidation involving heat and light.
_________ ____________ – Shows the three elements needed to produce and sustain a fire.
_________ ____________ – 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.
_________ of ____________ – The location where the fire started.
_________ ____________ – Noticeable patterns created by the fire as it burns.
_________ – Substances, such as gasoline, paint thinner, and alcohol, that accelerate the burning process.
_________ – A fire started deliberately.

2. Label the parts of the fire triangle and complete the descriptions.

The energy necessary to increase the ____________ of the _____ to a point where sufficient vapors are given off for ____________ to occur.

Fire requires an atmosphere with at least _____ oxygen.

Can be any ____________ material in any state of ____________ (solid, liquid, or gas.)

3. Identify the clues below that might help an investigator analyze a fire scene.

Point of Origin – Burn patterns and other damage can help determine the point of origin, or the ___________ where the fire ____________.

_________ Patterns – Created by very ________ fires that burn very quickly and ________ fast along its path, so that there can be sharp lines between what is burned and what isn’t.
   ▪ A char pattern on a ________ would help an investigator determine which side of the door the fire was on.
   ▪ A char pattern on the ________ would help investigators determine the use of an accelerant and its path.

_____ - Patterns - Fire burns ____, in a V-shaped pattern, so a fire that starts at an outlet against a wall leaves a char pattern that points to the origin.
   ▪ A very ________ V-shape might indicate a fire that was hotter than normal, such as one helped along by an accelerant.
   ▪ A ________ V-shape might indicate a fire that was slow burning.
   ▪ A _____-shape could indicate that there was a "pool of origin" rather than a point of origin, such as might be caused by, say, a puddle of gasoline.

________ Shadows - Occur when heavy furniture shields part of a wall; can help determine the origin point.

________ - Glass fragments, windows, and light bulbs can provide clues to a fire.
   ▪ Light bulbs tend to melt ____________ the heat source, so the "direction of melt" can indicate the direction of the fire.
   ▪ The shattered or cracked glass of the windows can provide indications as to how the fire ____________.
   ▪ A dark ________ layer on the glass could indicate a slow, smoldering fire.
   ▪ Clear glass with an abnormal pattern of cracking could imply a very ____ fire, possibly due to an accelerant.

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Effect - Since fire burns ________, there can be an effect where the fire ignites at a point, the superheated gases _______ upward and form a ________, which continues straight up to burn a ________ in the ceiling. If the roof is not entirely burnt, and the fire investigator finds such a hole, the ________ of the fire could be directly underneath.

Color of ________ – Determine what type material was burning.

Color of ________ – Indicates at what temperature the fire was burning.

4. **Give two examples of accidental fires.** ________________________ ________________________

5. **How would odors help an investigator determine the use of an accelerant?**

6. **How should an investigator manage a fire scene?**
   - Work from the least damaged areas to the most heavily damaged areas.
   - Document with notes, ________________, and videos.
   - Collect ________________ (accelerant samples, fire items, and other crime scene evidence.)
   - Interview ________________.
   - Determine the point of ________________.
   - Determine the ________________ source(s).
   - Hypothesize the ________________ for the fire.

7. **What can you do to help prevent arson or arson damage?**
   - Report suspicious ________________ and activities that may result in arson.
   - If you have a friend or classmate that has set fires in the past or plans to set a fire, tell an ________________ – parent, teacher, counselor, police officer, or a fireman.
   - Start or participate in a ________________ ________________ program with your parents.
   - Install and properly maintain ________________ ________________ in your home and encourage friends and relatives to do the same. Your family should also have a ________________ ________________ plan for your home.