**Significant Figures Matter!**

**Lab Safety:** If you are having difficulty with the valve, do not force it! They are fragile and shockingly expensive. Let your teacher know. Be careful with the nails. The syringes may require a lot of force at some points, and can also exert a lot of force on your fingers. Always have a partner when trying to place the nail in the syringe.

**Procedure**

1. Make sure your syringe valve is screwed onto the tip of your syringe.
2. Carefully experiment with the valve to identify when it is open and when it is closed. Try pulling or pushing the plunger. The plunger should be easy to move when the valve is open, and much more difficult when the valve is closed.
3. With the valve open, pull the plunger back and find the nail hole. Test that the nail can be inserted in the hole. Take the nail out.
4. Push the plunger all the way in. Close the valve.
5. One person should pull the plunger back until the nail hole is exposed. A second person should stick the nail into the hole.
6. Once the nail is secure, the first person can gently let go of the plunger. The nail should catch on the syringe and keep the plunger pulled out. Call one of us if you’re stuck.
7. Make sure your balance is turned on and zero-ed.
8. Mass your syringe.
9. Pick a gas bag. Be sure to identify which one it is.
10. Attach the valve of your syringe to the valve on the gas bag **by screwing it together**..
11. Open both valves.
12. Close both valves.
13. Detach your syringe and valve from the gas bag valve.
14. Mass your syringe.
15. Purge your syringe by letting the gas out into the air (Similar to steps 4 & 5):
    1. Open the valve.
    2. Remove the nail and push the plunger all the way in.
    3. Close the valve.
16. Pull the plunger out and put the nail back in. (Like you did in step 5.)
17. Repeat steps 9 – 16 until you have tried all 4 gases.
18. Determine the mass of gas by calculating the mass difference between step 2 and step 5 for each of the gases and record your value in the table.

**Using the 0.1 g balance:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sample # | Mass of Empty Syringe (g) | Mass of Syringe + Gas (g) | Mass of Gas  Mass Difference (g) | # of Digits in “Mass Difference” |
| A |  |  |  |  |
| B |  |  |  |  |
| C |  |  |  |  |
| D |  |  |  |  |

**Using the 0.01 g balance:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sample # | Mass of Empty Syringe (g) | Mass of Syringe + Gas (g) | Mass of Gas  Mass Difference (g) | # of Digits in “Mass Difference” |
| A |  |  |  |  |
| B |  |  |  |  |
| C |  |  |  |  |
| D |  |  |  |  |

What are your thoughts on the importance of the addition of one extra digit?