|  |
| --- |
| **What good looks like** |
| **Planning and Conducting - gathering and reporting data*** What is an accurate vs precise observation?
* Clear communication of data, (explicit about what change is happening for what material)
* Qualitative observations need to be accurate (using descriptors--precision)
* Quantitative observations need to explain the qualitative data accurately and precisely (sig figs, uncertainty, scientific notation).
* The observations are true observations and not inferences (no predicting or assuming what happened)
* Labs include observations that change over time.
* Labs include a variety of different properties observed (human sense, no taste, waft, hear crackling and popping, etc.)

***The following table summarizes some of the good chemistry 11 observations from yesterday’s video reaction activity and was taken from whiteboards and discussion.***

|  |  |
| --- | --- |
| **Qualitative**  | **Quantitative** |
| **Initial:**Na(s)+HCl-Na soft, malleable, dull to lustrous when cut, solid. - Temperature (back of hand if in person) -HCl transparent, liquid, seemed not viscous (didn’t stick to the container or move “thickly”).**During**-white, opaque, vapor, traveling up from reaction beakers immediately upon Na and HCl interaction. -rapidly shaking, vibrating, moving back and forth around the reaction beaker. White solid-like formation flies out of the beaker from vigorously spinning Na metal.-HCl bubbles form instantly upon reaction between Na(s) and HCl (aq). Transparent, colourless solution became white, opaque.-flame produces light, heat, orange, yellow, white, sporadic production, with approximately 1s periodicity. Sparks/flames began after 13s and dissipated after ~30s.-crackling/popping/searing/sizzling noise -burning splint - qualitative test for flammable gas. | 12M HClIn a lab, we could investigate the qualitative properties quantitatively with equipment such as: * Balance/scale: Mass
* Metric ruler: Volume, dimensions
* Thermometer: temperature (initial, during, final)
* Calculations: density (m/v)
* Phone Camera: time, allows to see reaction iteratively, temperature points.
* *Ask me if there is anything you may think of wanting to try from the equipment room to make other quantitative observations, I can INQUIRE about getting it.*
 |

 |
| **Communicating - clearly written with scientific conventions*** Use of proper scientific ideas and terminology (units, uncertainty, proper name of equipment, proper use of words e.g., gas versus air).
* Communication needs to be specific and clear (there was no change during the time the metal X was in the solution Y versus there was no change in 1).
 |