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Periodic Table Scavenger Hunt

The Periodic Table is one of the coolest ideas in science. It is an organisation of the elements by the structure of their atoms. Anything which is matter (gas/solid/liquid/plasma) is comprised of elements from the Periodic Table. You are, your dinner is, your pet is, and toilet paper is! It's actually a giant cheat sheet. Dmitri Mendeleev, the creator of the table, was late in submitting his work on all 63 elements (the only ones known at the time). In order to rush things, he made a database of all the elements according to their atomic weights – and that's what we use today! It is called "periodic" because elements are lined up in cycles or periods. When they are lined up this way, elements in the columns have similar properties. Groups are the columns of the periodic table. There are 18 columns or groups and different groups have different properties. This lining-up and grouping of similar elements helps chemists when working with elements. They can understand and predict how an element might react or behave in a certain situation. Each element has its own name and abbreviation in the periodic table. Some of the abbreviations are easy to remember, like H for hydrogen. Some are a bit harder like Fe for iron or Au for gold. For gold the "Au" comes from the Latin word for gold "aurum".

Instructions

Can you find where each element might be?

Using our hints have a search through your house and see if you can identify where some of these elements are. You might need some internet searching to help you find where some might exist. You will NOT find all of them as many of them are not commonly found.

Even though you won't find some in your house, where might you find them elsewhere? And what would they be used for?





1 (H) Hydrogen The tap	Periodic Table Scavenger Hunt											This stuff is dangerous!					2 (He) Helium The party supplies
3 (Li) Lithium	4 (Be) Bervllium			E	ler	ner	nt F	lint	S			5 (B) Boron	6 (C) Carbon	7 (N) Nitrogen	8 (0) Oxygen	9 (F) Fluorine	10 (Ne) Neon
Inside the tv remote	Your parents' jewellery	Elementary my dear Watson! Have fun searching. Of these 118									The laundry	What you write with	The cleaning cupboard	Breathe in!	The bathroom sink	In the living room	
11 (Na) Sodium	12 (Mg) Magnesium	elements, only 90 are naturally occurring. We made the rest.									13 (Al) Aluminium	14 (Si) Silicon	15 (P) Phosphorous	16 (S) Sulphur	17 (Cl) Chlorine	18 (Ar) Argon	
Your spice rack	The garden											The kitchen drawers	Glance outside	The baking shelf	Ask an adult to light a candle	What you write on	Look up
19 (K) Potassium	20 (Ca) Calcium	21 (Sc) Scandium	22 (Ti) Titanium	23 (V) Vanadium	24 (Cr) Chromium	25 (Mn) Manganese	26 (Fe) Iron	27 (Co) Cobalt	28 (Ni) Nickel	29 (Cu) Copper	30 (Zn) Zinc	31 (Ga) Gallium	32 (Ge) Germanium	33 (As) Arsenic	34 (Se) Selenium	35 (Br) Bromine	36 (Kr) Krypton
The fruit bowl	In the fridge	You can ride it	Up in the sky	In your dinner	In the shed	A purple gem	It has a north and south pole	In your paint set. Da dadee , dadadah,	Your parents' wallet	Inside your walls	Protects you from the sun	When you've got a fever	How you take a picture		On the roof	Gaming console	A measuring tool
37 (Rb) Rubidium	38 (Sr) Strontium	39 (Y) Yttirium	40 (Zr) Zirconium	41(Nb) Niobium	42 (Mo) Molybdenum	43 (Tc) Technetium	44 (Ru) Rutheniu	45 (Rh) Rhodium	46 (Pd) Palladium	47 (Ag) Silver	48 (Cd) Cadmium	49 (In) Indium	50 (Sn) Tin	51 (Sb) Antimony	52 (Te) Tellurium	53 (I) lodine	54 (Xe) Xenon
	Helps tell time		Almost a diamond	Used to see			m		In your mouth	In the kitchen	In colouring pencils	In handheld technology	In the pantry	In the office		In the medicine cabinet	Your bedside table
55 (Cs) Caesium	56 (Ba) Barium	*	72 (Hf) Hafnium	73 (Ta) Tantalum	74 (W) Tungsten	75 (Re) Rhenium	76 (<u>Os</u>) Osmium	77 (lr) Iridium	78 (Pt) Platinum	79 (Au) Gold	80 (Hg) Mercury	81 (TI) Thallium	82 (Pb) Lead	83 (Bi) Bismuth	84 (Po) Polonium	85 (At) Astatine	86 (Rn) Radon
	Look at your insides		Helps you see at night	In your cell phone	Helps you see at night	Used to take photos at night	Used to write on paper	Used to tell which direction you are facing	Used to make a necklace	Found in necklaces	Used to measure atmospheric pressure	Used to take photos	Helps your car start	Used to change the colour of a wall	Used on photography films		
87 (Fr) Francium	88 (Ra) Radium	**	104 (Rf) Rutherfordium	105 (Db) Dubnium	106 (Sg) Seaborgium	107 (Bb) Bohrium	108 (Hs) Hassium	109 (Mt) Meitnerium	110 (Ds) Dannstadtium	111 (Rg) Roentgenium	112 (Cn) Coperniciu m	113 (Nh) Nihonium	114 (FI) Flerovium	115 (Mc) Moscovium	116 (Ly) Livermorium	117 (Ts) Jennessine	118 (Og Organesso

*	57 (La) Lanthanum Helps you see in the dark	58 (Ce) Cerium Helps cook food	59 (Pr) Praseodymium Helps a plane fly	60 (Nd) Neodymium Used to light a candle	61 (Pm) Promethium	62 (Sm) Samarium Used to make movies	63 (Eu) Europium	64 (Gd) Gadolinium Used to tell if you have injured yourself	65 (Tb) Terbium	66 (Dy) Dysprosium	67 (Ho) Holmium	68 (Er) Erbium	69 (Tm) Thulium	70 (Yb) Ytterbium	71 (Lu) Lutetium
**	89 (Ac) Actinium	90 (Th) Thorium	91 (Pa) Protactinium	92 (U) Uranium	93 (Np) Neptunium	94 (Pu) Plutonium	95 (Am) Americium Detects if there is a fire	96 (Cm) Curium	97 (Bk) Berkelium	98 (Cf) Californium	99 (Es) Einsteinium	100 (Em) Fermium	101 (Md) Mendelevium	102 (No) Nobelium	103 (Lr) Lawrencium

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Period Table Scavenger Hunt

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Elei	ment	Your answer	Eler	nent	Your answer	
1	Hydrogen (H)		21	Scandium (Sc)		
2	Helium (He)		22	Titanium (Ti)		
3	Lithium (Li)		23	Vanadium (V)		
4	Berylium (Be)		24	Chromium (Cr)		
5	Boron (B)		25	Manganese (Mn)		
6	Carbon (C)		26	Iron (Fe)		
7	Nitrogen (N)		27	Cobalt (Co)	4	
8	Oxygen (O)		28	Nickel (Ni)	·	
9	Flourine (F)		29	Copper (Cu)		7
10	Neon (Ne)		30	Zinc (Zn)		•
11	Sodium (Na)		31	Gallium (Ga)		
12	Magnesium (Mg)		32	Germanium (Ge)		*
13	Aluminium (Al)		34	Selenium (Se)		
14	Silicon (Si)		35	Bromine (Br)		
15	Phosphorous (P)		36	Krypton (Kr)		
16	Sulphur (S)		38	Strontium (Sr)		
17	Chlorine (Cl)		40	Zirconium (Zr)		
18	Argon (Ar)					
19	Potassium (K)					
20	Calcium (Ca)					

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P Your answer Your answer Element Element 41 Niobium (Nb) 72 Hafnium (Hf) 46 Palladium (Pd) 73 Tantalum (Ta) Silver (Ag) 74 Tungsten (W) X 47 Cadmium (Cd) 75 Rhenium (Re) 48 Indium (In) 76 Osmium (Os) 49 Tin (Sn) 77 Iridium (Ir) 50 Antimony (Sb) 78 Platinum (Pt) 51 lodine (I) 79 Gold (Au) 53 Xenon (Xe) 80 Mercury (Hg) 54 81 Thallium (TI) 56 Barium (Ba) 82 Lead (Pb) Start of Lanthonides * 83 Bismuth (Bi) 57 Lanthanum (La) 84 Polonium (Po) 58 Cerium (Ce) Actinides ** 59 Praseodymium (Pr) 95 Americium (Am) 60 Neodymium (Nd) **The End!** 62 Samarium (Sm) 64 Gadolinium (Gd) -End of Lanthonides *



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Answers and Further Facts

1 Hydrogen (water) –water is made up of 2 atoms of hydrogen, and 1 atom of oxygen. H₂O comes in three states: water, ice and steam, yet it will always contain hydrogen.

2 Helium (balloons) – you probably won't have helium on hand at home, but ask your child to blow up a balloon and see if it stays in the air. It should, but only for a little bit. Ask if your child if they've ever seen balloons that stay up for hours. Explain that the other balloons stayed up due to helium. Helium is lighter than the air around us, which is why it makes the balloon float.

3 Lithium (batteries) – many batteries, but not all, contain lithium. If your batteries are rechargeable they will almost certainly have lithium inside. Lithium allows the battery to recharge again and again.

4 Beryllium (emeralds and aquamarine) – is found in emeralds. It is the most common window material for X-Ray machines because it is transparent to X-rays. Some tools are made of Copper and Beryllium – they don't make sparks when hitting steel.

5 Boron (soap and laundry detergent) – boron may be found in soap and laundry detergent and can help remove unwanted stains.

6 Carbon (pencil) - the material inside a pencil is graphite, a crystalline form of carbon. Why is it called a lead pencil if it's made of carbon?! It is known as a 'lead' pencil because when graphite was first discovered it was thought to be a type of lead (another element on the period table). Carbon is one of the most common elements on earth. All living organisms are made of carbon.

7 Nitrogen (ammonia in cleaning products) – nitrogen is in ammonia, which is usually found in toilet, window, glass and multi-purpose cleaners. Ammonia is very effective at cleaning, but can be harmful. It's very common in fertilisers.

8 Oxygen (air) – the air we breathe is roughly 21% Oxygen and 78% Nitrogen (our previous element). The other 1% is a mixture of other gases such as methane and carbon dioxide. You can talk with kids about how nitrogen in the air is okay for us, but nitrogen when it is in ammonia is dangerous.

9 Fluorine (toothpaste) –fluoride is added to your toothpaste to make your teeth nice and white.

10 Neon (plasma screen TV) – neon isn't found inside every type of TV, but if you have a plasma screen or an old 'box' television, you're looking at neon! Neon, a noble gas, is used inside a television to make over 100 colours.

11 Sodium (salt) – salt is made up of sodium and chlorine (another element on the periodic table). Why is sodium's symbol Na? This is because sodium is called Natrium in Latin. Ask your kids if they can spot any other elements with "weird" symbols. **12 Magnesium (plants)** – magnesium helps give plants their green colour! Magnesium is needed to make chlorophyll, the

part of plants which allows them to capture the sun's energy through Photosynthesis.





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13 Aluminium (aluminium foil) – aluminium foil was created as a replacement for tin foil in Switzerland in the early 1900s. One of the first objects to be wrapped in aluminium was Toblerone chocolate!

14 Silicon (glass) – glass is made by melting sand (silica) at a very high temperature (around 1700 Celsius) and then shaping it into window panes, vases and drinking glasses.

15 Phosphorous (baking powder) – phosphorous is found in baking powder, which is used to make cakes rise while they're cooking.

16 Sulphur (matches) – sulphur is in the little red tip of a match. It is used as fuel to get the match burning before the fire spreads to the wood. The smell of rotten eggs is also due to sulfur (Hydrogen sulphide)

17 Chlorine (paper) – as well as in table salt, chlorine is used to bleach paper bright white. Chlorine is often used in swimming pools to keep them clean, too much can make your eyes sting.

18 Argon (lightbulbs) – The third most abundant gas in our atmosphere. Another one of the noble gases, argon is used in lightbulbs to make them last longer. Argon gas is used to fill lightbulbs to prevent oxygen from corroding (or breaking) the Tungsten filament (that wiggly metal bit you can see in old light bulbs). If you have LEDs, argon won't be inside them.

19 Potassium (bananas) – potassium naturally occurs in bananas. It is what is known as an electrolyte which means it can conduct electricity when dissolved in water.

20 Calcium (Milk) - calcium is naturally found in milk. Calcium helps give us strong and healthy bones.

21 Scandium (bicycle frame) – scandium may be in your bicycle frame as an aluminium-scandium alloy. An alloy is a combination of metals or metals combined with another element. For example, steel is an alloy of two elements: carbon and iron.

22 Titanium (aeroplane) – alloys of titanium (titanium combined with one or more other elements) are often used to make planes, submarines and dentist's tools as titanium is both strong and light-weight.

23 Vanadium (in food) – can form very strong lightweight alloys with steel (the Model T Ford had some Vanadium alloys) but is also found in very small amounts in many types of food like mushrooms, black pepper, parsley and beer. We may need Vanadium in tiny amounts to help bone growth. It is sometimes found in meteorites too. Some body building supplements can contain Vanadium.

24 Chromium (shiny tools) – Chrome is used to plate tools to make them look shiny. Plating means a thin layer of chrome is added on top of the tool. Chrome can help protect from corrosion, harden a surface, or just make something look pretty.

25 Manganese (amethyst) – Manganese gives amethysts' their distinctive purple colour.



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27 Cobalt (blue pigment) – the colour cobalt blue is made using cobalt and aluminium oxide. It was the main blue used to create Chinese blue and white porcelain way back in the eighth century.

28 Nickel ('silver' coins) – although we call the 50, 20, 10 and 5c coins 'silver', they are actually made up of nickel and copper. This is because these metals are cheaper to produce than silver.

29 Copper (copper pipes or wires) – a lot of the pipes and wires inside our houses are made out of copper. Copper is often used as it conducts heat very well, allowing water to stay warm as it moves through the house.

30 Zinc (sunscreen) – zinc oxide (zinc combined with oxygen) is in many sunscreens as it helps protect us from the sun's harmful rays by creating a protective coating on our skin.

31 Gallium (thermometer) – gallium probably won't be in your home medicine cabinet, however, as a very soft metal it is used by doctors and researchers in thermometers as a non-toxic alternative to mercury.

32 Germanium (wide-angle camera lens) – while not in your standard phone camera, Germanium can be used in wide-angle camera lens to give special properties to the glass. It is used in a number of electronic devices such as LED's and solar cells.

34 Selenium (solar cells) – selenium is great for solar cells as it can convert light into energy. It is also required in tiny amounts in our diets. Some dietary supplements contain selenium.

35 Bromine (plastic casing of electronics) - bromine is often added to the plastic casing of electronics as it is flame retardant.

36 Krypton (ruler) – krypton is not actually inside your ruler. However, the way a metre used to be measured was in reference to the orange wavelength of a Krypton isotope. Now a metre is a specific distance light travels in a vacuum.

38 Strontium (clock) – not in your average clock. However, the world's most accurate clock is made using strontium. It is accurate to one second in 200 million years! It also makes red fireworks.

40 Zirconium (Cubic Zirconia) – Cubic Zirconia is often used a diamond substitute as it looks similar but costs a lot less to make

41 Niobium (glasses) – niobium oxide (niobium and oxygen) is added to glasses which allow the lens to be made thinner.

46 Palladium (dental fillings/crowns) – an alloy of palladium (palladium mixed with another metal) is used to create dental crowns and fillings. Palladium is often chosen because is it cheaper than gold or platinum.





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47 Silver (sterling silver cutlery) – sterling silver contains 92.5% silver and the rest is another metal, usually copper. Sterling silver is used to make cutlery look pretty.

48 Cadmium (Cadmium Red) – like cobalt, cadmium is used to make a red colour. Cadmium can also be used to make yellow and orange pigments.

49 Indium (touchscreens) – indium, combined with tin and oxygen, is an important material in touch screen devices like you tablet or phone.

50 Tin (tin cans) - tin is used as a coating to protect the other metals in cans from corroding (wearing away).

51 Antimony (printer) – you won't find antimony in your home office printer; however, it is used in 'old-school' printing presses to create fonts (also known as type-faces). Antimony is useful for this because it expands as it cools, allowing fonts to come out clear and crisp. It has been used as an alloy with tin and lead in lead-acid batteries.

53 Iodine (disinfectant) – lodine is a great disinfectant for external wounds. Other types of lodine (not the one in you medicine cabinet) can be used internally to treat medical problems such as issues with your thyroid.

54 Xenon (lamp) – Xenon probably isn't in your standard bedside lamp. However, it emits a beautiful blue glow that is often used in sunbed lamps and bacteria-killing lamps which are used for food preparation.

56 Barium (in X-rays) – Barium is used to see inside our bodies! If someone needs to have an X-ray of their digestive system, they first swallow barium sulphate (a mixture of barium and sulphur). This helps doctors see what is going on inside of the digestive system more clearly on the X-Ray.

57 Lanthanum (night-vision) – Lanthanum is a rare-earth metal like many other elements on the periodic table. The rarest rare-earth metal is actually 200 times more abundant than gold, however, they are called 'rare' because it is hard to find them in concentrated large quantities. Lanthanum is one of the rare-earth metals used in night-vision goggles. It is sometimes used in ignition elements in lighters and torches.

58 Cerium (oven) – Cerium oxide (cerium and oxygen) is used as a coating inside ovens to stop cooking residue from building up over time. It also is used in most white light LEDS.

59 Praseodymium (airplane engine) – It is used as an alloying agent with Magnesium to create very strong metals for airplane engines. It can be used to make certain types of welders goggles.

60 Neodymium (lighter) – Makes up a metal called Misch, which is used to make flints in lighters.

62 Samarium (lighting in movies) – Samarium is used to make carbon arc lights for lighting and projectors in movies.

64 Gadolinium (MRI) – This element has a magnetic property that makes it useful for magnetic resonance imaging (MRIs) when you injure yourself!





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f y ™™ O www.questacon.edu.au **72 Hafnium (light bulb filament)** – Hafnium is used in photographic flash bulbs and light bulbs because it can absorb neutrons very well and is resistant to corrosion. When used with other metals (such as niobium), it becomes heat resistant and used in space rocket engines!

73 Tantalum (acoustic wave filters) – Found in almost all home or personal electronic equipment, it shrinks the electronic device to make room for larger processors and improves audio quality in speakers. It's also used in surgical equipment because it isn't harmed by bodily fluids.

74 Tungsten (light bulb filament) – It was once used extensively in the filaments of incandescent light bulbs. This transition metal also has the highest melting point of all metals!

75 Rhenium (photography flash lamp) – Rhenium has a good resistance to wear and corrosion, so it's used as an electrical contact material. This rhenium wire is used in flash photography in the flash lamps.

76 Osmium (ball point pens) – Osmium is used to make the very hard alloys found in devices where frictional wear needs to be minimised, such as ball point pens and fountain pen tips.

77 Iridium (compass bearings) – Iridium is used with osmium to make tips of fountain pens and compass bearings. It is also the most corrosive resistant metal!

78 Platinum (jewellery) – Platinum is often used as a catalyst for chemical reactions, but it's also used in jewellery and decoration.

79 Gold (gold jewellery) – Pure gold is very soft and can easily take different shapes. It's widely used for creating beautiful gold jewellery, such as necklaces or rings!

80 Mercury (barometer) – Mercury is used to conduct electricity in a Barometer, which measures atmospheric pressure.

81 Thallium (camera lenses) – Thallium metal is used in electronic devices, such as camera lenses. Pure thallium is odourless and tasteless but can be dangerous if you're exposed to it!

82. Lead (car battery) – Lead used to be used extensively for many centuries, but it has since been found to be harmful to our health. It can still be found in car batteries, or in radiation protection.

83 Bismuth (yellow paint) – It is combined with oxygen (Bismuth Oxide) to form a yellow pigment used in paint and cosmetics.

84 Polonium (dust removal brush) – It is used in specific brushes to remove dust from photographic films, and to eliminate static electricity.

95 Americium (smoke detectors) - Americium is used to produce smoke detectors for household-use.

Well Done!



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