

## HOW TO KEEP A SCIENCE JOURNAL

Using our five senses and the tools that extend them (e.g. magnifiers, measuring tools etc.) to make observations about the natural world, documenting and recording our observations, and carefully organizing these observations have always been essential to science and remain at the heart of all scientific endeavors. Here are some ideas to help you frame your own scientific journaling practice.

The dual goals of these efforts are to:

1. Exercise and refine our senses and capacities for careful observation
2. Keep records of what we discover and notice in the world that are more accurate and potentially useful than mere memories. These records may be valuable for us to refer to during later investigation and experimentation or as a way of communicating our past discoveries to others.

### Basic Guidelines:



\*A science journal is any kind of durable journal that we can keep together over time and use specifically for the purpose of observational drawing and writing. If you purchased a camp kit, you'll find a Moleksine accordion journal. If not, any notebook with blank (not lined) pages that is about (13X21 cm / 5X8.25 in) or larger will work. Feel free to make your own and bind it with staples, string, clips or any other method. A protective cover to help keep the pages in good shape is encouraged.

\*We start recording observations in our journal on the first page and try to add each additional entry to the very next blank page.



\*We always write the date at the top (mm/dd/yy)

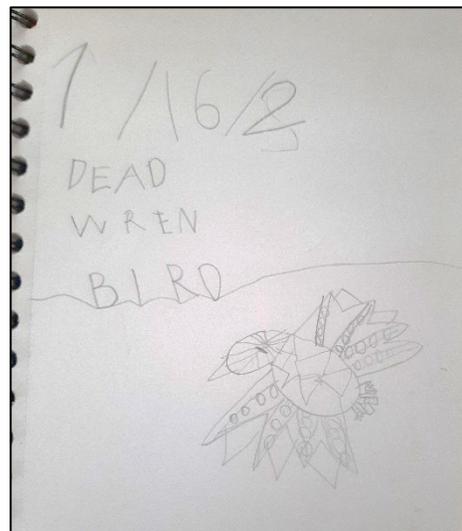
\*We always use pencils. This is the ideal tool for observational drawing and does not get smudged when our journals are exposed to moisture in the field. When we want to add color to represent what we are observing we use colored pencils or crayons, after first making a pencil drawing. For those with camp kits, we've included a set of watercolor pencils but any colored pencils, crayons, pens, or watercolor paints can be used to add color to drawings.

\*We never erase! When we are unhappy with an attempt to draw something we start again with a new attempt next to the unsatisfying one. This allows us to improve upon earlier drawings by looking closely at what aspects of them didn't look accurate while we try again.

\*We try not to use science journals for other types of drawing and writing that are not based on scientific observation or this camp.

### Process:

Once you have a journal and pencils, you are ready to find objects to investigate and begin making journal entries. Once you have found a specimen to observe, prepare by opening to the first blank page and writing the date near the top of the page. Then, write a simple label for the subject you are going to observe that is as specific as possible. If you are looking at a shell, you might label your drawing "shell" but if you know it is a "blue mussel shell" or "unknown shell from Long Island" that is a more specific label. DON'T use a label that is just a guess unless you indicate it is a guess (e.g. "shell?" or "clam shell maybe?") After labelling, begin to observe and draw. Take your time and look at the object from different angles and distances if possible. When your object is small enough, you might want to try drawing its actual size on your page. Some students like to begin by actually tracing the object's outline, if it is solid enough. If your specimen has different parts or looks different from different angles, you can make more than one drawing to represent the whole thing.



**Selecting Specimens to Observe:**



Virtually any real thing or natural object is a potential subject for scientific observation. At school, we tend to look for specimens outside and generally prefer things related to plants, animals, or non-living parts of our ecosystem such as stones or soil. Although we occasionally try to represent a whole landscape scene or large subject like a tree in our journals, we usually pick smaller objects we can get up close to, see all of at one time, and maybe hold in our hands when appropriate. Any particular subject is likely to have many aspects to be observed. A tree for example, may have unique bark, buds, leaves, flowers, seeds, and branches each worthy of their own journal entry, in addition to insects and birds that can be frequently seen on that tree. There may be particular fungi, lichen, and algae growing on the tree, and so on.

If you have access to any outdoor space at all, even a parking lot, you will find endless opportunities for scientific observation everywhere. The more closely you look, the more you will discover. One approach could be to pick a small, defined space and try over many visits to observe everything you can find there, from the soil or substrates that make up the ground and the minute creatures crawling around up through the largest plants and animals visible. If it is not easy to get out into the field, a window may provide a good vantage point for observations. Another approach is to look around the house for plants, seashells, pets, fruits and vegetables, even interesting grain patterns in a piece of wood furniture.

