



ROYAL SOCIETY
OF CHEMISTRY | Celebrating
IYPT 2019

Periodic Table Bingo

	14	15	
69.723 Ga	72.630 Ge	74.922 As	78.972 S
31	32	33	34
114.818 In	118.710 Sn	121.760 Sb	127.60 T
49	50	51	52
204.38 Tl	207.2 Pb	208.980 Bi	209 P
81	82	83	84
[286] Nh	[289] Fl	[289] Mc	[294] L
	114	115	

These activities have been created by the Royal Society of Chemistry to help celebrate the International Year of the Periodic Table.

Find out more at: www.rsc.org/iypt









Overview









The periodic table is the lynchpin of chemistry. A requirement of the national curriculum is that students are familiar with the first 20 elements of the periodic table. This activity is designed to familiarise students with the names and symbols of the first 20 elements of the periodic table and iron, copper, silver and gold. The activity can be adapted for age and ability and used across ages 10-16.

At primary the game should be used with the words and images cards to familiarise students with the names of the elements.

At 11-16, the difficulty and challenge of the game may be varied by mixing and matching the different sets of cards and counters.

Help sheet

H	Hydrogen		Hydrogen is used as a fuel in hydrogen cell powered vehicles.
He	Helium		Helium gas balloons being as liquid helium canister.
Li	Lithium		Stack of lithium ion mobile phone batteries.
Be	Beryllium		Beryllium is used in alloys with copper or nickel to make gyroscopes, springs, electrical contacts, spot-welding electrodes and non-sparking tools. Mixing beryllium with these metals increases their electrical and thermal conductivity.
B	Boron		Borax is a compound of boron that is used to make slime.
C	Carbon		A piece of coal – carbon based fossil fuel.
N	Nitrogen		Making ice-cream and freezing cells in liquid nitrogen.
O	Oxygen		Patient receiving oxygen in hospital and oxygen masks in plane.

F	Fluorine		Fluoride is required for healthy teeth.
Ne	Neon		Neon sign - neon gas glows red when electricity passes through it.
Na	Sodium		Table salt is a sodium compound – sodium chloride.
Mg	Magnesium		Bengal lights/ sparklers/ fireworks – Magnesium burns with a bright white flame.
Al	Aluminum		Aluminium baking foil.
Si	Silicon		Silicone baking products.
P	Phosphorous		Phosphorus is found as phosphates in many agricultural fertilisers.
S	Sulphur		Sulphur has a distinct yellow colour.

Cl	Chlorine		Toilet disinfectant contains chlorine as it is very effective at killing bacteria.
Ar	Argon		Argon welding machine – argon gas creates an inert atmosphere to oxidation resulting in a stronger join.
K	Potassium		Many eye drops are a solution of potassium chloride.
Ca	Calcium		Dairy products and eggs contain calcium.
Cu	Copper		Copper for electrical wires.
Fe	Iron		Rusty iron building materials.
Ag	Silver		Silver jewellery.
Au	Gold		Gold jewellery.

Question based extension activity

General Questions

This Element is in group X and has Y electrons in the outer shell.

This element is in the X period in group Y.

This element is in the X period and has Y electron in the outer shell.

This element is in the X period and requires Y electrons for a full outer shell.

This element has an atomic number of X

This element has a mass number of Y

Element Specific questions

Hydrogen

This element is a diatomic gas and is seen as a clean fuel for the future – generated from water and returning to water when oxidised.

This element is the most common element in the universe making up about 75% of the mass of the universe. It is found in the sun and most stars.

This element is a diatomic gas is highly flammable and makes a 'pop' when ignited.

Deuterium and tritium are isotopes of this element

Helium

This element is less dense than air and used in decorative balloons to keep them up in the air.

This element is the second most common element in the universe making up up about 24% of the mass of the universe. It is found in the sun and most stars.

This element is used to provide an inert protective atmosphere for making fibre optics and semiconductors.

This element is used in MRI scanners that use the gas to keep the superconducting magnets cool.

Lithium

This metal is the lightest of all metals

This metal is a component of rechargeable batteries.

This metal burns with a bright red flame.

This metals hydroxide is used to purify air and remove carbon dioxide in spacecraft and submarines.

Beryllium

This element is found in gems such as the emerald and aquamarine.

This element is used to make metal alloys such as beryllium copper and beryllium nickel. These alloys are used to make surgical instruments, precision instruments, and non-sparking tools that are used near flammable gases.

Too much exposure to this element can cause a lung disease called berylliosis.

This element is somewhat unique in its ability to appear transparent to X-rays

Boron

This element is used in the manufacture of glass and ceramics. It produces high end cookware materials used in brands such as Duran and Pyrex. It also helps to make glassware for science labs.

This element burns with a green flame and is used to create green coloured fireworks.

Scientists think that this element has potential as a medicine to treat arthritis.

The name of this element comes from the its mineral which gets its name from the Arabic word "burah".

Some compounds of this element such as Borax have been used by ancient civilizations for thousands of years

Carbon

This element forms more compounds than any other element. It is known to form nearly 10 million different compounds.

This element is the fourth most abundant element in the universe by mass and the second most abundant element in the human body.

This element is found in all forms of life. It makes up 18 percent of the human body by mass.

This element is found on Earth in the form of three different allotropes including amorphous, graphite, and diamond.

Nitrogen

This element is thought to be around the seventh most abundant element in the universe by mass.

This element makes up 78% of the Earth's atmosphere.

This element is the fourth most abundant element in the human body by mass. It accounts for around three percent of the mass of the human body.

The primary industrial use of this element is in the Haber process to make ammonia

Oxygen

This element is the third most abundant element in the universe

This element makes up around 21% of the Earth's atmosphere and 50% of the mass of the Earth's crust.

This element is the most abundant element in the human body making up around 65% of the body's mass and is needed by most life forms on Earth to survive.

In the solar system, only the Earth has a high percentage of this element.

Fluorine

This element is the most reactive of all the elements. This makes it dangerous and difficult to handle. It will react with nearly every other element. It is also the most electronegative of the elements

This element will burn all sorts of compounds and elements including water, copper, gold, and steel.

One of the most popular applications of fluorine is for refrigerant gases. For many years, Chlorofluorocarbons (CFCs) were used for freezers and air conditioners. Today they have been banned because they damage the ozone layer. Many of the replacement gases still contain fluorine

Applications that use this element include high temperature plastics such as Teflon, the smelting of iron and metal production, pharmaceuticals, etching glass, and in processing nuclear fuel.

Neon

This element is the fifth most abundant element in the universe, but very rare on Earth.

When this element is in a vacuum discharge tube, it glows with a reddish-orange light.

This element is used in lighting signs that are often named after it.

Other applications that use this element include lasers, television tubes, and vacuum tubes. It is also used to fix measurement points for the International Temperature Scale.

Sodium

This element is the sixth most abundant element on Earth making up 2.6% of the earth's crust.

This element burns with a yellow flame.

This element helps to maintain the proper fluid balance in the body's cells and helps us to digest our food.

Our bodies lose this element when we sweat. However, most people eat far more sodium than their bodies actually need. If the body runs low on sodium, it can cause the muscles to cramp, but too much of it can cause high blood pressure.

Magnesium

This element burns with a very bright white light. At one time, its powder was used to produce a bright flash for photography. Nowadays it is used in flares and fireworks

This element is fairly abundant on Earth in compounds and is found in over 60 different minerals in the Earth's crust. Some of the most important minerals include dolomite, magnesite, talc, and carnallite. The oxide of this element is the second most abundant compound in the Earth's crust making up around 35% of the crust by weight.

One of the main uses of this element is in metal alloys. This is because it is both strong and light. It is often mixed with aluminium, zinc, manganese, silicon, and copper to make strong and light alloys for use as automobile parts, aircraft components, and missiles.

Some of this element's compounds are used as medicines such as the hydroxide, which is used to help indigestion (Milk of Magnesia) and its sulfate (Epsom salts) which is used in baths to soothe sore muscles.

Aluminium

This element is the third most abundant element and the most abundant metal found in the Earth's crust. It makes up around 8% of the Earth's crust by weight.

This element is generally found on Earth in minerals and compounds such as feldspar, beryl, cryolite, and turquoise.

This element is 100% recyclable and maintains the same physical properties after recycling as the original. Recycling it takes only around 5% of the energy it takes to extract it from its ore.

Applications for this element's alloys include soda cans, automobile parts, bicycles, foil, power lines, siding for houses, and even baseball bats.

Silicon

This element makes up about 28% of the Earth's crust in mineral form.

This element is used in a variety of applications and materials. Most applications use the mineral form. These include glass, ceramics, and abrasives as well as Portland cement that is used to make concrete and stucco.

This element is also used to make synthetic compounds that are used to make lubricants, greases, rubber materials, waterproofing materials, and caulks.

This element is considered a semiconductor. Its conductivity increases with temperature. This property makes it a valuable element in electronics.

Phosphorus

This element comes in various allotropes including white, red, violet, and black. White and red being the major forms.

The primary use of this element in industry is in the manufacture of fertilizers. This is because it is a key element in the growth of plants.

Other applications for this element include baking powder, flame retardants, incendiary bombs, and LEDs (light emitting diodes).

This element is important in the functioning of the human body and is essential for life. It is used in the DNA molecule and is a main ingredient in bones and teeth

Sulphur

This element can take the form of over 30 different allotropes. This is the most allotropes of any element.

This element plays an important role in supporting life on Earth. It is the eighth most abundant element in the human body. It is part of the proteins and enzymes that make up our bodies and is important in forming fats and strong bones.

This element can be found in a number of areas on Earth including volcanic emissions, hot springs, salt domes, and hydrothermal vents.

The main source of acid rain is when the oxide of this element enters the atmosphere and is converted into acid.

Chlorine

This element is one of the most important chemicals used by industry. It is used in making a variety of products including insecticides, pharmaceuticals, cleaning products, textiles, and plastics.

Chlorine gas was used by the Germans in WWI to poison the Allied soldiers.

This element is needed for the survival of animal life in the form of table salt (sodium salt). Our bodies use it to help us digest food, move our muscles, and fight off germs.

Chlorine is used in swimming pools to keep them clean and safe by killing bacteria, germs, and algae. It is also used in drinking water to kill bacteria so we do not get sick when we drink it. Because it kills germs, it is also used in disinfectants and is the basis for most bleaches.

This element is found in abundance in both the Earth's crust and in ocean water. In the ocean, it is found as the sodium salt. In the Earth's crust, the most common minerals containing this element include halite, carnallite, and sylvite.

Argon

When this element is excited by a high voltage electric field, it glows in a violet colour.

When this element is combined with small amounts of mercury, it will glow with a blue colour when excited by electricity.

When this element is used as a gas laser it emits a blue-green colour.

The most abundant and cheapest of the noble gases, it is often used when an inert gas is needed. One of the main applications for this element is for the gas inside incandescent lighting. As it won't react with the filament used by light bulbs even at high temperatures. It is also used for welding, medical instruments, preserving wine, thermal insulation in windows, and in microelectronics.

Potassium

This element burns with a purple flame.

This element is the eighth most abundant element in the Earth's crust, making up about 2.1% of the Earth's Crust.

Industrial applications for this element include soaps, detergents, gold mining, dyes, glass production, gunpowder, and batteries.

This element plays a vital role in our bodies. It is used in muscle contraction, fluid and pH balance, bone health, and helps to prevent kidney stones. It is about the eighth most abundant element in the human body by weight.

Calcium

This element burns with a bright orange-red flame.

Rarely found in its elemental form, but readily found throughout the Earth mostly in the form of rocks and minerals such as limestone, dolomite, and gypsum. It is the fifth most common element in the Earth's crust.

This element is a very important element in both plant and animal life. In the human body, this element is part of a compound called hydroxyapatite, which is what makes our bones and teeth hard. It is the fifth most abundant element in the human body, making up around 1.4% of the body's mass.

The carbonate of this element is one of the major components of many rocks and minerals including limestone, marble, calcite, and chalk.

Copper

This element is found in the Earth's crust. Because it is slow to react, it is often found in elemental form. This was how many ancient cultures were able to take advantage of it.

This is not a very reactive element, but it will react slowly to air and water. When exposed to air, it will eventually tarnish to a brownish colour. If water is also present, it will corrode to form a green carbonate called verdigris.

The world-wide demand for this element has increased dramatically in recent years. Fortunately, it is 100% recyclable and large percentage of each year comes from recycling.

This element is used mostly in its metal form. About 60% of that produced is used for electrical wiring and cable. It is an excellent material for wiring because of its electrical conductivity, ductility, corrosion resistance, low thermal expansion, and tensile strength.

Iron

This element is the sixth most abundant element in the universe.

Iron is the most abundant element in the Earth. The Earth's core is mostly made up of its nickel alloy. It also makes up about 5% of the Earth's crust where it is the fourth most abundant element.

This element becomes significantly harder when alloyed with other elements such as carbon.

Iron is the most naturally magnetic of the elements.

Silver

This element has the highest electrical conductivity of all the elements as well as the highest thermal conductivity of the metals.

This is a relatively rare element found in the Earth's crust. It is found both in its free form and in minerals such as argentite.

This element was one of the first metals discovered by ancient peoples. Its artefacts have been found in many ancient civilizations such as the Sumer from 3000 BC.

Up until the recent advancement of digital cameras, around 30% of this elements production was used for photography as the nitrate compound..

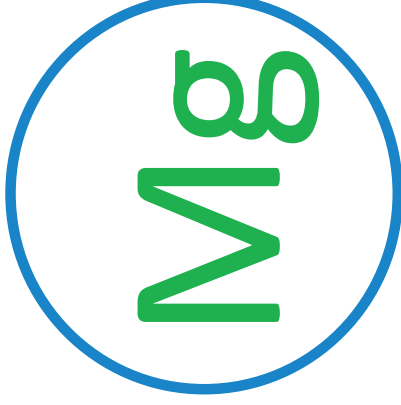
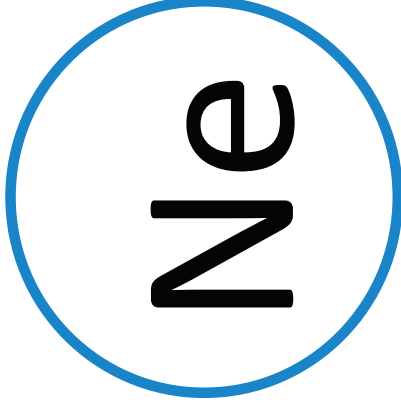
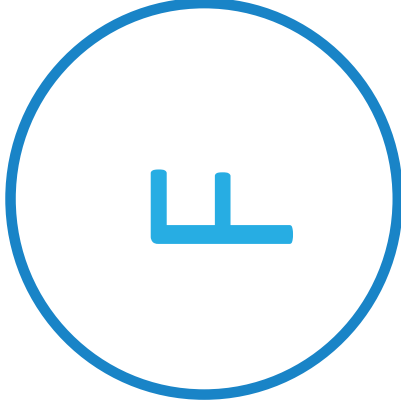
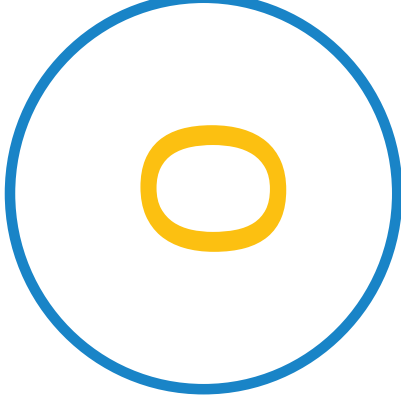
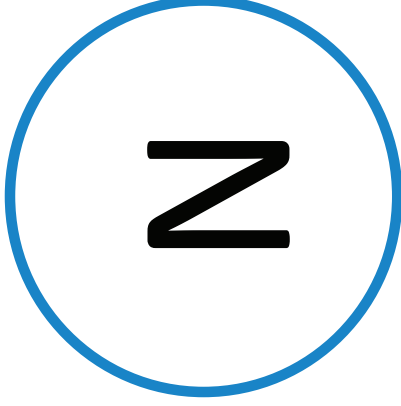
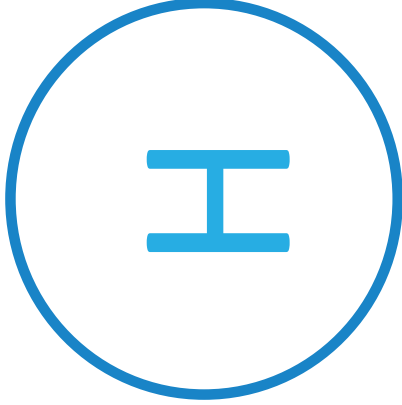
Gold

This element is one of the most resistant metals to corrosion and rust when exposed to air and water.

This element is an extremely rare element on Earth. Due to not reacting with very many other elements, it is often found in its native form in the Earth's crust or mixed with other metals like silver. It can be found in veins underground or in small fragments in sandy riverbeds

This element is used a lot in the electronics industry because of its good electrical conductivity and resistance to corrosion. Many electrical contacts and connectors are plated with this element for protection and reliability.

Other applications for this element include heat shielding, dental work, cancer treatment, and decoration such as thread and plating and ornamental objects.





Al

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Cl

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Cu

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Ag

Au



H

Al

Ca

Mg

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Au

Fe

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He

Si

H

Al

C

Mg

Fe

Ca

O



Periodic Table Bingo



Periodic Table Bingo

Li

P

He

Si

H

Al

Ar

Be

O

Be

S

Li

P

He

Si

H

Ar

Ca



Periodic Table Bingo



Periodic Table Bingo

C

Cl

Be

S

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Ag

B

Ar

C

Cl

Be

S

Li

O

Ca



Periodic Table Bingo



Periodic Table Bingo

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Ca

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Ar

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F

Ag



Periodic Table Bingo



Periodic Table Bingo

F

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B

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Ne

Ag

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Cu

O

Ca

N

Al

S



Periodic Table Bingo



Periodic Table Bingo

Na

Au

Ne

Ag

F

Cu

O

Al

S

Mg

Fe

Na

Au

F

Ag

Ne

K

B



Periodic Table Bingo



Periodic Table Bingo

C

Cl

Be

Si

Li

P

He

F

Ag

B

Ar

N

Cl

Be

S

Na

O

Ca



Periodic Table Bingo



Periodic Table Bingo

N

K

Fe

Ar

C

Cl

Be

Li

Ca

O

Ca

N

Al

B

Ar

C

Ne

Ag



Periodic Table Bingo



Periodic Table Bingo

Fe

Cu

Au

Ca

N

K

Si

C

Mg

Ne

Na

F

Cu

O

Ca

N

Al

Si



Periodic Table Bingo



Periodic Table Bingo

Ca

Au

Ne

Ag

F

Cu

O

N

Mg

Mg

Fe

Na

Au

N

Ag

Ne

K

B



Periodic Table Bingo



Periodic Table Bingo

H

Hydrogen

He

Helium

Li

Lithium

Be

Beryllium

B

Boron

C

Carbon

N

Nitrogen

O

Oxygen

F

Fluorine

Ne

Neon

Na

Sodium

Mg

Magnesium







H

Hydrogen

Al

Aluminium

Ca

Calcium

Mg

Magnesium

F

Fluorine

Na

Sodium

Au

Gold

Fe

Iron

O

Oxygen

He

Helium

Si

Silicon

H

Hydrogen

Al

Aluminium

C

Carbon

Mg

Magnesium

Fe

Iron

Ca

Calcium

O

Oxygen



Periodic Table Bingo



Periodic Table Bingo

Li

Lithium

P

Phosphorus

He

Helium

Si

Silicon

H

Hydrogen

Al

Aluminium

Ar

Argon

Be

Beryllium

O

Oxygen

Be

Beryllium

S

Sulphur

Li

Lithium

P

Phosphorus

He

Helium

Si

Silicon

H

Hydrogen

Ar

Argon

Ca

Carbon



Periodic Table Bingo



Periodic Table Bingo

C

Carbon

Cl

Chlorine

Be

Beryllium

S

Silicon

Li

Lithium

P

Phosphorus

He

Helium

F

Fluorine

Ag

Silver

B

Boron

Ar

Argon

C

Carbon

Cl

Chlorine

Be

Beryllium

S

Sulphur

Li

Lithium

O

Oxygen

Ca

Calcium



Periodic Table Bingo



Periodic Table Bingo

N

Nitrogen

K

Potassium

B

Boron

Ar

Argon

C

Carbon

Cl

Chlorine

Be

Beryllium

O

Oxygen

Ca

Calcium

O

Oxygen

Ca

Calcium

N

Nitrogen

K

Potassium

B

Boron

Ar

Argon

C

Carbon

F

Fluorine

Ag

Silver



Periodic Table Bingo



Periodic Table Bingo

F

Fluorine

Cu

Copper

O

Oxygen

Ca

Calcium

N

Nitrogen

K

Potassium

B

Boron

C

Carbon

Mg

Magnesium

Ne

Neon

Ag

Silver

F

Fluorine

Cu

Copper

O

Oxygen

Ca

Calcium

N

Nitrogen

Al

Aluminium

S

Sulphur



Periodic Table Bingo



Periodic Table Bingo

Na

Sodium

Au

Gold

Ne

Neon

Ag

Silver

F

Fluorine

Cu

Copper

O

Oxygen

Al

Aluminium

S

Sulphur

Mg

Magnesium

Fe

Iron

Na

Sodium

Au

Gold

F

Fluorine

Ag

Silver

Ne

Neon

K

Potassium

B

Boron



Periodic Table Bingo



Periodic Table Bingo

H

Hydrogen

Al

Aluminium

Ne

Neon

B

Boron

F

Fluorine

Na

Sodium

Au

Gold

Fe

Iron

O

Oxygen

He

Helium

Si

Silicon

H

Hydrogen

Al

Aluminium

N

Nitrogen

Mg

Magnesium

Fe

Iron

F

Fluorine

O

Oxygen



Periodic Table Bingo



Periodic Table Bingo

Li

Lithium

P

Phosphorus

He

Helium

Si

Silicon

H

Hydrogen

Al

Aluminium

Au

Gold

Be

Beryllium

O

Oxygen

Be

Beryllium

S

Sulphur

Li

Lithium

N

Nitrogen

He

Helium

Si

Silicon

H

Hydrogen

Ar

Argon

Ca

Calcium



Periodic Table Bingo



Periodic Table Bingo

C

Carbon

Cl

Chlorine

Be

Beryllium

Si

Silicon

Li

Lithium

P

Phosphorus

He

Helium

F

Fluorine

Ag

Silver

B

Boron

Ar

Argon

N

Nitrogen

Cl

Chlorine

Be

Beryllium

S

Sulphur

Na

Sodium

O

Oxygen

Ca

Calcium



Periodic Table Bingo



Periodic Table Bingo

N

Nitrogen

K

Potassium

Fe

Iron

Ar

Argon

C

Carbon

Cl

Chlorine

Be

Beryllium

Li

Lithium

Ca

Calcium

O

oxygen

Ca

Calcium

N

Nitrogen

Al

Aluminium

B

Boron

Ar

Argon

C

Carbon

Ne

Neon

Ag

Silver



Periodic Table Bingo



Periodic Table Bingo

Fe

Iron

Cu

Copper

Au

Gold

Ca

Calcium

N

Nitrogen

K

Potassium

Si

Silicon

C

Carbon

Mg

Magnesium

Ne

Neon

Na

Sodium

F

Fluorine

Cu

Copper

O

Oxygen

Ca

Calcium

N

Nitrogen

Al

Aluminium

Si

Silicon



Periodic Table Bingo



Periodic Table Bingo

Ca

Calcium

Au

Gold

Ne

Neon

Ag

Silver

F

Fluorine

Cu

Copper

O

Oxygen

N

Nitrogen

Mg

Magnesium

Mg

Magnesium

Fe

Iron

Na

Sodium

Au

Gold

N

Nitrogen

Ag

Silver

Ne

Neon

K

Potassium

B

Boron



Periodic Table Bingo



Periodic Table Bingo

Hydrogen

Helium

Lithium

Beryllium

Boron

Carbon

Nitrogen

Oxygen

Fluorine

Neon

Sodium

Magnesium



Aluminium

Silicon

Phosphorus

Sulphur

Chlorine

Argon

Potassium

Calcium

Copper

Iron

Silver

Gold



Hydrogen

Aluminium

Calcium

Magnesium

Fluorine

Sodium

Gold

Iron

Oxygen

Helium

Silicon

Hydrogen

Aluminium

Carbon

Magnesium

Iron

Calcium

Oxygen



Periodic Table Bingo



Periodic Table Bingo

Lithium	Phosphorus	Helium
Silicon	Hydrogen	Aluminium
Argon	Beryllium	Oxygen

Beryllium	Sulphur	Lithium
Phosphorus	Helium	Silicon
Hydrogen	Argon	Carbon



Periodic Table Bingo



Periodic Table Bingo

Carbon	Chlorine	Beryllium
Silicon	Lithium	Phosphorus
Helium	Fluorine	Silver

Boron	Argon	Carbon
Chlorine	Beryllium	Sulphur
Lithium	Oxygen	Calcium



Periodic Table Bingo



Periodic Table Bingo

Nitrogen

Potassium

Boron

Argon

Carbon

Chlorine

Beryllium

Oxygen

Calcium

Oxygen

Calcium

Nitrogen

Potassium

Boron

Argon

Carbon

Fluorine

Silver



Periodic Table Bingo



Periodic Table Bingo

Fluorine	Copper	Oxygen
Calcium	Nitrogen	Potassium
Boron	Carbon	Magnesium

Neon	Silver	Fluorine
Copper	Oxygen	Calcium
Nitrogen	Aluminium	Sulphur



Periodic Table Bingo



Periodic Table Bingo

Sodium	Gold	Neon
Silver	Fluorine	Copper
Oxygen	Aluminium	Sulphur

Magnesium	Iron	Sodium
Gold	Fluorine	Silver
Neon	Potassium	Boron



Periodic Table Bingo



Periodic Table Bingo

Hydrogen	Aluminium	Neon
Boron	Fluorine	Sodium
Gold	Iron	Oxygen

Helium	Silicon	Hydrogen
Aluminium	Nitrogen	Magnesium
Iron	Fluorine	Oxygen



Periodic Table Bingo



Periodic Table Bingo

Lithium	Phosphorus	Helium
Silicon	Hydrogen	Aluminium
Gold	Beryllium	Oxygen

Beryllium	Sulphur	Lithium
Nitrogen	Helium	Silicon
Hydrogen	Argon	Calcium



Periodic Table Bingo



Periodic Table Bingo

Carbon	Chlorine	Beryllium
Silicon	Lithium	Phosphorus
Helium	Fluorine	Silver

Boron	Argon	Nitrogen
Chlorine	Beryllium	Sulphur
Sodium	Oxygen	Calcium



Periodic Table Bingo



Periodic Table Bingo

Nitrogen

Potassium

Iron

Argon

Carbon

Chlorine

Beryllium

Lithium

Calcium

Oxygen

Calcium

Nitrogen

Aluminium

Boron

Argon

Carbon

Neon

Silver



Periodic Table Bingo



Periodic Table Bingo

Iron	Copper	Gold
Calcium	Nitrogen	Potassium
Silicon	Carbon	Magnesium

Neon	Sodium	Fluorine
Copper	Oxygen	Calcium
Nitrogen	Aluminium	Silicon



Periodic Table Bingo



Periodic Table Bingo

Calcium

Gold

Neon

Silver

Fluorine

Copper

Oxygen

Nitrogen

Magnesium

Magnesium

Iron

Sodium

Gold

Nitrogen

Silver

Neon

Potassium

Boron



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Hydrogen

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Helium

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Lithium

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Beryllium

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Boron

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Carbon

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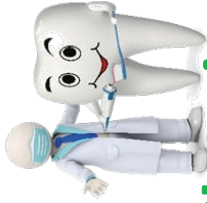
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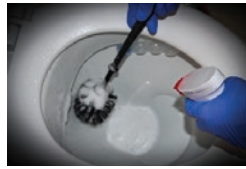
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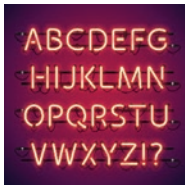


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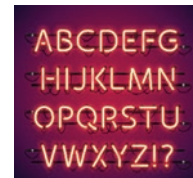
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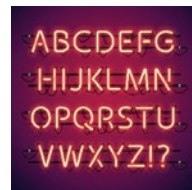
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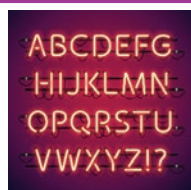
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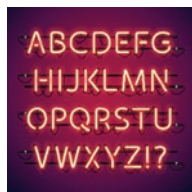


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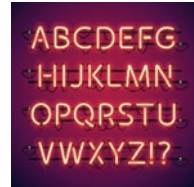
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