**WHAT IS SCIENCE: CATEGORIZING AND SORTING**

**STUDENT ANSWER KEY**

***What is Science?***

* Science is both a **body of knowledge** that represents a current understanding of natural systems and the **processes** used to refine, elaborate, revise, and extend this knowledge.
* Science knowledge has a history that includes the refinement of, and changes to, theories, ideas, and beliefs over time.
* Scientific knowledge is a result of human endeavor, imagination, and creativity.
* Science distinguishes itself from other ways of knowing through use of empirical standards, logical arguments and skeptical review .

* The word science comes from the Latin word *scientia*, meaning knowledge. Essentially, science is a way to build and organize knowledge about phenomena by using questioning, observations, investigations, experimentations, research, iterations, testable explanations, replication, variation and summarizations, inferences and predictions about the universe (Heilbron, 2003).
* Science is made up of different fields and disciplines that study the physical world//it explores the structures and functions from the smallest to the biggest living and nonliving things on Earth and the relationships between them; Science also studies other planets and stars, space, time, galaxies and the universe.

***How is Science Done?***

* Scientists are life-long learners and always question what we see and what we think we understand. As we get new information, we must continuously revisit our processes and update our conclusions.
* The process of science is designed to address questions and challenge ideas through research and aims for measurable and replicable results through testing and analysis//laws and theories.
* The major questions we ask in science are: What, Why and So What? We do it all the time!
* Science is not just about facts, but more about the method we use to inquire about those facts. Instead of rote memorization and accumulation of facts, intelligence is taking what we know (experience), applying it to the task or issue at hand, and creating and evaluating that information for many useful purposes. Intelligence in the modern world is less about what we know, and more about how we apply what we know to meet new challenges and accomplish our goals. (Adapted from: <https://www.bartleby.com/essay/Science-as-a-Discipline-Notes-F3TDGPFBZ6FA>)
* Some scientists work in laboratories, some work with computer/conceptual/physical and math/scientific models and others' work is "field" based.
* Scientists are life-long learners and always question what we see and what we think we understand. As we get new information, we must continuously revisit our processes and update our conclusions.

***Why does science change?***

* We use science to ask questions we are curious about, follow hunches to see where they lead, make observations, and draw conclusions based on the information we have.

* There is no such thing as perfect information. Science is based on evidence, it evolves, and it helps us to distinguish facts from fiction and opinions.
* Science has changed over time--as our needs and our thinking have changed and evolved (for example the film was made in 1977 and ended "on the edge of understanding" of single protons (the smallest particle the film explored) since then, much more has been discovered about single protons.
* Science involves sharing of information and acceptance that there is no final answer as new science informs new understandings
* There is no such thing as perfect information. Science is based on evidence, it evolves, and it helps us to distinguish facts from fiction and opinions.

***What is science good for?***

* It helps us make sense of this world and other worlds
* It helps us push the boundaries of what we already know
* It reminds us that we don't know what we don't know
* It helps us make informed and responsible choices that can affect us and all living things
* It can inform policy makers so they can make good choices that affect us all (example COVID-19)
* It can improve our lives; ensure public health; eradicate diseases; allows us to hear and see better; makes it possible for us to fly...
* It helps us distinguish facts from opinion
* The more we know and can understand how living and non-living things in our world/universe function by engaging in science, the better able we are to make responsible and strategic choices that affect us and the others with whom we share the planet.
* Science helps us to ask questions we are curious about, follow hunches to see where they lead, make observations, and draw conclusions based on the information we have.