Element Guide Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_

1. Name the 2 elements that make up the highest percentage of the Earth’s crust and their mass percent abundance

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|  | Element | Symbol | % Abundance by Mass |
| 1 | Oxygen | O | 46.6% |
| 2 | Silicon | Si | 27.7% |

1. Name the 4 most common elements in the human body with their mass percent abundance

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|  | Element | Symbol | % Abundance by Mass |
| 1 | Oxygen | O | 65.0% |
| 2 | Carbon | C | 18.5% |
| 3 | Hydrogen | H | 9.5% |
| 4 | Nitrogen | N | 3.2% |

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| **Chlorine - Cl** | Atomic # | 17 |
| What family elements is chlorine a part of?  Halogens  What does chlorine look like?  Pale green gas  The most common compound with chlorine is sodium chloride, also called table salt.  What is an example of a household product made with chlorine?  Many cleaning products on this list – bleach | | |

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| **Carbon - C** | Atomic # | 6 |
| What are the three forms that carbon can take?  Diamond, Graphite, Buckminster Fullerenes (bucky balls)  What is the subdiscipline of chemistry focused on the study of Carbon-based compounds called?  Organic Chemistry | | |
| **Copper - Cu** | Atomic # | 29 |
| Why is copper often mixed with other metals?  To make it stronger and more durable  What is bronze made of?  Copper and Tin  What is brass made of?  Copper and Zinc  Why is copper used in electrical wires?  It is cheap, malleable, and a great conductor of electricity | | |

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| **Gold - Au** | Atomic # | 79 |
| Why is the symbol for gold Au?  Comes from the Latin word “Aurum” meaning “gold”.  Why does gold keep its luster (shine)?  Gold’s electron configuration makes it fairly non-reactive  What is Gold leaf? How thick is it?  Gold that has been hammered into a thin sheet 1/8000 mm to 1/10000 mm thick (3 micro inches) | | |

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| **Hydrogen - H** | Atomic # | 1 |
| Hydrogen is diatomic. What does this mean?  It forms molecules in pairs like H2  Hydrogen is the most abundant element in the universe.  Our sun fuses Hydrogen atoms together to produce Helium .  What does the name Hydrogen mean?  “Water Creator” (from the Greek ὑδρο- hydro meaning "water" and -γενής genes meaning "creator") | | |
| **Iron - Fe** | Atomic # | 26 |
| Iron is most abundant in what part of the Earth?  The core  Why was Iron a popular material for the construction of early tools?  It is malleable and can be easily formed when heated up.  What is steel made of?  Iron and Carbon  Rust is created when Iron reacts with Oxygen . | | |

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| **Sulfur - S** | Atomic # | 16 |
| In what type of geological region are you most likely to find sulfur?  Hot springs and volcanic regions  What does hydrogen sulfide smell like?  Rotten Eggs  Name a common household product which contains sulfur  Matches | | |

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| **Nitrogen - N** | Atomic # | 7 |
| Nitrogen is an important ingredient in what invention by Alfred Nobel?  Dynamite and Nitroglycerin  Why is Nitrogen important to living things?  Nitrogen is a primary component of amino acids, the building blocks of all proteins.  What temperature is required to support liquid Nitrogen?  -196°C (-321°F) | | |

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| **Oxygen - O** | Atomic # | 8 |
| Where does most of the Oxygen in our air come from?  Photosynthesis from plant life. Most of it actually comes from the algae in the oceans  What is combustion?  Process of burning in an oxygen rich environment  What is oxidation?  Loss of electrons (usually by a metal). Rusting is an example of oxidation | | |

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| **Silicon - Si** | Atomic # | 14 |
| What form does most of the Silicon on Earth take?  Silicon Dioxide – aka Sand  Silicon is the most famous of the semi-conductors. Its properties as part of this category make it ideal for what important application?  Electronics – specifically transistors | | |

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| **Lithium - Li** | Atomic # | 3 |
| What element family is Lithium a member of?  Alkali metals  Lithium is often used as a medication for what disease?  Mental disorders: bipolar disorder, depression, schizophrenia  There is a growing concern that there isn’t enough Lithium supply to support this new(ish) application:  Lithium batteries (primarily for electric vechicles) | | |