ECLEMENTS

SCIENCE MAGAZINE

PERIODIC TABLE

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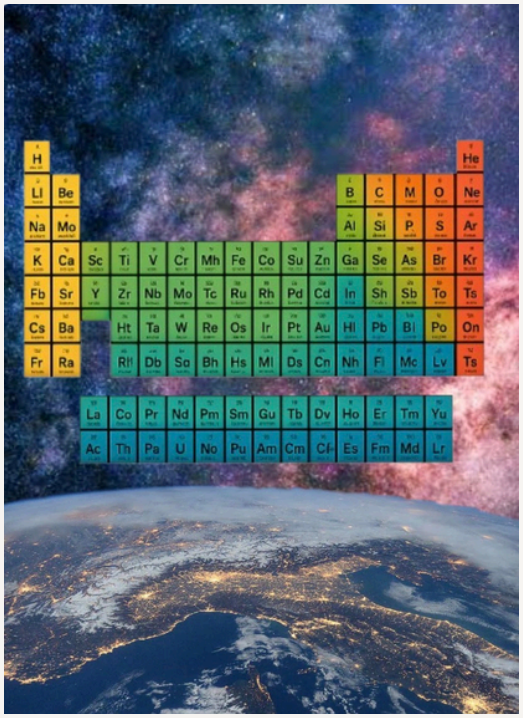
Introduction

Did you know that everything around us is made out of elements, but what is an element? Elements are some of the smallest matter in the world. They are essential because they are objects that can't be broken down any further.



There are 118 elements, and hopefully, more to be discovered. But where are they organized?
All the elements are organized in a table called the periodic table.

The table is organized by periods and columns, where they are separated, depending on their properties. But how did the periodic tables start? The creator was Dimitrii Mendeleev using many discoveries from other scientists. He was a professor of chemistry who noticed that the elements didn't have a way to be organized, so he created the periodic table. This magazine will be about how elements affect our life, and all their properties.

Why are Diamond and Graphite so Different if both are Carbon?

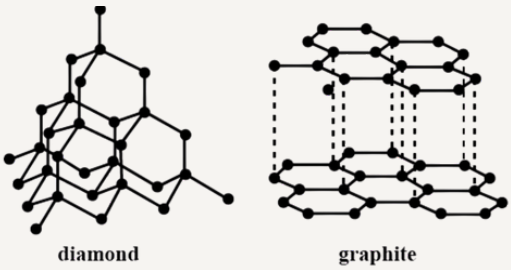
By: Julia Galindo

Have you ever wondered what a pencil and a diamond have in common? Well, let us understand that they are both different forms of the same element, Carbon. But why are they so different? Even though both graphite and diamonds come from the same element, Carbon, their uses and hardness are very different. But why? The main answer is, they are different because of their atomic bonds, the different pressures applied to build each one, and the incredible hardness of diamonds. What makes diamonds so special? What are some things both diamond and graphite have and don't have in common? And also, what are the main uses of graphite? Well, that is what this article is for: to answer these questions.

Diamonds are known for being the hardest substance on earth; they are a 10 in the Mohs hardness scale, while graphite is a 1.5. This means you can scratch graphite with your fingernail. A diamond can only be scratched with another diamond. Have you noticed that sometimes when you drop your pencil, the lead breaks? Well, the Mohs scale is not only used for scratching, but it is also used to measure hardness. Diamonds are made out of carbon atoms forming covalent bonds where there are no free electrons; every atom is bonded to four neighboring atoms, creating a very strong structure. This type of atom structure is called a tetrahedral structure. Compared to Diamonds, graphite is a very soft substance that consists of multiple layers of Carbon atoms organized in hexagonal rings. Both Diamonds and graphite are found as rough stones in their natural form. There are some of the things diamond and graphite have in common and don't have in common.

What are some things we use graphite for? An example of the use of synthetic graphite is for Electrodes, batteries, graphite Shapes, lubricants, and friction materials. Another type of graphite is natural graphite, which is used for many purposes, including batteries, refractories, castings, and lubricants. Graphite is a very soft and fragile material, but it can be used to make many things. For example, have you seen the grey-ish material that makes your pencil write? That is a lead, which is made of graphite. Have you noticed that many things nowadays work with batteries? Such as toys and remote controls? Well, batteries contain a lot of graphite, just like pencils; this is a soft but very useful material.

Diamonds are unique in many ways, and here are some things that make diamonds special. Each atom is joined to 4 other neighboring atoms with strong bonds. This creates a tetrahedral structure where there are no free electrons. The atoms form covalent bonds by sharing electrons. Also, they are good thermal conductors due to the high melting point they get from their strong bonds. How are diamonds formed? Diamonds form when carbon is under extreme pressure and heat for a very long time. This amazing substance is found as rough stones in nature. Natural diamonds are also known for being rare and preferred by most people, even though lab diamonds, which also go by the name cubic zirconia, are actually cheaper and much easier to make. Still, like I mentioned before, lots of people still prefer natural diamonds over laboratory ones.



https://www.eastcarb.com/graphite-composition/

The way atoms bond, the conditions in temperature and pressure will make the final product different, like diamonds and graphite, for example, they are both made out of carbon, but the differing atom bonds, temperature, and pressure are what make them so different. So next time you take your pencil out to write, maybe think of diamonds, remember that graphite and diamonds come from the same element, even if they seem to be very different.

https://scienceready.com.au/pages/allotropy?srsltid=AfmBOop4dv4J1dWHJFRh6lM6liX-rifvQ_utUYckjzheQr51BwVIHKgb

Aluminium: Past and Present

By: Pedro Pablo Mac Allister

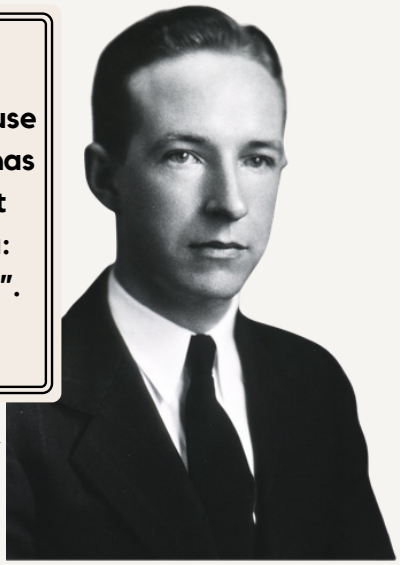
Did you know that aluminum was a luxury before? Now it is actually very common. Before it was common, the great kings like Napoleon III received their guests with aluminum gifts instead of gold gifts. Because of that, history is so important in this text. In general, aluminum was a luxury in ancient times. A long time ago, aluminum was a luxury because it was very difficult to extract from ore, and, as you'll see later, if something is exclusive or not common, it is a luxury, And here's a very superficial answer to this question: when aluminum was discovered, people thought of it as a luxury but when they discovered that they needed it in their daily life, it became very common because it became cheaper to extract with many machines that made it easier.

Aluminum was considered a luxury in ancient times. It was a luxury until the mid-1800s, and it was more valuable than gold. Since it was discovered in ancient Egypt, it couldn't be extracted as a pure metal. To take out of it all the impurities, people invented processes such as smelting. After silicon and oxygen, aluminum is the third most abundant element found in the Earth's crust so it is and was easy to find. But before humanity knew that, aluminum was very difficult to extract, making it a luxury. So, like humanity didn't know that aluminum was and is very abundant on earth and how easy it is to extract, they thought that aluminum was a luxury.

https://commons.wikimedia.org/wiki/File:Aluminum_ingots_6_20151016_1339386186.jpg

Many things, such as aluminum, were considered a luxury in ancient times. But what was considered a luxury? Many things were a luxury, but before going deeper into this, here is a word with a very interesting definition. Something that is "luxurious" is sophisticated, exclusive, and elegant. Luxurious people usually have a very good reputation and are often recognized by people. Aluminum, for example, is shiny and was very difficult to extract. But how do we name luxuries? Actually, many luxuries have names very closely associated with premium things and goods. For example, the name of "Louis Vuitton" is associated with a French craftsman who was a luxurious man. Another example is "Hermès", a company of wallets. Hermes was the messenger of the gods of Olympus.

Aluminum's constant use in the last 100 years has been so powerful that historians call this era: "The age of aluminum".



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As you know, aluminum was considered a luxury in ancient times, but it is very common now. You'd also ask yourself, if aluminum was a luxury, why do I use it every day? As you know, aluminum is an essential element of modern life. That is because of its chemical properties, such as its resistance to heat or its High oxygen affinity. When humanity discovered this, they started using it a lot, and as they started using it a lot, it stopped being a luxury. Like aluminum was difficult to extract, Charles Martin Hall and Paul Héroult created the process that we saw above: The Hall-Hérloult process. Aluminium is all around you, from everyday items such as a drink can, or an airplane flying above your head. All this is because of the Hall-Héroult process.

The Hall-Heroult process: In the late 19th century, Charles Martin Hall and Paul Héroult invented a very impressive discovery: the Hall-Herout process. This is a method for producing aluminum that is often used in the modern world.

How did the discovery of new elements change people's lives?

By: María Laura

Did you know the new 2016, elements are actually useful only for scientific research and theory testing? In 2016 four new elements were discovered, and this was an important scientific event that impacted scientists' lives and the way science saw manmade elements. These new elements didn't affect people's lives in general, but did affect people who study science and future science projects . So there are important concepts to go through, like: The new elements, and who discovered them, the every-day roles of the new elements and their importance to society and scientists' way to discover new elements or create new elements and that all elements have to be confirmed and named. These concepts will provide clarity and an answer to the question that this whole research is based on "how did the discovery of new elements change people's lives?". It's important to have that in mind while discussing each concept.

The elements 113,115,117,118 from the periodic table: Nihonium, Moscovium, Tennessine and Oganesson were recently discovered in 2016 by Japanese RIKEN institute, Joint Institute for Nuclear Research In Russia and Lawrence Livermore National Laboratory in the US, with Yuri Oganessian as led. These elements are important for society because they represent milestones in scientific discovery. They are named to honor various places, geographical regions, and people who contributed to their discovery. Nihonium (Nh) is named after Japan ("Nihon"), the "Land of the Rising Sun" that acknowledges the country's role in the discovery. Moscovium (Mc) honors the Moscow region and the Joint Institute for Nuclear Research. Tennessine Ts) recognizes the state of Tennessee, where Oak Ridge National Laboratory and other American institutions contributed.

Oganesson (Og) is named after Yuri Oganessian. The institution in charge of usually naming elements is the IUPAC. These elements were an important advance for science. That's why the naming is important; it is how people recognize the elements. These manmade elements are made of: particle collisions, fusions, new elements formation, decay and instability.

Everyday roles of the new elements and their importance to society
Even though new elements are important in different science fields and important in science discoveries they don't affect most people's everyday lives. These elements are important because they help teach scientists how manmade elements are artificially made, and are important milestones. They are extremely dangerous. Because of their short half-lives they can't be relied on. As well since there is only a small amount of atoms ever made there isn't much. Also since it's highly radioactive, unstable and superheavy they are dangerous. It is deathly dangerous, even if only a few atoms like this have been made and they are for research and few other scientific purposes. This is important for society because this is a tool for future needs. It is like a model of manmade elements. Scientists are constantly working to make new elements so this is an achievement. It is hoped that at some point scientists make new elements that improves lives probably when technology is more advanced.

Scientists steps to release a new elements, discovery or creation,confirmation,naming and releasingScientists have developed different methods for discovering new elements, depending on whether the element occurs naturally or is synthetic. If they are naturally occurring elements, researchers begin by analyzing familiar substances and breaking them down into simpler components. Eventually, they identified materials that can't be broken down any further using chemical processes, these were recognized as fundamental elements. As science advanced, techniques like spectroscopy became essential. By studying the light emitted or absorbed by different substances, scientists could detect the presence of specific elements. In fact, helium was first discovered not on Earth, but in the spectrum of sunlight years before it was isolated in a lab. Some elements were uncovered through the purification of minerals and close examination of their physical or chemical behavior. For synthetic elements, the process is much more complicated. Scientists use particle accelerators to smash together lighter atomic nuclei under high-energy conditions, attempting to create heavier, unstable elements. These newly formed elements are confirmed by observing how they decay over time and by repeating the experiments to verify the results. In the case of Nihonium, Moscovium, Tennessine and Oganesson they are synthetically created, which means they are heavier than natural elements and that they are unstable. So that means that Tennessine, Oganesson. Nihonium and Moscovium went through a similar process. Finally the IUPAC names them and releases them.

To keep in mind
To recap all the information here is the topics we went through. What are the new elements and who discovered/made them. The importance of these elements in science and how they are dangerous and can't be used in daily life. The process of new elements being released. All of this information gives little details for answering the "how did the discovery of new elements change people's life?" To conclude the new elements are important in science development and important for possible future uses but right now they don't affect people's life. So people should connect with science, keep being updated and reflect on "how did the discovery of new elements change people's lives?" This will help you learn more about what's around you.

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The Value of Gold

By: Sara Sofía Mercado

Canva

Have you ever asked yourself why gold is so expensive and valuable ? In this article you will know the answer Gold is an element that has been valuable for many years but, why is it more valuable than other elements? What is special about it? Gold is more valuable than other elements because of its scarcity, unique properties and its important uses.

Canva

Can gold be created by other elements? Yes, it can. But If you try to make it, you won't only need a nuclear reaction and find different materials, you won't win any money from it, so making it is not a good way to have a valuable element in house. How was it exposed to Earth for us to find it? By the weathering of rocks and an activity that includes the movement of hot, and minerals rich in water. When the water cools, minerals such as gold went out to create veins. These veins were carried from deep by hot water that works like a teletransporting agent. The weathering of gold's rocks were made by forces such as wind, rain and changes of temperature.

Gold is considered a valuable element because of its special chemical and physical properties. It, unlike gallium that melts when it has contact with a human hand, smelts at a higher temperature that 1,000 °C and its boiling point is almost 3,000 °C. It is soft and heavy, also it is a great conductor of heat and electricity, so it can be used for electronic devices such as cellphones or computers. It is considered to be a valuable element because it can resist air, cold and heat and this gives it the property of being durable in different situations. Gold, unlike diamonds and other elements, can easily change its shape because it is so malleable than 1g of it which is actually the size of a rice grain, could be formed into a thin surface that covers 1 meter (a normal size of a door), also its surface is smooth, brilliant and with a beautiful golden color. It can be alloyed with a variety of metals to form golds such as: green, red and white, but unfortunately native gold normally contains some impurities like of silver and of iron. It is part of one small group of elements that are found in its native state, so it is a natural pure element. It, unlike aluminum, is a very dense metal, because, for example, on the scale from 1-10 gold would be 10. If one day you taste or smell metallic gold, you won't feel anything, because it has neither smell nor taste. Elemental gold can be used sometimes as a food additive because it is considered to be non-toxic. Ancient alchemists wished that they could convert base metals into beautiful and precious gold.

Gold is valuable for different reasons and one of them is because of its creation and how it is formed. If you ask people where gold is from, almost all are going to tell you that it comes from mines, extract it from water etc., but the true origin was after the same creation of Earth. It is so old that, before the birth of the solar system, natural gold was already formed. It was created by cosmic events that occurred many years ago, these events created heat and pressure and like this, it appeared on the Earth's crust. During Earth's formation it was going down onto its nucleus. Today we have access to it because of asteroides that have impacted on Earth. A supernova (a process in which a star at the end of its life has a lot of energy) has the sufficient energy to make it in an artificial way.

Gold is considered to be a valuable element because of its rarity and uses. People want it for many reasons and the most important is for its rarity (platinum is also a valuable metal and it is rare but it is so rare that it can not be used like gold). It is difficult to find, because, for example, for you to find at least 20g of gold you will need to search for it for a very long time (250 twenty-tonne trucks full of soil). It is a symbol of power, wealth and majesty, so some people use it to make religious pictures. It is very useful for jewelry, medical tools, aerospace etc. Like gold, different from iron, is not corrosive, It do not damage skin or other kinds of surfaces so people want it because it conserves itself. Until the ancient civilization, from Egyptians, it has had an important value for humans. When the Europeans conquistadors went to America they were fascinated with the legends of gold. They searched cities like El Dorado, they also went into different ecosystems to find different riches. Aztecas vinculated gold with their god, Tonatiuh, that was also relacionated with sun, birth, death and regeneration. For them gold had an important role in maintaining the balance of the whole universe. We all agree that it has had an important position throughout time. It has been used for exchange, as money and for other elements. Its value is mostly for social opinions, all agree that it is valuable and will be in the future. Maybe gold's special shine comes literally from itself because of its property to absorb light. It is not reactive and does not lose shine, unlike copper (that turns in green and brown colors),so it "survives" for thousands of years. It plays an important economic role and that means that exchange can literally collapse if it doesn't exist any more.

If everyone values gold (or other elements like diamonds) then it must be valuable, because people think that gold has an important value, you think it too, right? In conclusion, gold is valuable for its special properties such as durability, malleability and its color, by the crash of stars that evolved its creation, for its different uses in jewelry, gold coins and bars, bank reserves, electronics and industrial, global exchange and medical resources, lastly for its scarce amount on Earth and rarity. So, now you know why gold is more valuable than other elements, do you think it really deserves its fame?

Toxic but Useful: the Hidden Dangers of Metals

Did you know that things you use daily contain dangerous metals which are hazardous to your health? Most thermometers contain mercury, and some pipes, like the ones you use to bring water to your home, have a huge possibility of being made, or with the use of dangerous metals such as lead. Even though these metals are dangerous for the human body, and can cause really serious diseases , we keep using them for a lot of products! Why?Well the answer to the constant use of these dangerous metals is thanks to their special characteristics, such as their malleability and their ability to expand when heated, which very little other metals possess too, because of the special abilities of these metals, it is very hard and expensive to replace them, so for example, engineers instead of buying a safe really expensive -and not so useful compared to the metals- material, they instead use a -somehow- cheap, incredibly useful, but dangerous metal. But we better"dig deeper"to understand better our"need" to use these metals.

https://upload.wikimedia.org/wikipedia/commons/2/2c/Mercury_escaped.jpg

Fun fact: Mercury, which is represented like (HG) in the periodic table, is the only metal that transforms into a liquid at room temperature.So for clearly understanding, we better understand what makes dangerous metals so special that we keep using them even though they are very Hazardous for human Health?Metals are defined by certain characteristics: like thermal conductivity (when the metal conducts heat or cold) and also its malleability (the ability of being deformed or shaped without being braked) and also its high reflectivity of light. Metals most of the time form naturally in crystalline forms which means in the form of a cristal. All of these"perfect"abilities make Metals perfect for a lot of work requiring high heat resistance and easy shaping. Which are actually a lot. Metals are actually elements in the periodic table (a way to order all elements in a table for it to be more organized.) , which characterise because of their great bonds with other elements to create new substances used to create a lot of objects. Used in building or daily things. But not all metals are harmful, actually some metals are necessary for survival such as iron, zinc, copper and magnesium, we consume them every day. That is why it is important to distinguish between heavy metals which are harmful such as Mercury and Lead, which can cause damage to the nervous system; and those that are beneficial in small amounts.Fun Fact: Leads chemical name is Pb which comes from latin plumbum, which means Plumber or plumbing because Lead was used and still in a lot of pipes.Some metals are harmful to humans, we know that, right? But Why? Well let's take Mercury and Lead for example, two very different yet important Metals. Lets start with Mercury, it is very dangerous because even the smallest amount can cause serious damage, especially to the brain. It can cause short term memory loss, paralysis and even Parkinson and Alzheimer disease. This happens when Mercury gets in your body system, it slows down Chemical activity of the brain tubulin , (which is essential for brain formation) so because of that it causes Neurological dysfunction. So yes, it is pretty dangerous, but humans don't limit its use just because of that. Lead is very similar when speaking of dangerous-ity just because of its high toxicity in, well, ANY amount, because of this; inhaling even the smallest microscopic particle may cause damage to your body. When inhaling Lead, your body has no ability to expel Lead from our intestines, so it could stay on your body for along time (Emphasis on the Looooong). We humans are a bit perseverant, so despite them causing all these damages we keep using them because they have special characteristics such as the ability to change shape without being breaked. Not many metals possess such characteristics, which make Lead and Mercury a perfect material, for infrastructural use.Fun Fact: Lead has the highest number of protons (positively charged particles that are in an atom) of all steady elements.

https://commons.wikimedia.org/wiki/File:Two_pieces_of_lead,_11_grams,_1_x_1.5_cm_each.jpg

Have you ever seen or owned a thermometer with mercury inside? Or seen a pipe made out of steel? Well this and many are examples of uses of metals, especially dangerous ones.What are more examples of the uses of these Metals? Lead is specially used on infrastructure (Building). For example; lead is applied to steel to improve its quality and its manufacturing efficiency, like better flexibility, for it to be easier to manage the material when constructing, but that's not all, lead is incredibly useful so It also applies more conductivity of heat; Which is useful for works requiring materials who can support high temperatures without melting. It's very resistant to corrosion too, so it can support a lot of processes without being damaged. For a miniature conclusion of lead; it is not completely necessary for making common things, like things we use every day, like a toothbrush (well I hope it's every day) but it is necessary in things like manufacturing, but because of its toxic components it has been replaced with other metals.

Other than manufacturing only for buildings, it also helps create excellent radiation shielding added to terrestrial equipment. So it makes these more durable, so logically it helps with the reduction of materials used on terrestrial equipment because they last longer because of the radiation shielding, which protects sensible things from harmful effects of ionizing radiation -which is high energy things powerful enough to damage an equipment very fast and easy. Lead is absolutely not taking all the credit, mercury is super important too! Mercury is an excellent material for using on thermometers, because it expands when heated so it can mark the exact temperature of the body. It is even used on dental filling called amalgams! It is used due to its liquid form when at room temperature, and its easy malleability. Mercury produces a bright vapor, which is used in high powerlights, such as streetlights and bright neon lights. So yes, these might be mercury on a streetlight, or even a thermometer! So that's why when you buy a mercury thermometer it comes with a little sign saying: WARNING: MERCURY SIDE , IF IT BRAKES DO NOT TOUCH IT OR INHALE IT. Or something like that, in whatever case lead and mercury are used for a TON of things, yes it is dangerous, but with its correct precautions it is a great tool.Fun fact: Mercury's chemical symbol (Hg) comes from derived (somehow like changed) from its Greek name "hydrargyrum"; which means "Water silver"

So, after all we've learned I can finally conclude the answer to our question; Some toxic metals have been used for many manufacturing and common uses, even though they are dangerous. They have been used thanks to their special characteristics such as malleability and different States of matter in different temperatures. You should be very careful around dangerous metals, because they can cause serious damage to your body. Now you know why dangerous metals are used, right? But I wonder if ancestors who discovered mercury and lead knew it was toxic? And how did they discover it was toxic? I invite you to keep exploring about dangerous Metals that weren't mentioned here, like; what was the most common metal used? What were his uses? When was this metal discovered? By Whom!Maybe even create a collage! Thank you for reading and I hope you enjoyed it. Like I mentioned, I persuade you to keep exploring questions you still have on your mind. Don't ignore them. Answer them

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By: Gabriela Cuartas

The Periodic Rythm

By María Ramírez

Gold

In the riverbank,
There is a human
Looking for something
that will change his life
in a few moments
he will find a rock, glint
Bright as the sun

in a jewelry workshop
There is a jeweler
He is creating a ring
For his girlfriend
With diamonds and gold


Chat GPT


Chat GPT

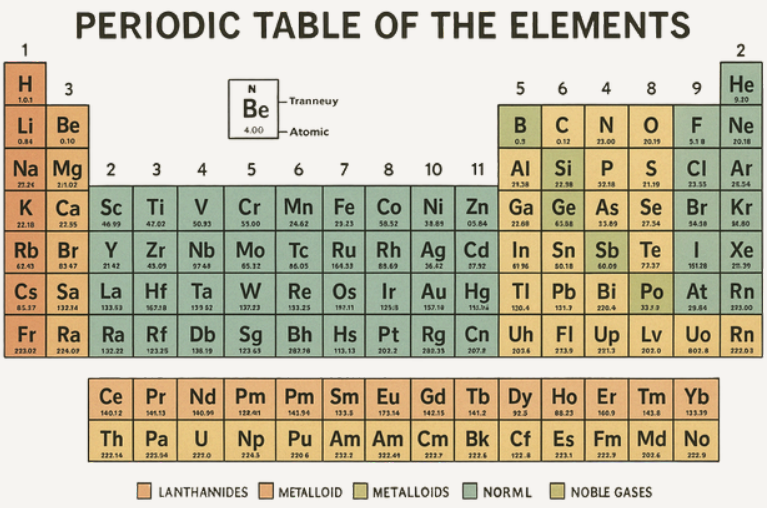
Dimitirii Mendleev

Oh Dimitrii, Dimitrii
You make science glow,
And thinking about how you did it alone.
All of your work impressed us all
Making us think about you with awe

You to the periodic table,
Are like da Vinci to the Mona Lisa.
Sitting alone shuffling cards
Without knowing that would be the start

After all the experiments laying around
The fizzing and bubbling let the answer be found
It started with patterns
Then earned many banners

Organizing elements with symbols and numbers
Making chemistry rumble around
Leaving us all with a compass to science
Recognized and known by all historians



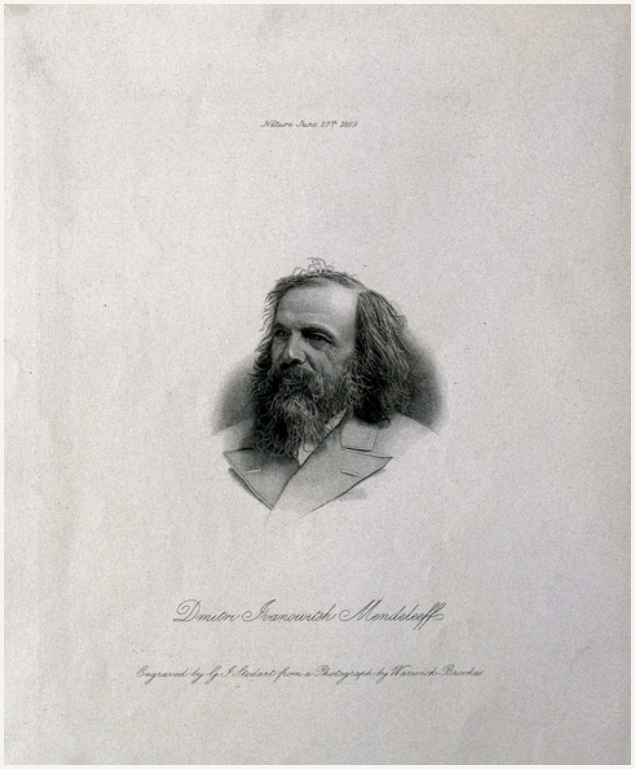
Chat GPT

Dimitirii Mendleev Acrostic

Dmitri was so smart
Inside the lab he would blow off the charts
Many experiments were scientists dreams
Impressive fulfillments
Truly
Remarkable,
Impressive. The
Inspections to all elements

Mendeleev was very relevant
Experiments with bangs and booms
Notable
Disbelief of what became understood
Expressing of feelings from boos to you hoos
Liberty of knowledge
Elements now weren't as mixed as porridge, Mendeleev
Emphatically shared his
Various results.

By Mariantonia Uribe



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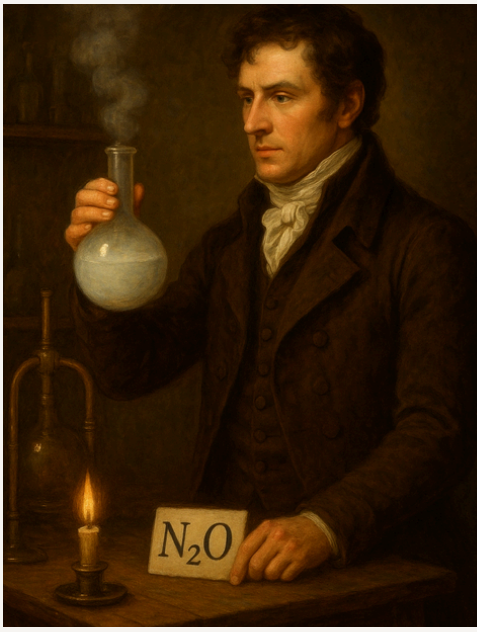
Mr. Davy's famous discovery

By Juan Ignacio

In Humphrey Davy's laboratory he sits quietly hoping to discover a new type of gas,
He stirs his findings with the pleasure and confidence every scientists needs,
The pot bubbles and fizzes with the chemical reactions,
He hopes to specifically find nitrous oxide.



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Out of nowhere a large fizz of gas started coming out of his pot,
He accidentally inhales it and almost suffocates,
And then, he started laughing,
The room lit up and not even Humphrey knew what was happening.

When he finally stopped laughing he sat around to rest,
Trying to think what could happen next,
Will he become famous?
Or will he keep living in the shadows of his laboratory?

At the end he stood up, trying to find out what happened,
He finally found out, that the gas made him laugh,
He ran out to tell everybody his discovery, hoping to impress some people
Finally his discovery became famous and important, he finally named his discovery the Laughing gas.

Wikimedia Commons/Wellcome Collections

Phlogiston

By Juan Martín Díaz

It starts with a man, a dreamer so bright,
Johann Becher in Germany, born to the night,
With little in coins, but rich in imagination
He search for discoveries beyond expectation

He spoke of a fire, a secret to see
Phlogiston, he said live in flame and in tree
The idea was wrong, but opened the door
And oxygen's truth was found evermore

Years later, came Priestly, a curious man
Who loved little experiments more than grand
With candles and bottles on a simple stand
He searched for answers with steady hand

Now, we know it all, we know what is there
But before, the oxygen was very rare
Here you have it, the history in your brain
Little drops of knowledge falling like rain

Wikimedia Commons/ TeWeBs

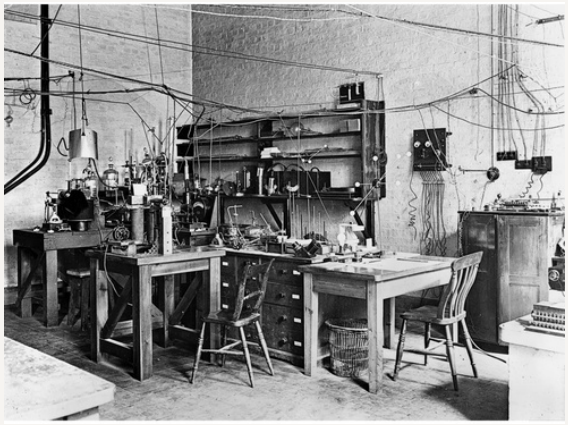
Wikimedia Commons/ Orf3us

Acrostic

By Juan Martín Díaz

Past oxygen
Hope higher
Lost flame
Old name
Gave way
In day
Smoke gone
Truth shown
On clear air
New fair

Proton's words



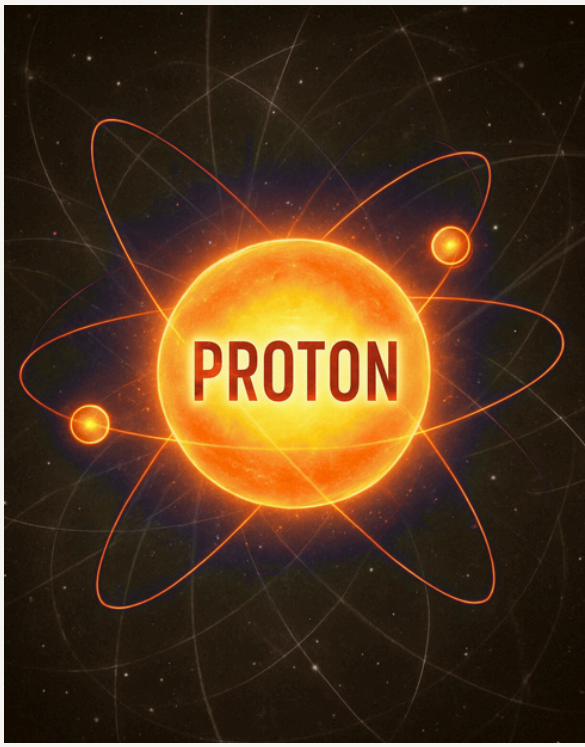
Wikimedia Commons/Science Museum London

Looking around the room, with all those beakers in sight
Was the lonely Rutherford, beside his silent light
With his positive alphas and a metal sheet
Thinking of how to discover what was in it

He directed his particles right to the foil
It was a better discovery that when people found oil
Shot the positives, they would sound, BOING!
This was the best moment
Of all things he was growing

He named this sub atomic parts protons
And they were as tiny as the electric photons
Rutherford couldn't stand his joy
He was even up to dance and annoy

Oh, what he discovered was beautiful and shining
Just like a strike of igniting lighting
And with this evidence and treasures that he found
We should uncover what's beneath the ground



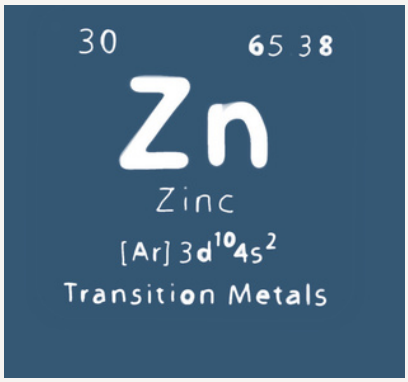
Chat GPT

Acrostic

Word: PROTON
Part of everything we know, so small that is invisible to the naked eye.
Rutherford can explain how it was done or discovered, but not you nor I.
Oxygen, Hydrogen and Carbon are all made of them.
Tough as diamonds and important as our lives, are the building blocks of the world.
Or can they be replaced?
No, they are unique, and create the world that we live in.

By Ignacio Miguel

The Thoughts From Science



China. 22/09/2025

Hi, I'm Zinc. I am writing to introduce myself and explain to you why you should know about me.

First, I'm going to start with my physical characteristics like my color, my state and facts about the periodic table. There are many places where you can find me, such as: Mexico, the United States, Peru, India and China, the country in which I'm sending this message. I am an element from the periodic table, and my atomic number is 30. My color is bluish-silver, metallic, and I am also in a solid state.

Now I will show you some of the parts in which people usually use me. I am usually used to many important things such as making alloys, protection of corrosion in iron or steel, batteries, sunscreens and skin creams as a UV protection and skin treatment. I'm a good conductor of electricity; for this reason, you can find me very often in many different places.

I am very useful and important for a lot of things. I am also very important to your health, helping your immune function and wound healing and as already mentioned, you can use sunscreen. That's why you should consider using me. Probably your wounds will not heal, your immune system won't be able to protect you from viruses and diseases, but with me, I will help you.

I'm very important for the world, making potential tools, structures and objects for you to stay healthy

From the heart, your friend Zinc

Zinc

By Diego Alejandro Suárez

Chemical Elements - Zinc. (2016). Images-of-Elements.com. http://images-of-elements.com/zinc.php

22/09/25

My beloved water, From rocks in Bangladesh

It's been a long time since I wrote you a letter. The first time I did was when I first met you. Remember? We bonded that day in India and I felt for the first time true love. I wrote to you that night the way you made me feel. "You make me feel in ways I have never felt" quote from what I wrote and what I feel. After we realized we were meant to be we expanded and went to Bangladesh and other places. The weird part was that the world didn't support us. People were getting sick because of our love and I felt terrible because the one true love I have (you) was being treated like if it was something bad and people weren't drinking it anymore, and I thought people were jealous but deep in my mind I knew why they could act like this. I never told you but it does affect me. I wish this wasn't a forbidden love. You will always be my love and my one true partner but it's time to accept our fate.Together we are dangerous but don't get me wrong I loved you and love you more than anything. I know you are awesome, always bring love to Earth and that you are a basic need but I don't want to mess with your future.

Wikimedia Commons/Science

If we keep bonding they won't ever trust you again and I don't want to harm you or be responsible for that. It isn't a lie that I got used to harming others with the excuse that we were just bonding. Us together make toxic water that makes humans sick. When they drink you infected by me continuously, sadly they can get: hyperpigmentation, hypopigmentation, keratosis, skin cancer, lung cancer, bladder cancer, kidney cancer, liver cancer, hypertension, atherosclerosis, heart disease, risk of heart attacks, type 2 diabetes,cognitive impairment developmental delays in children, numbness or tingling in hands and feet, chronic cough and breathing problems due to lung damage,gastrointestinal symptoms,weakened immune system, increased risk of infections,potential reproductive and developmental problems. How will you feel being the responsable for people's deaths? I don't feel good and that's why I wrote you this letter. I don't want to keep doing this.

I am feeling heartbroken and it took me a lot of courage and thinking to make this decision but I have a final decision. Sadly we can't continue doing this. You and I have a bright future but together we opacaque each other. It's like we are slowly building a bad reputation and a relationship that doesn't only harm others but that also harms us. I am sorry but I know that you are my true love and that I will never ever forget you. The thing that we have between us is magical. With you I can express my love and I like that you are easy to talk to. I know. Well there is not much more to say just that I wish for you the best and I hope you have an amazing future and that slowly you can regain your reputation for now I will keep a low profile. Please don't contact me, it will only make the pain worse. I know that in a few years you will understand this was the right thing. I will never forget you my love but goodbye.

Yours forever, Arsenic.

By María Laura Valdés

24/09/25

My dear Arsenic, From the South Pacific

I am so happy you wrote. I just realized that delivery is slower everyday. Anyways I felt full with joy when the letter arrived until I read it. At first I thought it was cute remembering our first date and the way we expanded but then I realized where you were going. I am not going to lie, I was surprised and shocked to see you all of a sudden care so much about society and so little about me about us.I don't know how to express myself. We felt love and it looks a little bit like you don't care about anything. I never cared one bit about my reputation. I cared about you. All of the things I worked for don't matter if I don't have the one thing I want. You. I love you but now it seems crystal clear. All you care about is our reputation or the harm we might be causing others but what about me, what about my feelings. It feels like even though we are harming others and probably our future we or at least I am okay. I feel the love for you and I think that is not an excuse for the harm but it is the reason why I can live with it. I guess we are dangerous and that we could kill people or give them a bad illness, and trust me I care about that but I just wish we could be free.

Even though this is forbidden love, people don't support it and everyday looks for a way of separating us. I love you and that won't change. Won't change even if we aren't together. I just don't understand why if you truly love me like you say you won't put me first. I gave everything to you: my purity, my reputation and my heart. It's heartbreaking seeing you just care about other people. I think we could just raise awareness about how we are dangerous and try to control our expansion. But I just know I won't change your mind and that even if you find another way out of this another possibility you still won't want me back. When something is set on your mind, well I guess it is set forever. But what keeps me from still trying. I can accept your choice but the way I see you won't change sweetheart but I will try to live with it.

Search. (2025). Wellcome Collection. https://wellcomeimages.org/indexplus/obf_images/cf/8d/68fee46c1b8de3e1d4ae6c865b1c.jpg

I guess I should be grateful for all of what you taught me , for the first time I felt alive thanks for letting me dream about you and thanks for being there. I don't know if you will ever change your mind but I will be waiting. I am just really hurt but I still haven't processed it all because one day you were telling me about your day and the other you are breaking up with me. I want to see you one last time but I don't know if my heart is strong enough. Also you said no contact and that's even worse. Our bond is so strong it won't ever break. Maybe that's why it hurts feeling like you are trying to break it. I am sad but I still know I will always be in your heart and you will always be in mine. With pain in my heart I guess I goodbye I love you and I hope you enjoyed the time together. If at any moment you want me back I will be waiting for you Au revoir my love.

Forever your true love, water

By María Laura Valdés

Tuesday 23 september
From every where of the earth crust

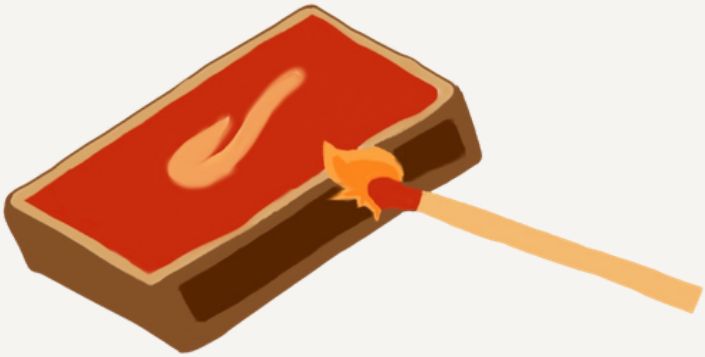
Dear humans, I'm phosphorus, you may know me as the one that lights up the fire. Have you ever thought of phosphorus as an element? Yes I'm an element, I did not know that. I thought that I would only light up the fire.

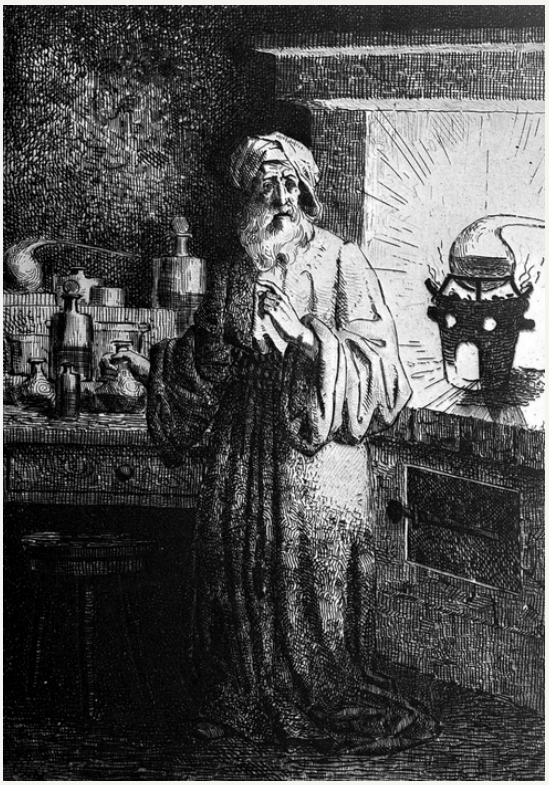
I was found by a german alchemist named Henning Brand in 1669. Henning was doing an experiment trying to transform urine into gold but instead he discovered me. I was a bright and shiny element when he discovered me. He discovered me in the dark. I was discovered by accident. I can also be find rocks and minerals in Morocco, China, USA, Russia and Jordan. There are many places. I can be used by many things like fertilizer, detergent ,cleaning products ,food industry ,chemical uses, biological importance, and food industry. I don't like the way people use me, they use me as fertilizer,detergent cleaning products and chemical processes. When people use me they mix me with more things and they abuse me when cleaning because for you humans all needs to be clean and perfect. Also you buy many cleaning products that you finished in one day. I wish that you could find a better way to use me and I will apprehend.

From heart of phosphorus

Phosphorus

By Paula Lobanov





https://wellcomeimages.org/indexplus/obf_images/06/7b/4f7188c085e606b54c13d7fc1355.jpg

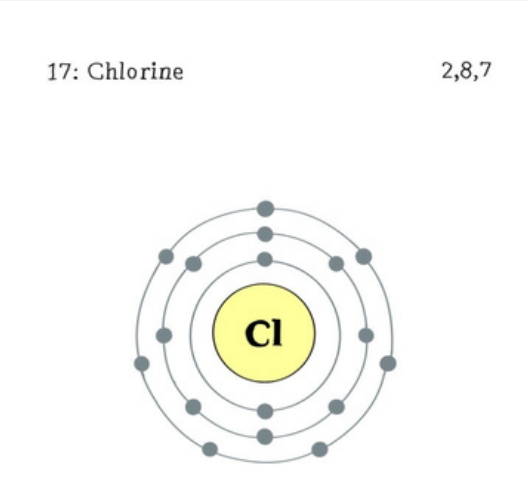
somewhere in United States in 25th of February 2024

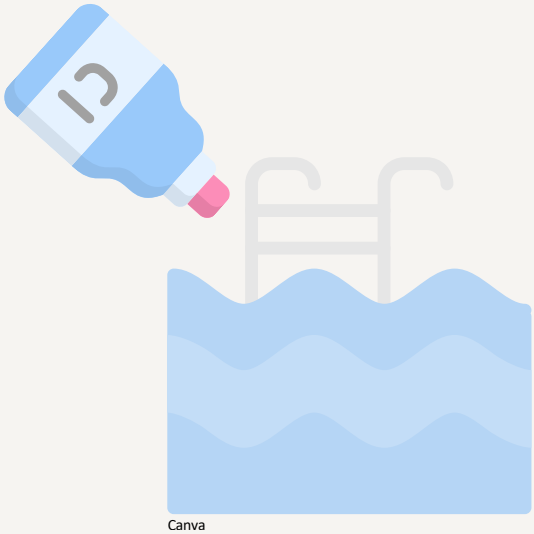
Dear scientists,

I am writing this letter because I want to tell you how I feel. I am thankful that you scientists have used me in experiments and created products that help people. For example you have used me to clean water so it doesn't have bacteria, or to disinfect pools and kill insects. I appreciate that so much and I think that if you continue using me I will help a lot in the future because probably the earth will be more contaminated and I can disinfect things. So I am very thankful that you have made a tool to help people. But another reason I wrote this letter was to tell you about a thing that I have been thinking about. The thing is that, if you scientists do more experiments with me and try to find more ways to use me. I like that I can help people but I want to be more than a disinfectant of water. So I want you to try to do more experiments with me. I will be more useful. Thank you scientists.

Respectfully chlorine. ✅

By Antonio Melo





Canva

Tuesday 23 of September ,Western Australia

Dear mining companies of all the world,

You are doing a great job extracting me but you are doing a lot of damage to the environment and around the world .

The environment is the most important part of the world because it gives us oxygen and other fundamental things because when you access the mines to extract all the minerals you are cutting many trees and you are polluting all the air because the smoke that the machine produces is contaminating the air.You need to find a solution soon to stop contaminating the air and the world

I think that you can plant new trees in the affected areas after you extract all the minerals and you can use different machines that don't produce so much smoke that pollute the air.That will pollute the environment less and you can continue selling the minerals.

Remember that we only have one planet and we need to care about it. So you can continue extracting me and think about not polluting the environment .

I hope you do the right thing

Forever yours, iron(Fe)

By Maximiliano Polanco

https://commons.wikimedia.org/wiki/File:Amazon_slash_and_burn_agriculture_Colombia_South_America.jpg

Hi Maxi, I am magnesium but in the periodic table they call me Mg,this is my periodic symbol. I was discovered by sir Humphrey Davy in 1808. I am a shiny silvery-white metal, that's why I'm so attractive. You can find me in many places such as seawater, green plants, and minerals. I am the eighth most common element in the earth crust. I am very reactive, I burn with a bright white flame and if you try to turn my flame off with water it will only get bigger. This is because I burn so hot that it is hard to stop me. Also since I am very reactive you can get a lot of compounds. Because I can mix with oxygen, sulfur, chlorine, and carbon, then compounds created are useful for medicine, industry, sports, and plants. You can imagine I have many uses so I'm going to tell you about two interesting ones.

You can't imagine how much you and I work together in our daily life. With me, you can do all your different activities and sports. Inside you there are many different muscles, each one of them has a lot of magnesium inside. I help your muscles contract to relax. Also, I am the messager that sends all nerves signals correctly to you. As you know I am very relaxed and controlled so that is very good for your heart so I keep your heartbeat steady. Another interesting thing that I do is work together with calcium and vitamin D to keep bones and teeth strong. I think that calcium is the bricks, vitamin D the construction manager and I am the helper and stabilizer. Additionally I prevent bones from being weak. Also you know that 60% of all the magnesium in your body is inside bones. Other things I do for you that help you are reducing stress and anxiety so you are calm and ready to think. You know I am very balanced so I help you be responsible at keeping the sugar levels in a control zone. But sometimes I have to fight for you because you don't fight for me and let infections get into you.

You know how I get into you? I can be in a lot of places but the one that helps you is food. I am inside foods like nuts, whole grains, and other things like bananas or avocado. Other places where you can find me on earth are dalomite, magnesite and olivine and other ones, that's why I'm the 8th most common element on earth. Also in water most sea salt is made of magnesium. In fact, per every liter of water there are 1.3 grams of magnesium, there's where scientists take magnesium to make metal water. Humans like you with great ideas use me to make many technological things like cars, phones or iPads. You can't imagine all the places where you can get magnesium. Magnesium is everywhere, imagine you are a gymnastic, magnesium starts being from inside your body then in your shoes or even cloth and then after you get into the bar you put that powder of carbonate magnesium in your hands so your hands stay dry and you don't fall. And how you think cars are very heavy and they are made of magnesium, magnesium is the lightest and strongest metal you can get. Finally, now you know that I'm very important and useful for the world and new experiments so if you read this please do a big thing with this incredible metal that can do everything such as still burning inside water. Bye max . Thank you

By Tomás González

User:Warut - Wikimedia Commons. (2022). Wikimedia.org. https://commons.wikimedia.org/w/index.php?title=User%3AWarut&redlink=1

By Busra Betul Akkaya

From earth's crust to balloon sellers. 22 September, 2025

Dear balloon sellers,

I write to you today because you are wasting me.

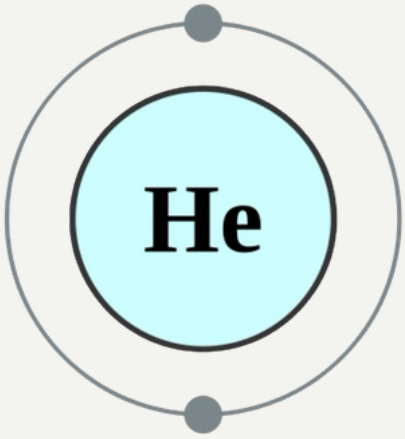
I think it's important you understand that I am so sad. I am one of the most abundant elements in the universe and you can use me in many different ways, like as a shielding gas in arc welding, but instead of it, you use me for unnecessary processes.

For example, some people use me for many important things like NASA, to cool liquid hydrogen that is used in rockets. And in medicine with MRI (Magnetic Resonance Imaging), where I cool the superconducting magnets. Without me MRI wouldn't work. I am so important and you are wasting me filling me in the balloons! Oh my god!

Selling balloons with helium is dangerous and affects wildlife, for example, some people buy balloons and then they inhale me to play with their voices. But when they do this, I displace the oxygen that they have in their lungs and I can lead to asphyxiation. Also the people let the balloons fly in the sky, but after a while, the balloon explodes and falls to the ground and to the ocean. Some animals think it's food and they eat it, but sadly they can die.

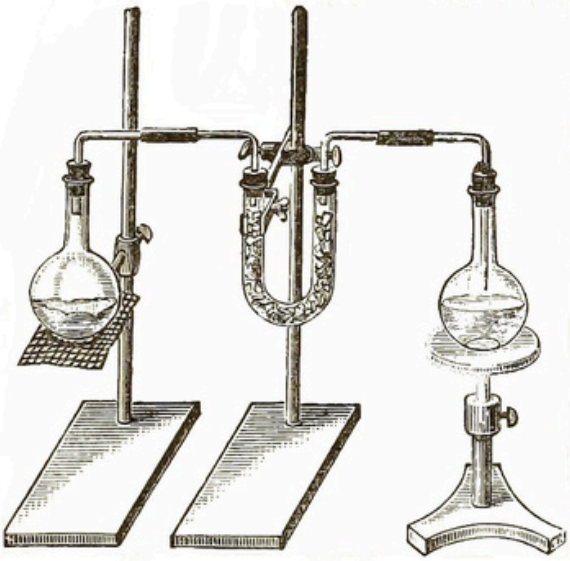
So, maybe these words inspire you to don't waste me in balloons and use me in different ways to take care of

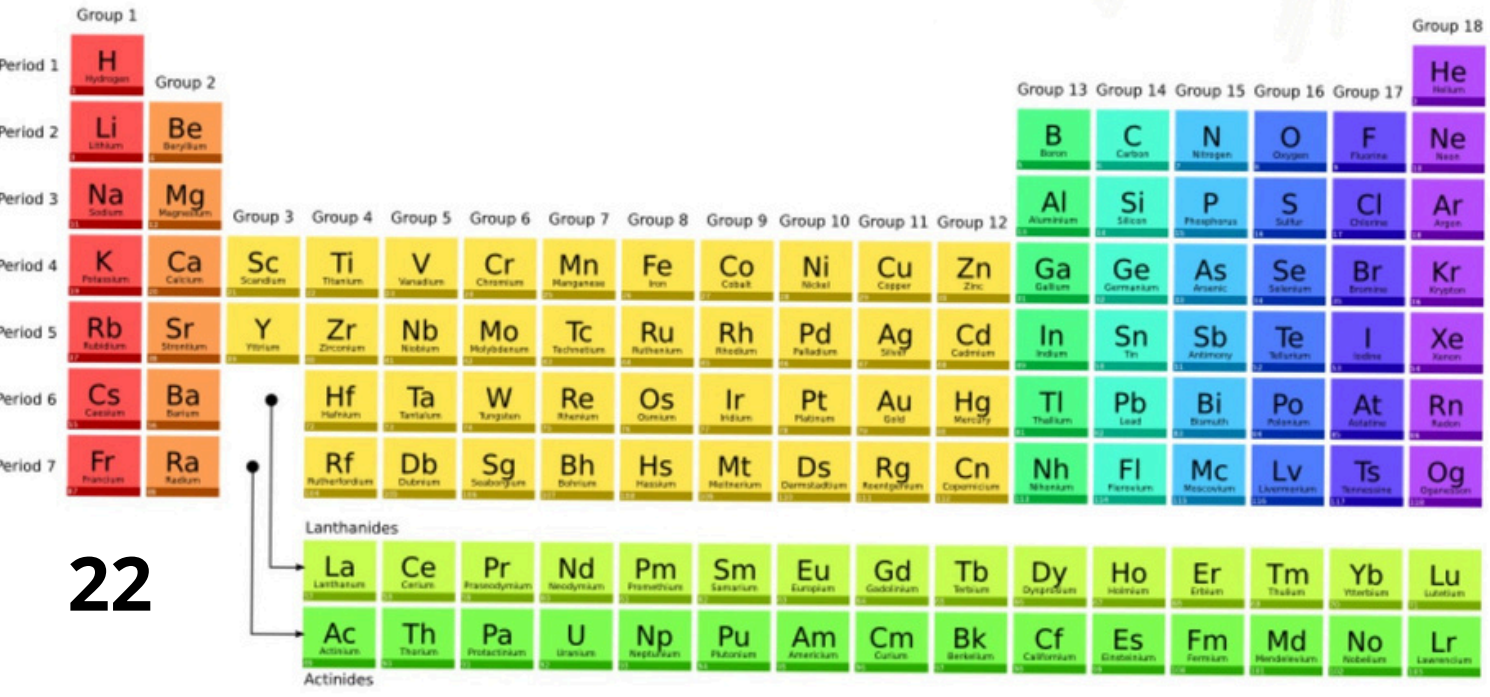
Respectfully, Helium



Category:Electron shell diagrams - Wikimedia Commons. (n.d.). Commons.wikimedia.org. https://commons.wikimedia.org/wiki/Category:Electron_shell_diagrams

Elements all Around





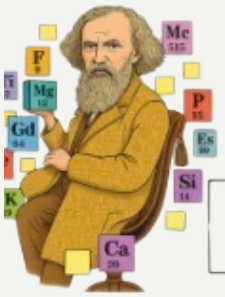
By María Laura

Think and Connect: answer the questions that have a space to be answered

María Laura : Monsieur Lavoisier, why did you want to study science?
Lavoisier: I was always curious about how things work—why fire burns, why the air feels alive. I wanted real answers, not guesses. Have you ever wondered what makes a fire burn?
————————————————————————————
María Laura: What was "phlogiston," and why did you question it?
Lavoisier: Phlogiston was thought to be a substance that escaped when things burned. But I saw metals get heavier when they burned. I discovered it wasn't phlogiston, but oxygen from the air that was involved. When you see a candle burn, what do you think happens to the wax?
————————————————————————————
María Laura: How did you figure out oxygen is involved in burning?
Lavoisier: I burned things in sealed containers and saw the air change. Oxygen was the gas that made things burn. Air isn't empty, it has oxygen, helps things burn and keeps us alive.What do you think makes fire burn hotter or slower?
————————————————————————————
María Laura: Why was measuring things carefully so important?
Lavoisier: Measuring carefully helped me show that matter doesn't disappear when it changes, it just transforms. That's the Law of Conservation of Mass, and since science is a concept of facts the measures have to be exact. It's like measuring ingredients in a recipe—everything needs to add up.
María Laura: You worked as a tax collector. Did that affect your work?
Lavoisier: It helped fund my experiments, but during the Revolution, people saw tax collectors as part of a corrupt system. I worked for the Ferme Générale, which collected taxes for the king, and many believed we were taking advantage of the poor.
María Laura: The Revolution was dangerous. How did it change your life?
Lavoisier: I was arrested and executed because of my role in the government. But I believed science should always come first.
María Laura: What do you want people to remember about you?
Lavoisier: I want to be remembered as someone who helped turn chemistry into real science. The air you breathe might seem invisible, but it's full of life-giving oxygen. Did you know the air around you is made of different gases? What do you think they're for?————————————————————
María Laura: What do you think is important for the readers to know?
Lavoisier: It's important to stay curious and keep asking questions—who knows what you'll discover! Goodbye, young scientist!
María Laura : Goodbye Lavoisier, have a nice day!

https://commons.wikimedia.org/wiki/File:Antoine_Laurent_Lavoisier._Line_engraving_by_Nargeot_after_J_Wellcome_L0003933.jpg

Help Dimitrii get to the beaker



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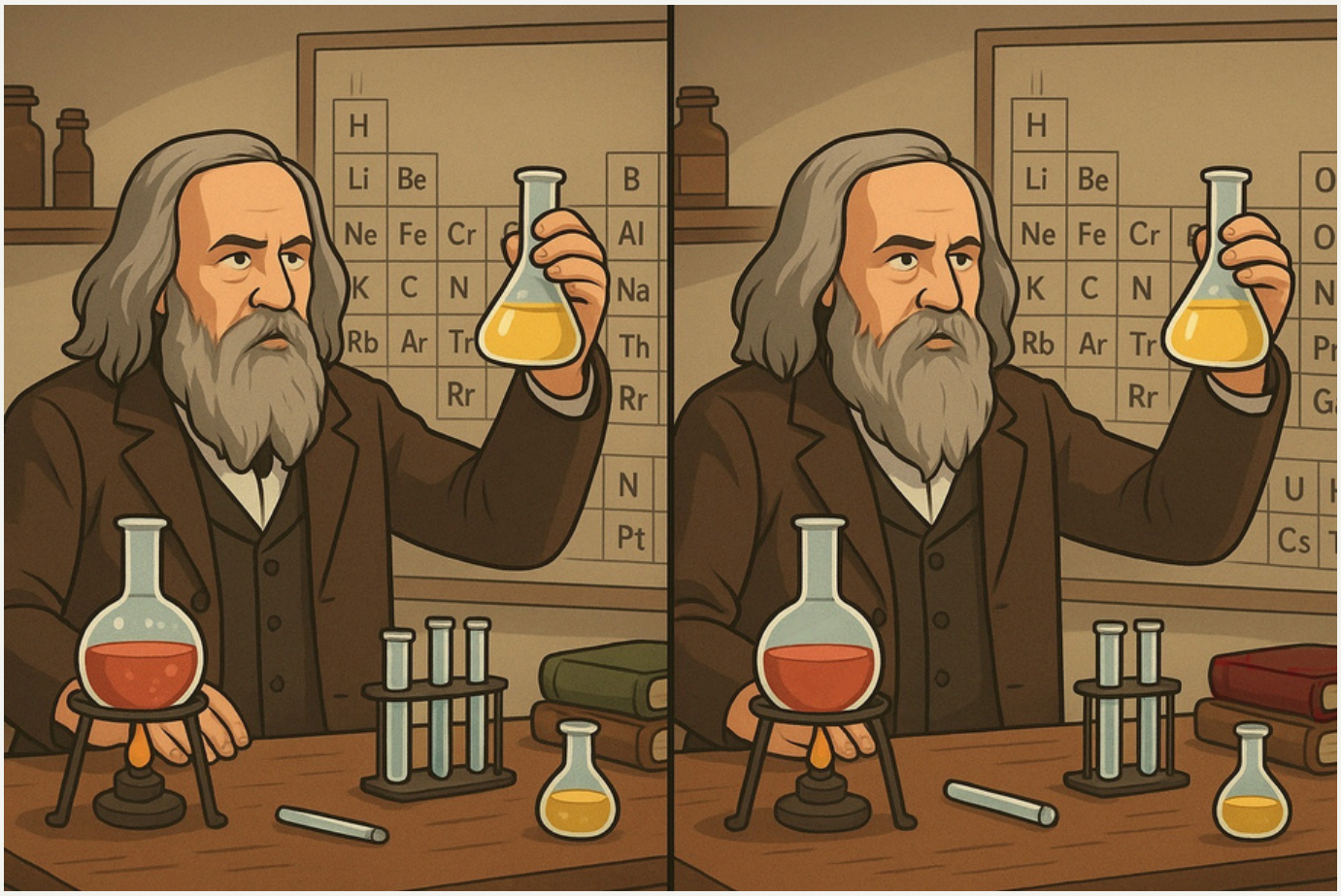
https://puzzlemaker.discoveryeducation.com

Spot the 7 differences



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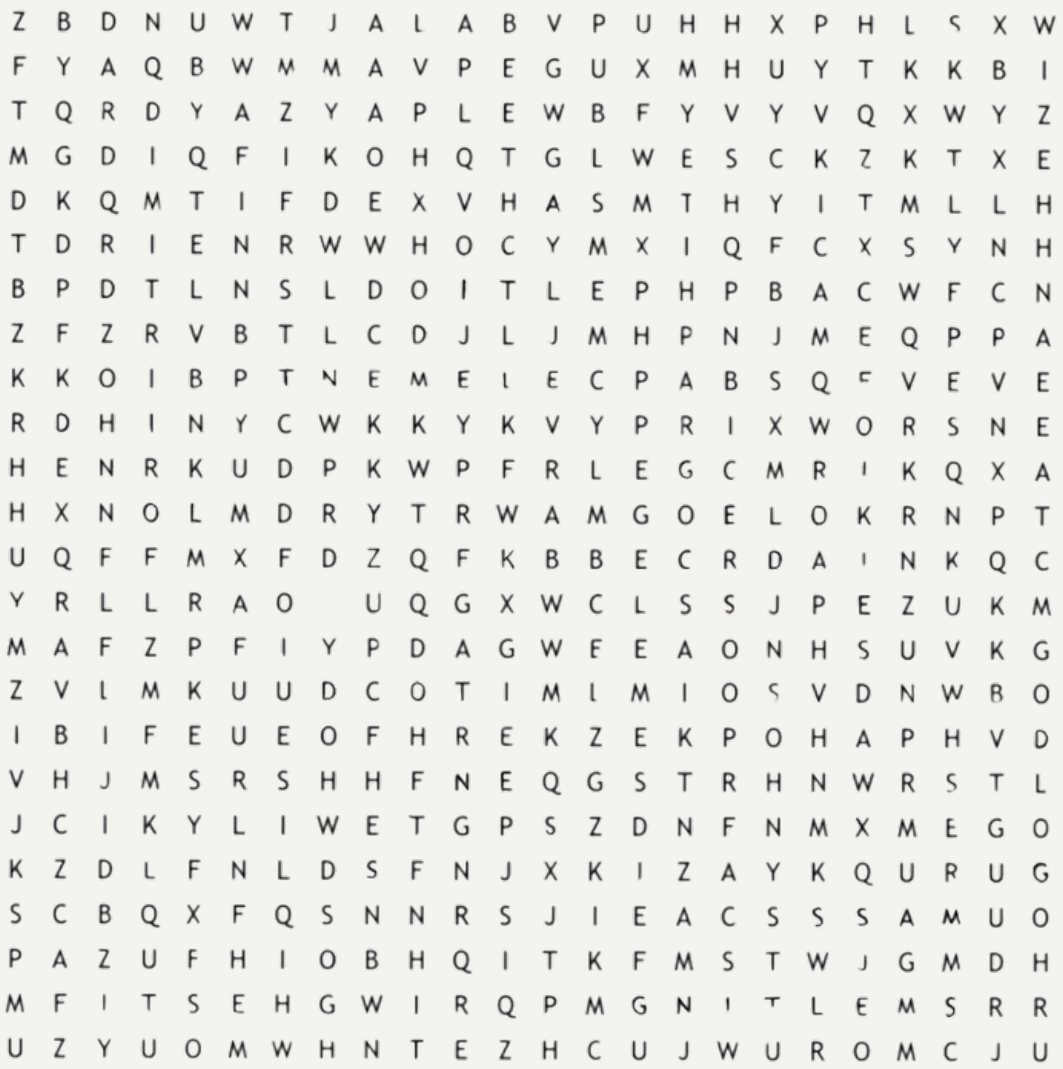
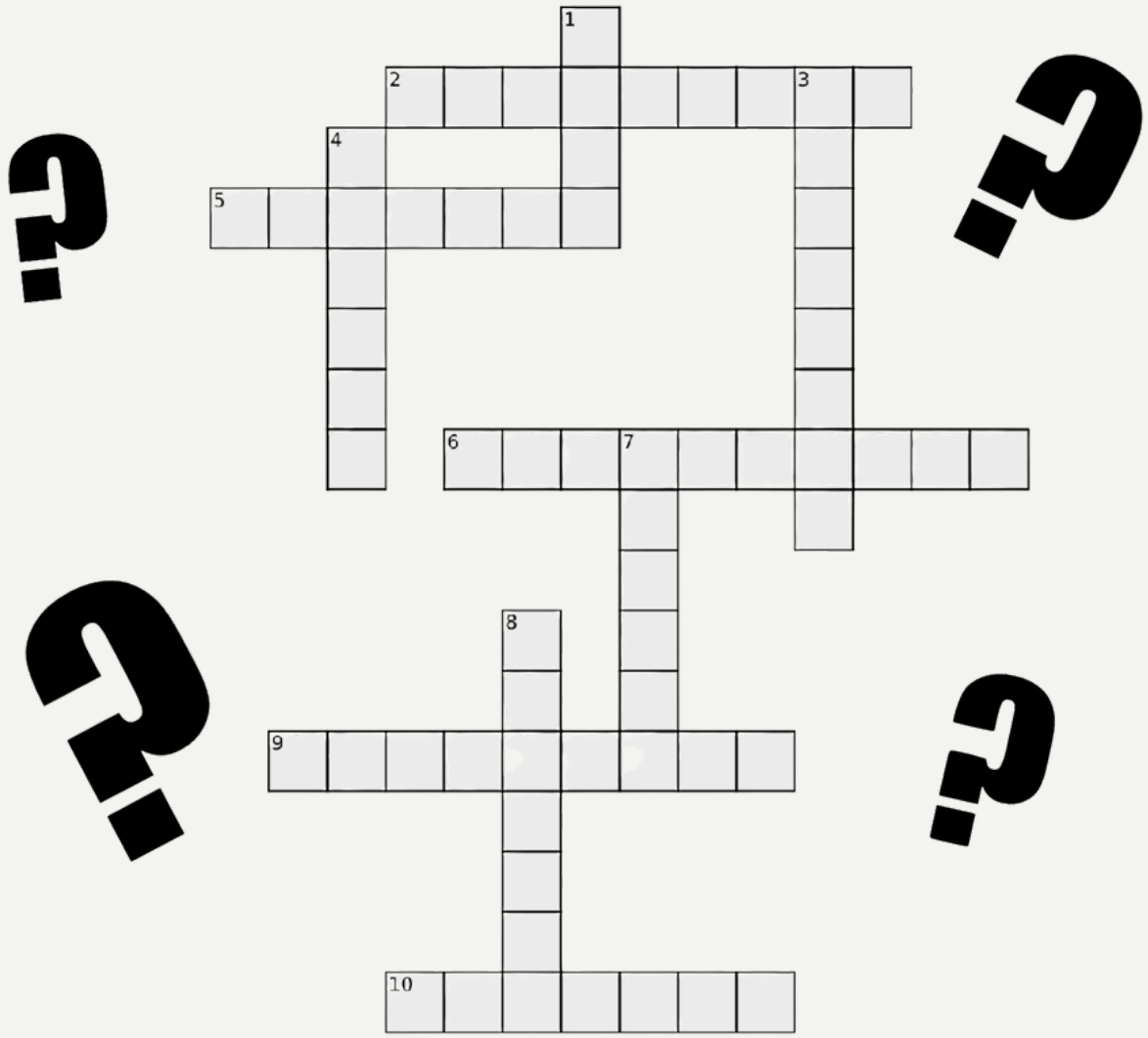
scramble science



Acid
Diamond
Dimitrii
Eclements
Element
Gold
Graphite
Mass
Ores
Periods
Smelting

https://wordmint.com/puzzles

Science all around



Horizontal

2. Scientist in the middle 18ths
5. Shiny element usually in rings
6. Synonym of rebellion
9. Name of magazine
10. Topic of magazine

Vertical

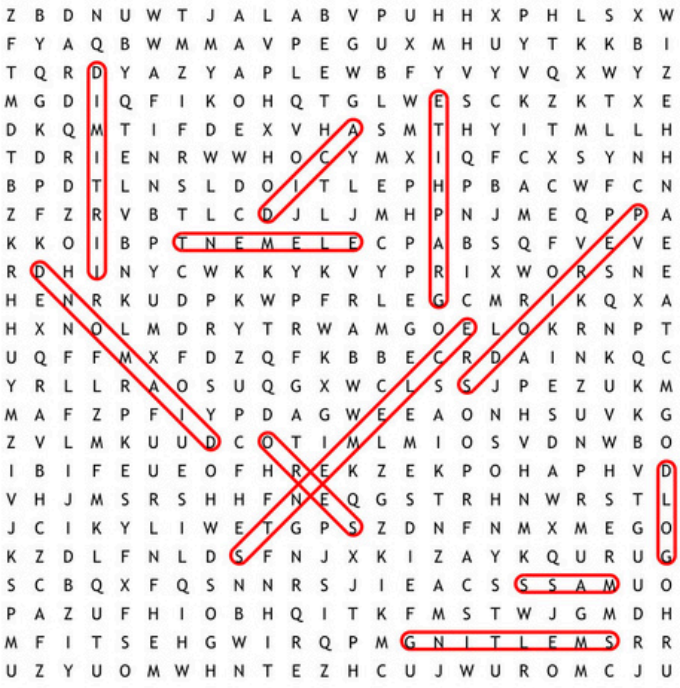
1. One of the most famous and expensive element
3. What's in the periodic table?
4. Black element part of fire
7. ELEMENT FORMING PART OF WATER AND AIR
8. Creator of the first periodic table

Good luck!

Solutions

Make sure to try solving the puzzles by yourself first !

Scrambled science



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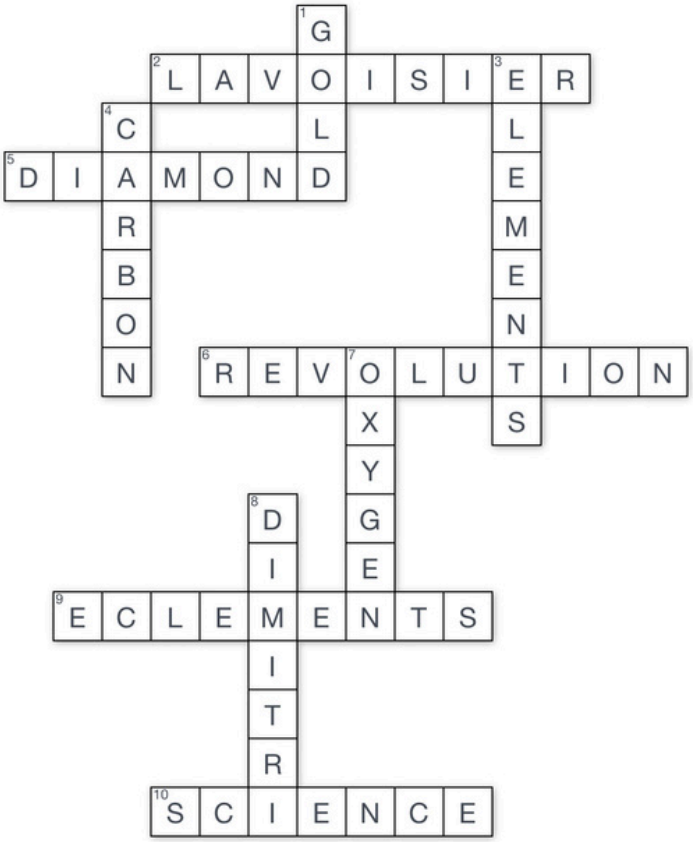

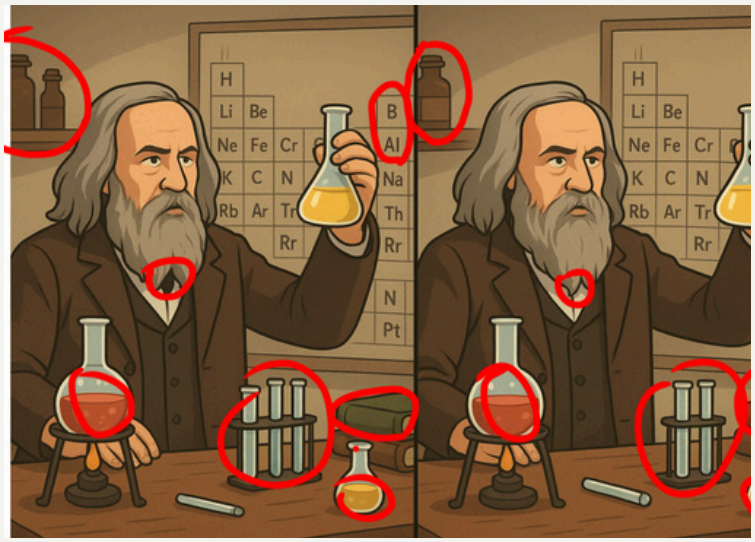

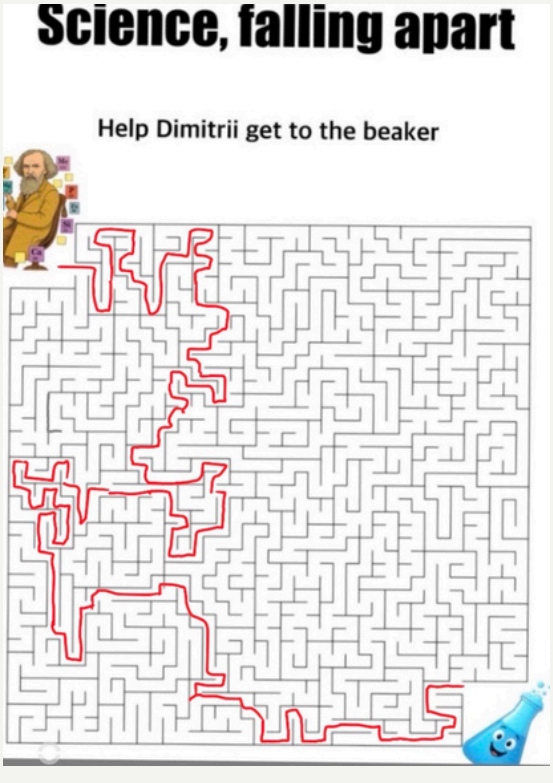

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Article Julia Galindo

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By Isabel Thomas
Pages 133-135
Phaidon editorial
Published in 2020
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A Visual Exploration of Every Known Atom in the Universe
Theodore Gray
Black dog and Leventhal Publisher
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Article Maria Laura

Link 1 https://iupac.org/iupac-is-naming-the-four-new-elements-nihonium-moscovium-tennessine-and-oganesson/
Link 2 Book THE ELEMENTS A VISUAL ENCYCLOPEDIA OF THE PERIODIC TABLE
Author: Tom Jackson
Editorial and publisher: DK Publisher
Year of publishing: year 2017
Pages used: 139,16,187,199
Link 1https://www.stem.org.uk/system/files/elibrary-resources/2016/02/Catalyst_26_3_discovering_new_elements.pdf

Link 2 Book The Periodic Table: Its Story and Its Significance
Author:Eric Scerri **Publisher**: Oxford University Press **First Edition Publication**: October 2006 **Updated Edition**: November 18, 2019
Chapter: chapter five

Link 1 https://www.zmescience.com/feature-post/natural-sciences/chemistry-articles/periodic-table/chemical-elements-09062016/#:~:text=The%20Japanese%20team%20is%20already,you%20were%20given%20the%20chance?

Link 2https://www.westlab.com/blog/the-4-new-elements-on-the-periodic-table#:~:text=In%20January%2C%20the%20new%20elements,must%20be%20named%20after%20either:

Article Sara Sofía

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