

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

GROUPS OF THE PERIODIC TABLE OF ELEMENTS

ALL YOU EVER WANTED TO KNOW, BUT WERE AFRAID TO ASK!

M. MARSHALL – THE SCIENCE SCENE

Open Ended Question

If you found a genii bottle on a beach and had 3 wishes. What would be your number 1 wish?

GROUP 18: NOBLE GASES

A simplified periodic table grid is shown, consisting of 7 rows and 18 columns. The grid is divided into three main sections: a small section on the left with 2 columns, a large central section with 10 columns, and a small section on the right with 2 columns. The rightmost column, representing Group 18 (Noble Gases), is highlighted in yellow and labeled with the number '18' at the top. The other cells in the grid are empty.

NOBLE GASES GROUP 18

- Has a full set of valence electrons (8 is a full set)
- Noble gases DO NOT give away electrons
- They are stable.

He

Ne

Ar

Kr

Xe

Rn

GROUP 17: HALOGENS

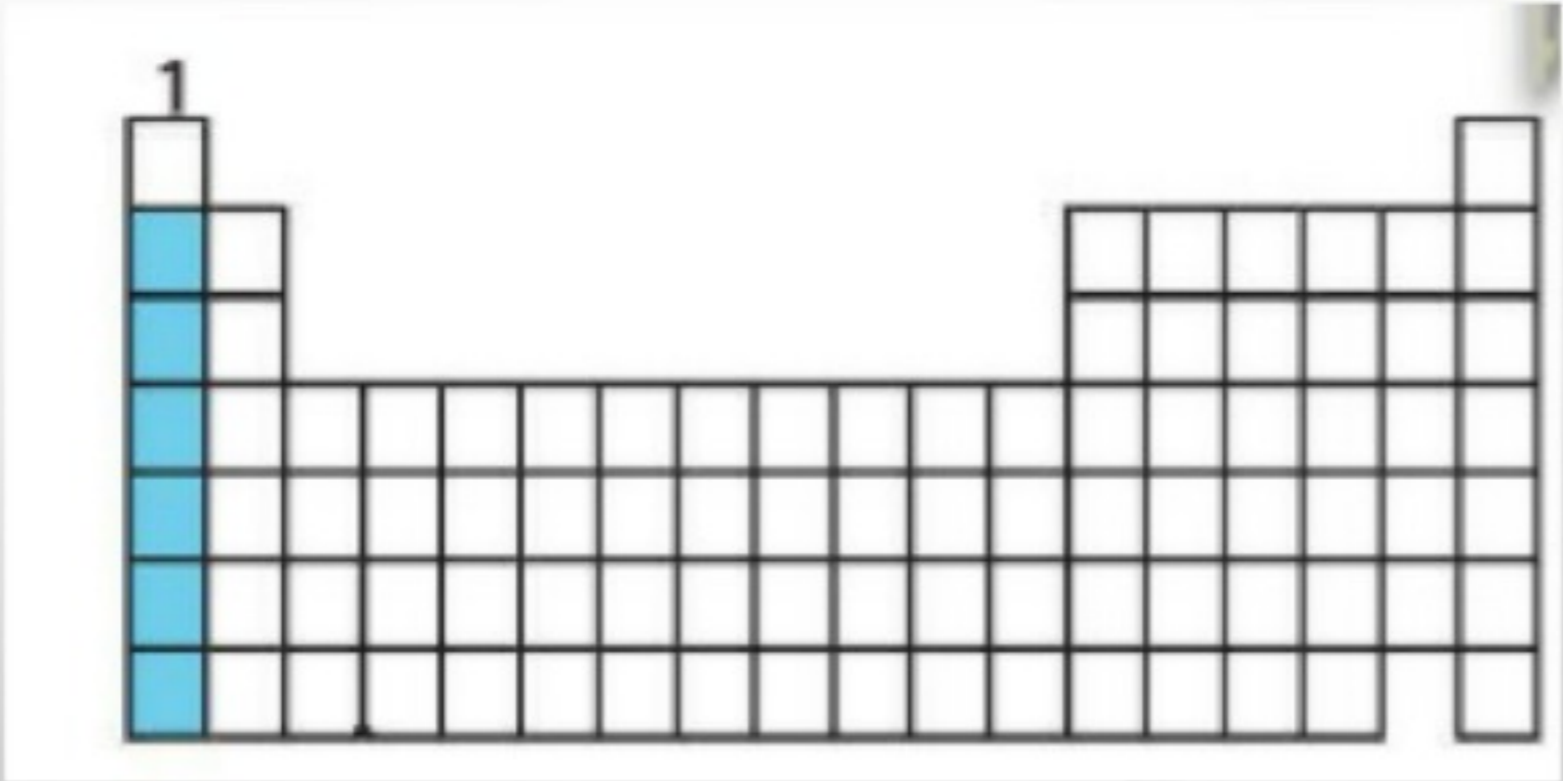
A simplified periodic table grid showing the layout of elements. The grid is 7 rows high and 18 columns wide. The first two columns are on the left, and the last two columns are on the right. The middle six columns are connected to the left and right sections. The seventh row is shorter than the others, missing the first and last columns. The column containing the halogens (Group 17) is highlighted in yellow, and the bottom-most cell of this column is highlighted in green. The number '17' is written above the top cell of this column.

HALOGEN GROUP 17

- Have 7 valence electrons.
- They need 1 electron to make a complete set.
- They will share or gain electrons.
- They are reactive.
- In their pure form, they form diatomic molecules.
- They combine with metals to form salts.



GROUP 1: ALKALI METALS



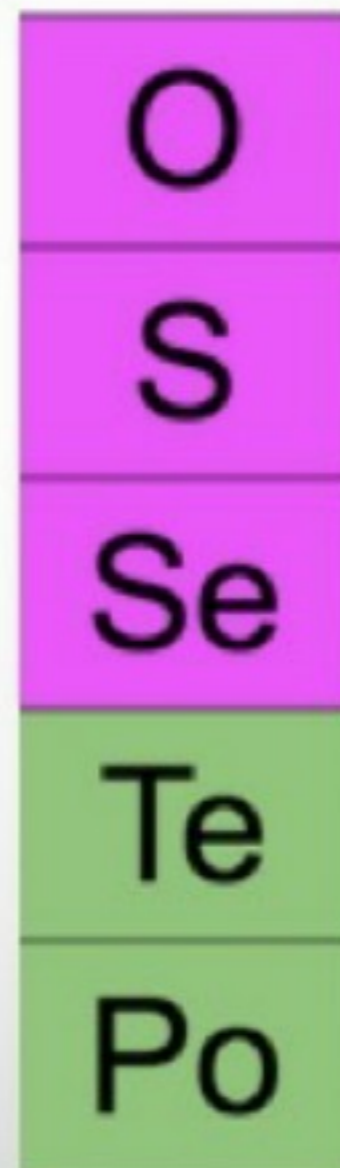
GROUP 2: ALKALINE EARTH METALS

A simplified periodic table diagram showing the layout of elements. The second column from the left is highlighted in blue and labeled with the number '2' at the top, representing Group 2: Alkaline Earth Metals. The table consists of 7 rows and 18 columns, with the first two columns on the left and the last two columns on the right, and a gap in the middle representing the transition metals.

	2																		

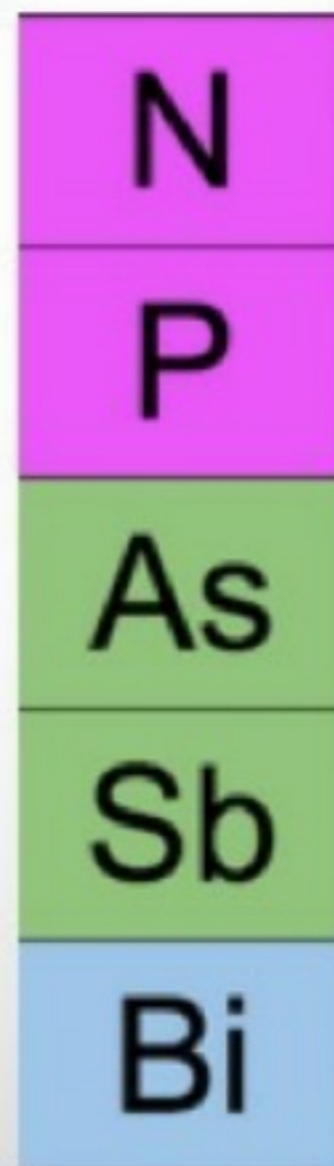
OXYGEN GROUP 16

- Have 6 valence electrons
- They include nonmetals and metalloids
- They need to find 2 electrons to complete their set.
- This group is reactive.



NITROGEN GROUP 15

- Nitrogen group members have 5 valence electrons.
- It is made up of nonmetals, metalloids, and a metal
- They generally gain 3 electrons.



CARBON GROUP 14

- Carbon has 4 valence electrons.
- It is made up of a nonmetal, metalloids, and metals
- Carbon compounds are essential to life.

C
Si
Ge
Sn
Pb

BORON GROUP 13

- Have 3 valence electrons.
- They will most likely lose electrons.
- They are reactive.
- Aluminum is the most important metal in this group and has many uses.

B
Al
Ga
In
Tl

MIXED GROUPS: METALLOIDS

The image shows a partial periodic table grid. The groups are labeled 13, 14, 15, 16, and 17 at the top. The elements in these groups are highlighted in green. The highlighted elements are:

Group	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7
13	B	Al				
14	C	Si	Ge			
15	N	P	As	Sb		
16	O	S	Te			
17	F	Cl	Br	I		

GROUP 1: ALKALI METALS

A simplified periodic table diagram with the first column highlighted in blue. The number '1' is positioned above the top cell of this column. The table consists of 7 rows and 18 columns, with a gap between the 9th and 10th columns in the first two rows.

1																	

GROUP 1 - ALKALI METALS

- 1 valence electron
- Most reactive. They are never found in elemental form by themselves. Only found in combination with other elements.
- Will lose their electron
- They are very soft metals

H
Li
Na
K
Rb
Cs
Fr

GROUP 2: ALKALINE EARTH METALS

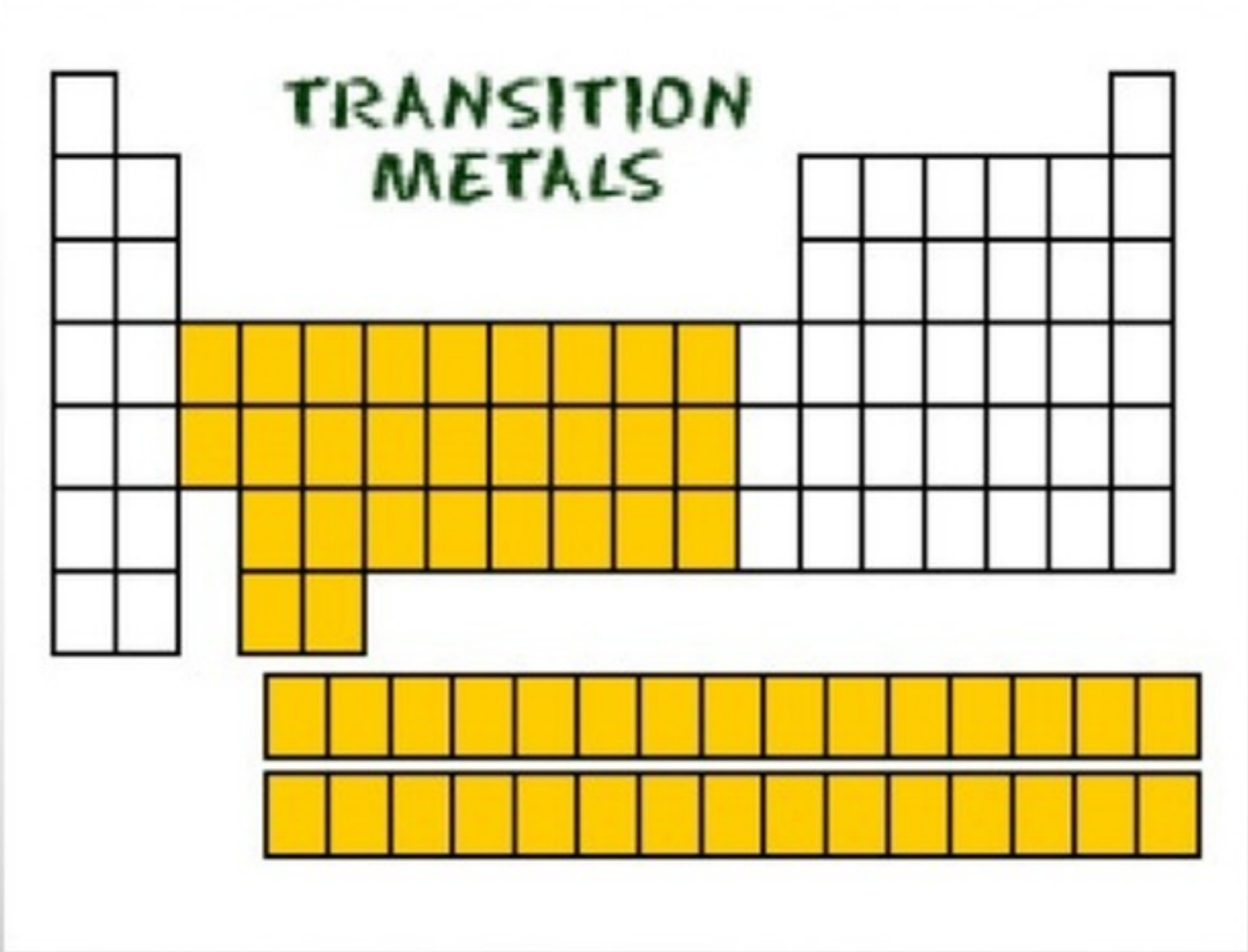
A simplified periodic table diagram with 7 rows and 18 columns. The first two columns are highlighted in blue. The number '2' is written in the top-left cell of the blue area. The table is missing the noble gas column on the far right and the transition metal block in the middle.

2																	

GROUP 2 ALKALINE-EARTH METALS

- These metals are fairly hard and shiny.
- They are not found in elemental form, but only in compounds.
- They have 2 valence electrons.
- They will lose electrons.
- They react readily with halogens to form salts.

Be
Mg
Ca
Sr
Ba
Ra



TRANSITION METALS

Groups 3-12

- As will all metals, these are ductile, malleable, shiny and good conductors of electricity.
- They are transition metals and do not give away their electrons as easily as atoms of Groups 1 and 2
- They are less reactive than groups 1 & 2
- They are unique in that their valence electrons are present in more than one shell.
- They don't always use the same number of valence electrons in chemical reactions. (sometimes they give away 2, sometimes 3 to form compounds)

Lanthanide series

Cerium 58 Ce 140.12	Praseodymium 59 Pr 140.91	Neodymium 60 Nd 144.24	Promethium 61 Pm (145)	Samarium 62 Sm 150.36	Europium 63 Eu 151.96
Thorium 90 Th 232.04	Protactinium 91 Pa 231.04	Uranium 92 U 238.03	Neptunium 93 Np (237)	Plutonium 94 Pu (244)	Americium 95 Am (243)

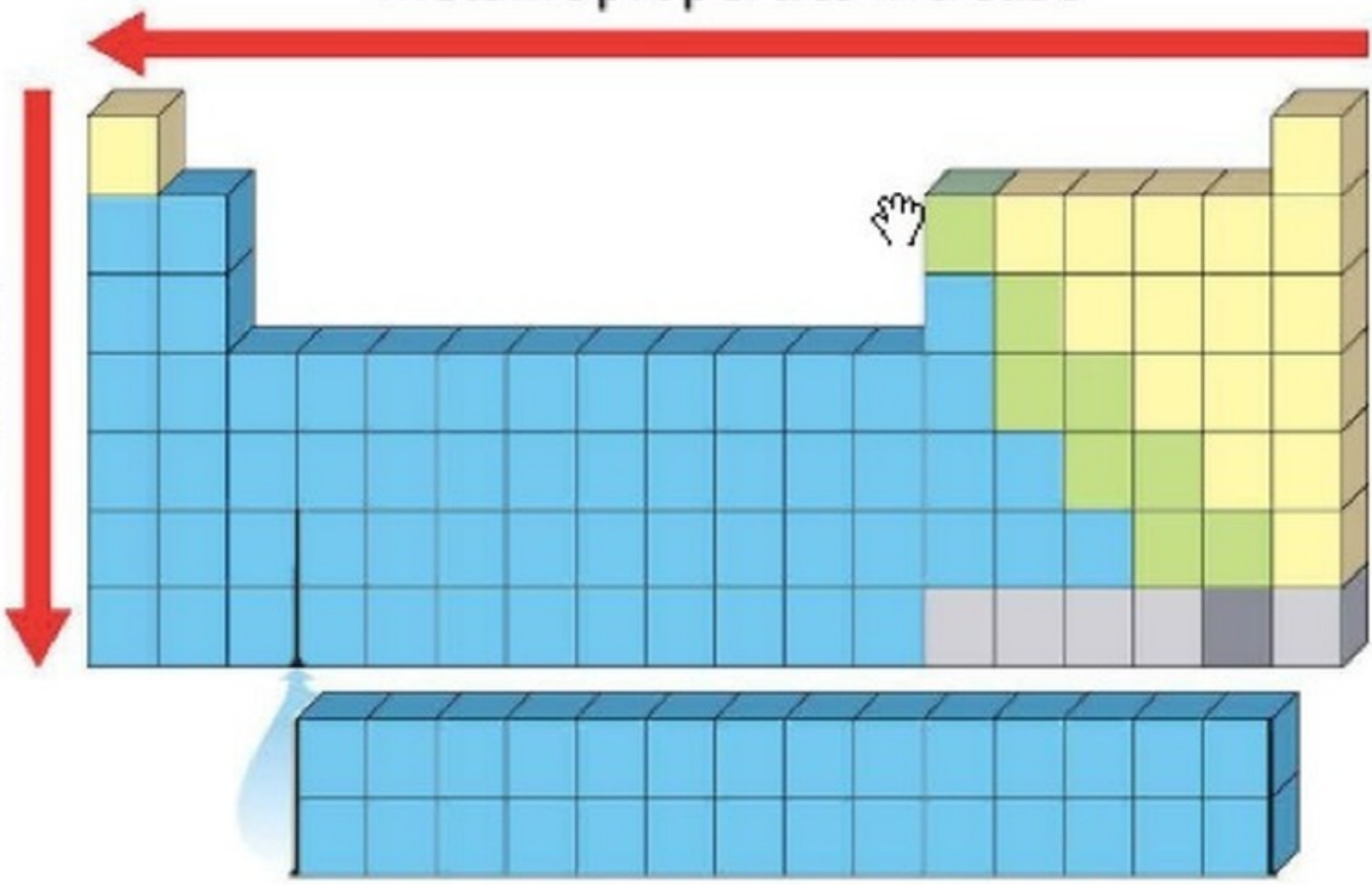
Actinide series

Gadolinium 64 Gd 157.25	Terbium 65 Tb 158.93	Dysprosium 66 Dy 162.50	Holmium 67 Ho 164.93	Erbium 68 Er 167.26	Thulium 69 Tm 168.93	Ytterbium 70 Yb 173.05	Lutetium 71 Lu 174.97
Curium 96 Cm (247)	Berkelium 97 Bk (247)	Californium 98 Cf (251)	Einsteinium 99 Es (252)	Fermium 100 Fm (257)	Mendelevium 101 Md (258)	Nobelium 102 No (259)	Lawrencium 103 Lr (262)

Metallic properties increase

Metallic properties increase

increase



Quiz

Which group has 6 valence electrons?

- oxygen group
- carbon group
- noble gases
- alkaline-earth metals
- nitrogen group
- alkali metals
- transition metals
- boron group
- halogen group

Which group has 8 valence electrons?

- oxygen group
- carbon group
- noble gases
- alkaline-earth metals
- nitrogen group
- alkali metals
- transition metals
- boron group
- halogen group

Which group has 2 valence electrons?

- oxygen group
- carbon group
- noble gases
- alkaline-earth metals
- nitrogen group
- alkali metals
- transition metals
- boron group
- halogen group

Which group has 1 valence electron?

- oxygen group
- carbon group
- noble gases
- alkaline-earth metals
- nitrogen group
- alkali metals
- transition metals
- boron group
- halogen group

Which group has 4 valence electrons?

- oxygen group
- carbon group
- noble gases
- alkaline-earth metals
- nitrogen group
- alkali metals
- transition metals
- boron group
- halogen group

Which group is most reactive?

- oxygen group
- carbon group
- noble gases
- alkaline-earth metals
- nitrogen group
- alkali metals
- transition metals
- boron group
- halogen group

Which group is stable?

- oxygen group
- carbon group
- noble gases
- alkaline-earth metals
- nitrogen group
- alkali metals
- transition metals
- boron group
- halogen group

How many electrons can go in the first energy level?

2

4

8

18

32

Carbon has how many valence electrons?

4

6

8

10

Sodium (Na) has how many valence electrons?

1

2

8

11