Name _____ Date _____

Fiber Analysis Lab

Materials:
- compound light microscope
- glass slide/cover slip
- forceps
- white paper
- Bunsen burner
- 3 sample fibers: wool, rayon, silk, polyester, cotton, acetate
- unknown fiber sample

Procedures:

1. Study the unknown fiber sample. Make a wet mount slide of the unknown fiber by using the forceps and placing it on a slide, adding a drop of water, and covering it with a cover slip.

2. Examine the sample using the scanning objective (4x), low power (10x), and high power (40x) on your microscope. Sketch what you see on your data table.. Note any pits or striations on the fiber.

3. Repeat this procedure with each of the known samples.

4. Light your Bunsen burner and note the burning characteristics of each of the known fibers as well as the unknown fiber. Record your observations in the data table.

    a. Holding the fiber in the forceps, bring it close to, but not touching the flame. Describe the fiber's behavior as it approaches the flame: does it begin to ignite, melt, or curl?

    b. Holding the fiber in the forceps, touch the fiber to a flame: does it ignite quickly or slowly? Does it sputter, drip, or melt?

    c. Remove the fiber from the flame and describe how it behaves: Does it self-extinguish, continue to burn, or glow?

    d. Note any odor associated with the fiber in a flame.

    e. What kind of residue it left after the fiber is removed form the flame? Does the fiber leave a white, fluffy ash, a hard bead, or a melted blob?

Data Table 1: Examination of Fibers Under a Microscope

Type of Fiber	4x Sketch	10x Sketch	40x Sketch
Unknown			

Data Table 2: Behavior of Fibers in a Flame

Type of fiber			
Approaching Flame			
In Flame			
Removed From Flame			
Odor			
Residue			

Post lab Questions: Answer the following in complete sentences and on your own paper.

1. From your observation of the fibers under a microscope, which type of fiber is most like the unknown? Describe the similarities of these two fibers.
2. From the burning tests, which type of fiber is most similar to the unknown? Describe the characteristics they have in common.
3. Why might an investigator want to identify unknown fibers from a crime scene?
4. What must a forensic scientist be able to do in order for fiber evidence to be useful in a crime scene investigation?
5. From where do we get the materials to make natural fibers?
6. How are man-made fibers classified? Give examples of each type.