Periodic table 2018 worksheet

People have known about elements like carbon and gold since ancient times. Elements cannot be changed using chemical methods. Each element has a unique number of protons. If you examine the iron and silver samples, you won't know how many protons the atoms have. However, elements are distinguishable because they have different properties. You may notice that there are more similarities between iron and silver than between iron and oxygen. Is there a way to organize elements to see at a time which elements have similar characteristics? Dmitri Mendeleev was the first scientist to create a periodic table of elements similar to the one we use today. You can see Mendereyev's original table (1869). This table showed that when elements were ordered by increasing the atomic weight, a pattern appeared in which the properties of the elements were repeated periodically. This periodic table is a graph that groups elements according to similar properties. Why do you think Mendereyev created the periodic table? Many elements remained discovered during Mendereyev's time. Periodic tables helped predict the characteristics of new elements. Compare the modern periodic table to Mendereyev's table. What do you notice? He predicted that there would be question marks and spaces between the elements, where the uns discovered elements would fit in. Changing the number of protons changes the atomic number, which is the number of elements. If you look at the modern periodic table, do you see skipped atomic numbers that are undiscready discovered elements? They are made. You can use periodic tables to predict the properties of these new elements. Periodic tables help you compare and predict some properties of an element. Moving from left to right across the table reduces the size of Atom, and moving the column down increases Atom's size. The energy required to remove electrons from atoms increases as it moves from left to right, and decreases as it moves down the column. The ability to form chemical bonds increases as it moves from left to right, and decreases as it moves down the column. The most important difference between Mendereyev's table and today's table is that modern tables are organized by increasing the number of atoms and consist of not increasing the weight of atoms. Why was the table changed?In 1914, Henry Moseley learned that the atomic number of elements can be determined experimentally. Before that, the number of atoms was only the order of elements based on the increase in atomic weight. When the number of atoms became important, the periodic table was reorganized. Getting Started | Durations and Groups | Group Details | Review Questions | Quiz elements in the periodic table are arranged by duration (row) and group (column). The number of atomics increases as you move a line or period. A line in a period element is called a period. The period number of the element is the highest not excitedthe level of electrons in that element. Moving down the periodic table increases the number of elements in the period because as the energy level of the atom increases, the subassemic increases with each level. Group Element Columns helps you define element groups. Elements in a group share several common properties. The base is an element having the same outer electron arrangement. The outer electron is called the value electron. Elements in the group share similar chemical properties because they have the same number of value electrons. The Roman numerals listed above each group are the normal number of values and electrons. For example, a group VA element would have five valies. There are two sets of groups. Group A elements are called representative elements. Group B elements are non-representative elements. Each rectangle in the periodic table provides information about the element. When you print many periodic tables, you can find symbols, atomic numbers, and atomic weights for elements. Getting Started | Durations and Groups | Group Details | Review Questions | Quiz elements are categorized according to their properties. The main element categories are metals, nonmetals, and metalroids. Metal See metal every day. Aluminum foil is metal. Gold and silver are metals. If you're asked if an element is metal, metalroid, or nonmetal, and you don't know the answer, I think it's metal. What is the nature of metals? They are shiny (shiny) malleable (can strike) and are good conductors of heat and electricity. These properties arise from the ability to easily move electrons in the outer shell of metal atoms. What is metal? There are so many metals, divided into groups of alkali metals, alkaline earth metals and transition metals. Transition metals can be grouped into smaller groups, such as lanthanides and actinides. Group 1: Alkali metals are located in group IA (column 1) in the periodic table. Sodium and potassium are examples of these elements. Alkali metals form salts and many other compounds. These elements are less dense than other metals, forming ions at +1 charge and having the largest atomic-sized elements in that period. Alkali metals are highly reactive. Group 2: Alkaline earth metal alkaline earths are located in group IA (second row) in the periodic table. Calcium and magnesium are examples of alkaline earths. These metals form many compounds. They have ions with a +2 charge. Atoms are smaller than alkali metal atoms. Group 3-12: Transition metal transition elements are located in group IB to VIIIB. Iron and gold are examples of transition metals. These elements are very hard, with high melting and boiling points. Transition metals are good electrical conductors and are very malleable. They form positively charged ions. MigrationBecause contains most of the elements, you can group them into smaller groups. Lanthanides and actinides are classes of transition elements. Another way to group transition metals is to enter the triad, a metal with very similar properties usually found together. Metal Triad Iron Triad consists of iron, cobalt and nickel. Under iron, cobalt and nickel are palladium triads of ruthenium, rhodium and palladium, under which are platinum triads of osmium, iridium and platinum. If you look at the Lanthanides periodic table, you can see that there are two line of elements under the body of the chart. The top line has an atomic number after the lantern. These elements are called lanthanides. Lanthanide is a silver metal that easily changes color. It is a relatively soft metal with a high melting point and boiling point. Lanthanide reacts to form many different compounds. These elements are used in lamps, magnets and lasers to improve the properties of other metals. Actinides Actinid is in the row below Lanthanide. Their atomic number follows actinium. All actinides are radioactive and have positively charged ions. They are reactive metals that form compounds with most nonmetals. Actinid is used in pharmaceuticals and nuclear equipment. Group 13-15: Not all metal groups 13-15 contain some metals, some metals, and some nonmetals. Why are these groups mixed? These elements are not similar enough to have groups in a single column, but they share some common properties. You can predict the number of electrons required to complete an electronic shell. The metals in these groups are called basic metals. Nonmetals and metalloid elements that do not have metal properties are called nonmetals. There are some elements, some but not all of the properties of the metal. These elements are called metalroids. What is the nature of nonmetals Nonmetals have poor heat and electrical conductors. Solid nonmetals are brittle and have no metallic luster. Most nonmetals get electrons easily. The nonmetal is located in the upper right corner of the periodic table and is separated from the metal by a line that cuts diagonally through the periodic table. Nonmetals can be divided into classes of elements with similar properties. Halogens and noble gases are two groups of nonmetals. Group 17: Halogens are located in group VIIA in the periodic table. Examples of halogens include chlorine and iodine. Bleach, disinfectants and salts have these elements. These nonmetals form ions with a charge of -1. The physical properties of halogens vary. Halogens are highly reactive. Group 18: Noble gases are located in group 8 of the periodic table. Helium and neon are examples of noble gases. These elements are used to make lit signs, refrigerants and lasers. Your gas is not reactive. This isThey have little tendency to get or lose electrons. Hydrogen has one positive charge, like alkali metals, but it is a gas that does not function like metal at room temperature. For this reason, hydrogen is usually labeled as nonmetal. What are the properties of metalroids? Silicon and germanium are examples of metalroids. The density of boiling point, melting point, and metalroid varies. Metalloids make good semiconductors. The metal is located along the diagonal between metal and nonmetal in the periodic table. Note that even for mixed groups of elements, the trend in the periodic table still applies. The size of the atoms, the ease of removing electrons and the ability to form bonds can be predicted as they move across the table. Introduction | Periods and Groups | Group Details | Review Questions | Quiz Test your understanding of this periodic table lesson by seeing if you can answer the following questions: Modern periodic tables are not the only way to classify elements. What are the other ways to list and organize elements? An example of each element type is provided. Where in their group do you expect to find elements with the largest atoms? (top, center, bottom) Compare and contrast halogens with noble gases. What properties can be used to distinguish between alkali, alkaline soils and transition metals?