شرح الدرس الأول table periodic modern the of development تطور الجدول الدوري الحديث

تاريخ إضافة الملف على موقع المناهج: 10-10-2024 11:28:30

المزيد من مادة كيمياء:	ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

التواصل الاجتماعي بحسب الصف العاشر المتقدم

صفحة المناهج الإماراتية على فيسبوك					
المواد على تلغرام	التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات	

المزيد من الملفات بحسب الصف العاشر المتقدم والمادة كيمياء في الفصل الأول

1	عرض بوربوينت الدرس الأول table periodic modern the of development تطور الجدول الدوري الحديث
2	شرح الدرس الأول table periodic modern the of development تطور الجدول الدوري الحديث
3	حل أوراق عمل الوحدة الثانية The periodic and table periodic law الجدول الدوري
4	أوراق عمل الوحدة الثانية The periodic and table periodic law الجدول الدوري
5	حل أوراق عمل مراجعة الوحدة الثانية الجدول الدوري والقانون الدوري باللغة الانجليزية

EasyChemistry4all by Mr. Mouad

مناهج دولة الإمارات

عام، متقدم ونخبة 9،10،11،12

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Inspire Chemistry

Module 5_Lesson 1:
“Development of the Modern Periodic Table”

Learning Objectives:

- **Trace(تتبع)** the development of the periodic table and the contributions of different scientists.

- **Identify** key features of the periodic table.

Focus Question

How are elements organized in the periodic table?

New Vocabulary

- periodic law
- group
- period
- representative elements
- transition elements
- metals
- alkali metals
- alkaline earth metals
- transition metal
- inner transition metal
- lanthanide series
- actinide series
- nonmetals
- halogen
- noble gas
- metalloid

Review Vocabulary

atomic number: the number of protons in an atom

Development of the Periodic Table

In the late 1700's, **Antoine Lavoisier** compiled a list of the 33 elements known at the time.

Table 1 Lavoisier's Table of Simple Substances (Old English Names)

Gases	light, heat, dephlogisticated air, phlogisticated gas, inflammable air
Metals	antimony, silver, arsenic, bismuth, cobalt, copper, tin, iron, manganese, mercury, molybdena, nickel, gold, platina, lead, tungsten, zinc
Nonmetals	sulphur, phosphorus, pure charcoal, radical muriatique*, radical fluorique*, radical boracique*
Earths	chalk, magnesia, barote, clay, siliceous earth

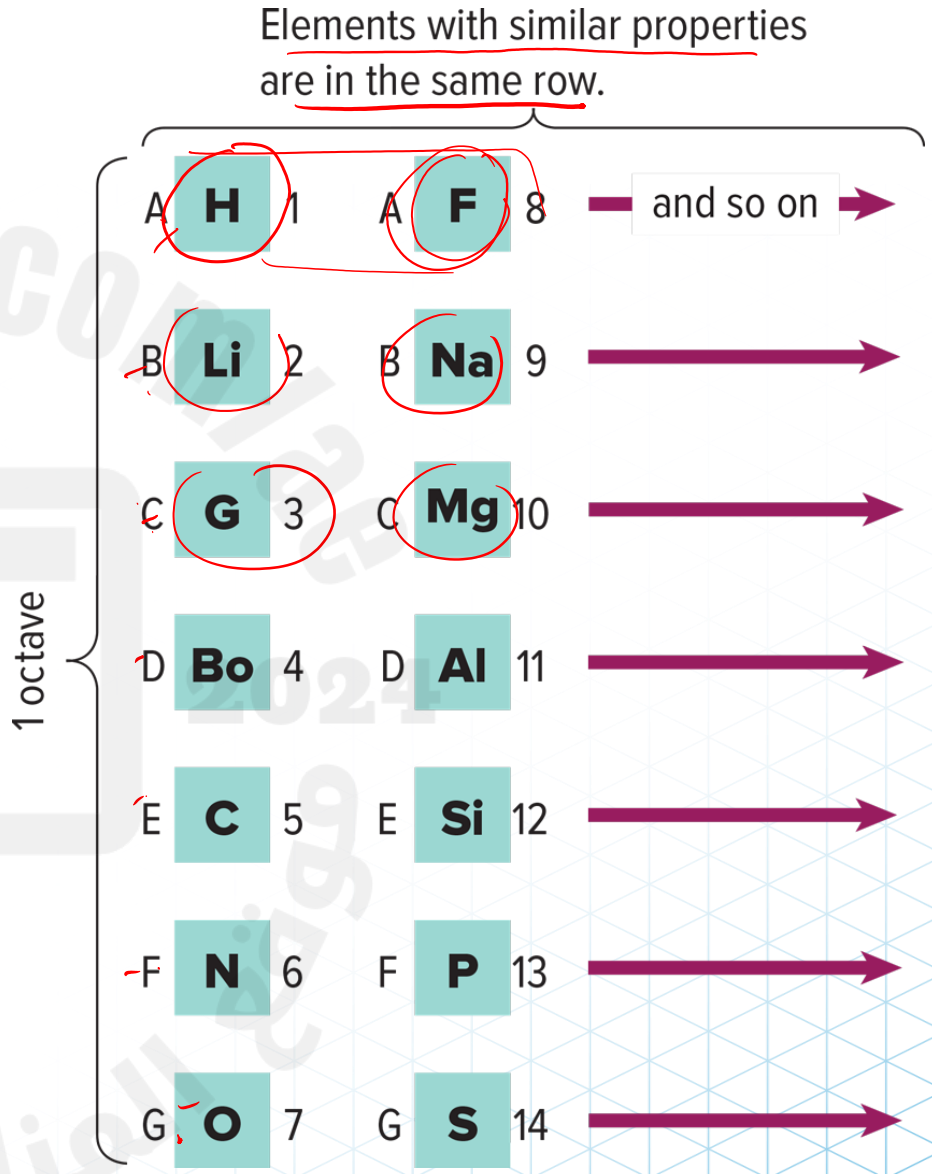
*no English name

Development of the Periodic Table

- Many new elements were discovered during the 1800s. Scientists needed a better way to organize knowledge about the elements.

- **John Newlands** proposed **arranging elements by atomic mass**. He noticed that properties repeated after every 8 elements (Octaves).

8



Development of the Periodic Table

- **Dmitri Mendeleev** made a table arranging the elements in order of **atomic mass** into **columns** with **similar properties**.

- Empty spaces in the table enabled him to predict the existence of undiscovered elements.

smart!

REIHEN	Gruppe I – R^2O	Gruppe II – RO	Gruppe III – R^2O^3	Gruppe IV RH^4 RO^2	Gruppe V RH^3 R^2O^5	Gruppe VI RH^2 RO^3	Gruppe VII RH R^2O^7	Gruppe VIII – RO^4
1	H=1							
2	Li=7	Be=9.4	B=11	C=12	N=14	O=16	F=19	
3	Na=23	Mg=24	Al=27.3	Si=28	P=31	S=32	Cl=35.5	
4	K=39	Ca=40	-=44	Ti=48	V=51	Cr=52	Mn=55	Fe=56, Co=59 Ni=59 Cu=63
5	(Cu=63)	Zn=65	-=68	-=72	As=75	Se=78	Br=80	
6	Rb=85	Sr=87	?Yt=88	Zr=90	Nb=94	Mo=96	-=100	Ru=104, Rh=104 Pd=106, Ag=108
7	(Ag=108)	Cd=112	In=113	Sn=118	Sb=122	Te=125	J=127	
8	Cs=133	Ba=137	?Di=138	?Ce=140	-	-	-	- - - -
9	(-)	-	-	-	-	-	-	
10	-	-	?Er=178	?La=180	Ta=182	W=184	-	Os=195, Ir=197 Pt=198, Au=199
11	(Au=199)	Hg=200	Tl=204	Pb=207	Bi=208	-	-	
12	-	-	-	Th=231	-	U=240	-	- - - -

Development of the Periodic Table

- **Henry Moseley** refined(إعادة تعديل أو تكرير) Mendeleev's **table by arranging in order of increasing atomic number** instead of atomic mass. This resulted in a clear **periodic pattern.**

- The statement that there is a periodic repetition of **chemical and physical properties** of the elements when they are arranged by increasing atomic number is called the **periodic law.**

Development of the Periodic Table

very imp!

Table 2 Contributions to the Classification of Elements

John Newlands (1837–1898)
- arranged elements by increasing atomic mass
- noticed the repetition of properties every eighth element
- created the law of octaves

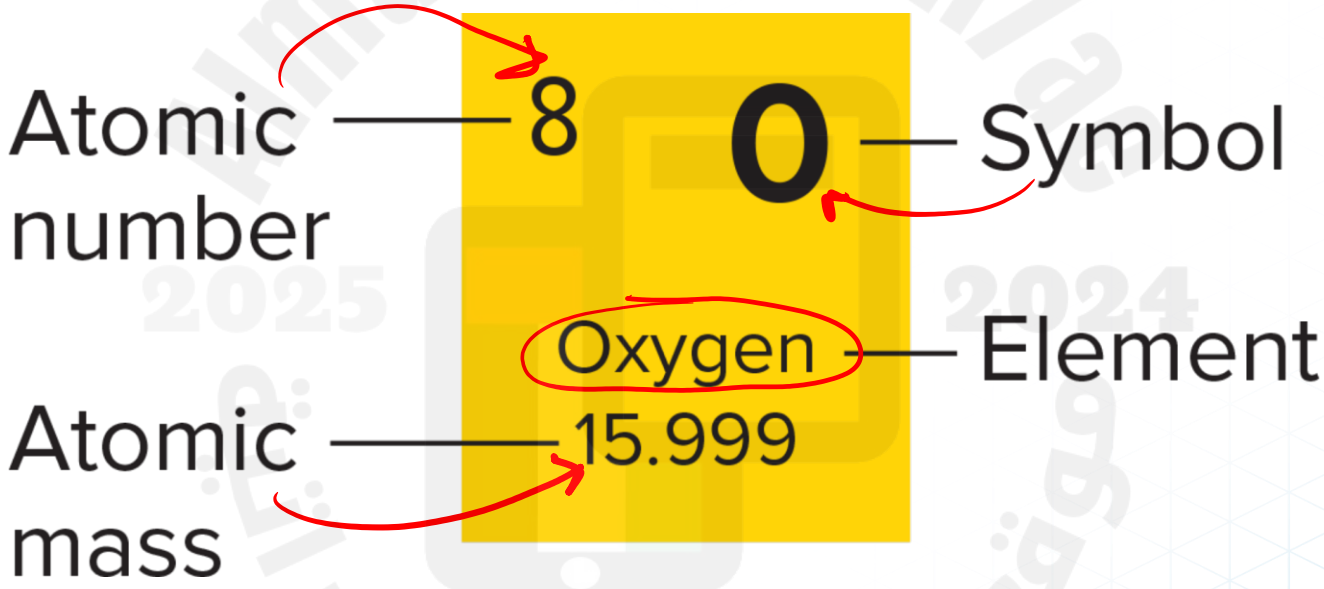
Lothar Meyer (1830–1895)
- demonstrated a connection between atomic mass and elements' properties
- arranged the elements in order of increasing atomic mass

Dmitri Mendeleev (1834–1907)
- demonstrated a connection between atomic mass and elements' properties
- arranged the elements in order of increasing atomic mass
- predicted the existence and properties of undiscovered elements

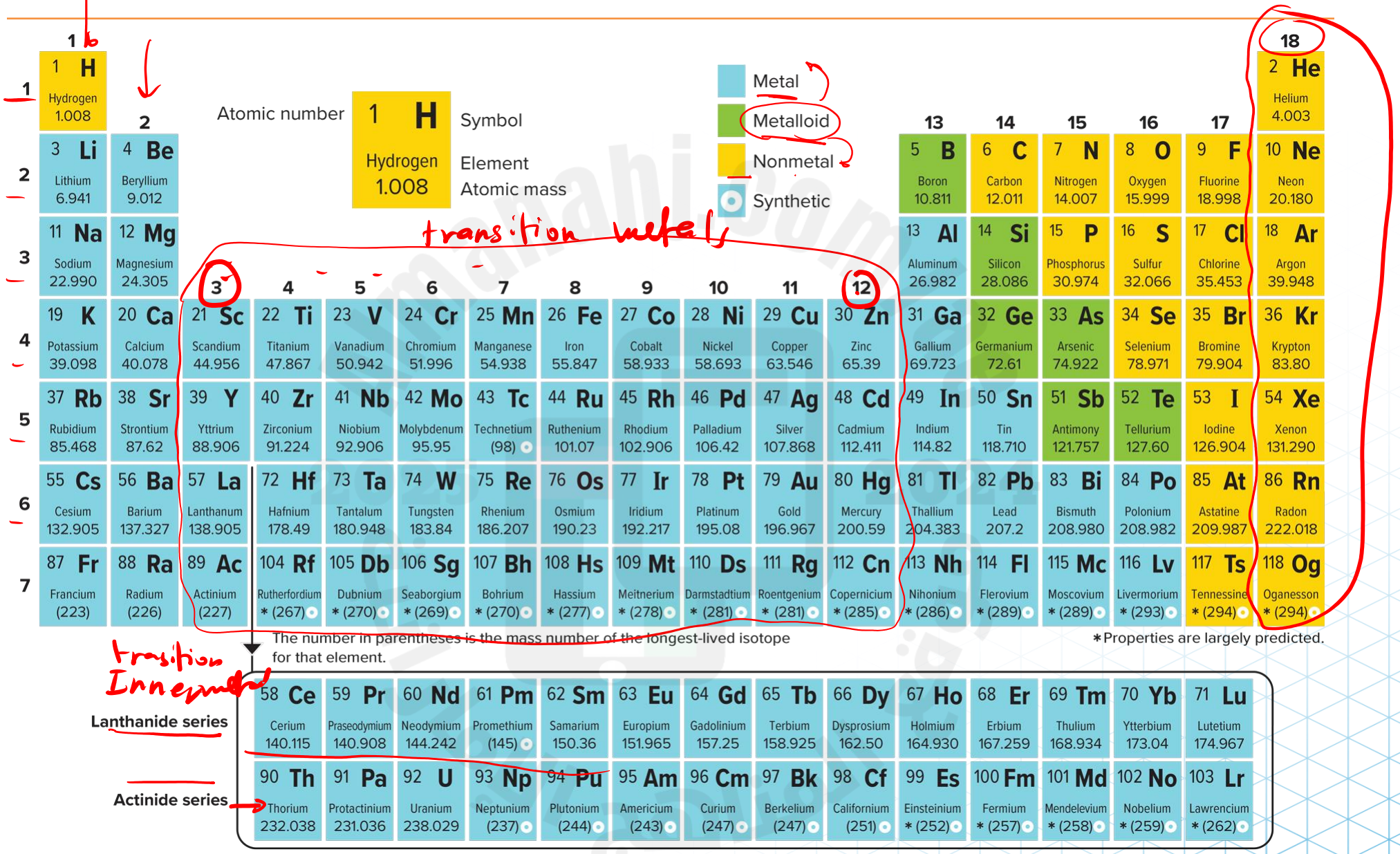
Henry Moseley (1887–1915)
- discovered that atoms contain a unique number of protons called the atomic number
- arranged elements in order of increasing atomic number, which resulted in a periodic pattern of properties

The Modern Periodic Table

- The modern periodic table contains boxes with each element's name, symbol, atomic number, and atomic mass.



The Modern Periodic Table



The Modern Periodic Table

- Columns of elements are called **groups** or families.
- Rows of elements are called **periods.**
- Elements in groups 1, 2, and 13–18 are called the **representative elements.** They possess a wide variety of chemical and physical properties.
- Elements in groups 3–12 are known as the **transition metals.**

الفلزات الانتقالية

The Modern Periodic Table

- Elements are classified as metals, nonmetals, and metalloids.

- **Metals** are elements that are generally shiny when smooth and clean, solid at room temperature, and good conductors of heat and electricity.

- **Alkali metals** are all the elements in group 1, except hydrogen. They are very reactive.

- **Alkaline earth metals** are in group 2. They are also highly reactive.

The Modern Periodic Table

3 – 12

- The transition elements are divided into **transition metals** and **inner transition metals.**

- The two sets of inner transition metals, known as the **lanthanide series** and the **actinide series,** are located along the bottom of the periodic table.

The Modern Periodic Table

- **Nonmetals** are elements that are generally gases or brittle, dull-looking solids. Nonmetals are poor conductors of heat and electricity.

- Group 17 is composed of highly reactive elements called **halogens.**

هي غازات خاملة لا تتفاعل

- Group 18 gases are extremely unreactive. They are commonly called **noble gases.**

النبيلة

- **Metalloids,** such as silicon and germanium, have physical and chemical properties of both metals and nonmetals.

The Modern Periodic Table

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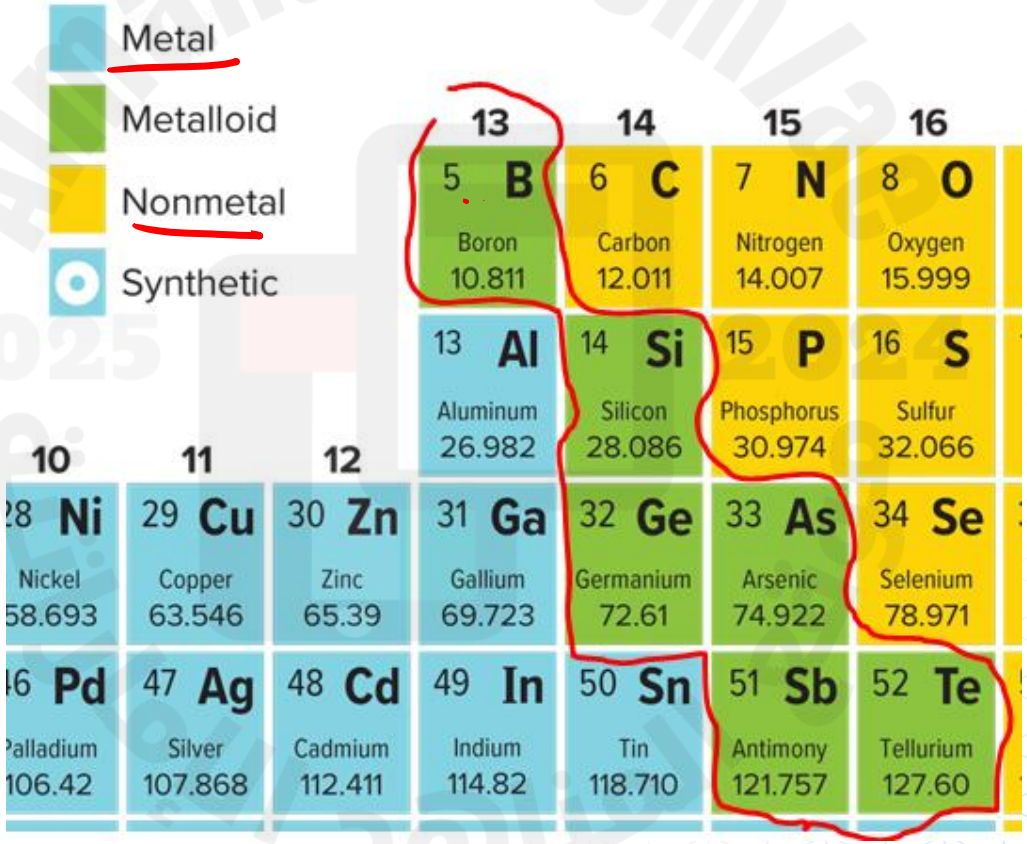

Activity

1. Who first recognized that arranging elements according to atomic number results in a clear periodic pattern?

Antoine Lavoisier

Dmitri Mendeleev

John Newlands

D Henry Moseley

Activity

2. Which term refers to rows on the periodic table?

A elements

B groups

C periods

D series

Activity

3. Which term refers to columns on the periodic table?

- elements
- B groups — CORRECT
- periods
- series

Activity

1, 2 13 – 18

4. Where are the representative elements found on the periodic table?

A in the top 2 rows

B in the bottom 2 rows

C in groups 1, 2, and 13–18

D in groups 3–12 (transition elements Metals)

Activity

Si Ge

5. Silicon and germanium are examples of _____.

A alkali metals — Group 1

B metalloids ✓

C nonmetals

D halogens → Group 17

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