

IB SL Periodic Table 1

1 Describe how the elements in the Periodic Table arranged

2 State the names of the following elements

- The element in Period 3 and Group 14
- The element in Period 5 and Group 8
- The element in Period 1 and Group 18

3 State whether each of the following elements is in the s, p, d or f block

Mg	Mn	Sm	As	Ne	U	Ti	Cs
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4 State the significance of the period number (n)

5 For each of the following atoms state the number of the principal energy level and the number of valence electrons

Atom	principal energy level	number of valence electrons
Ca		
P		
Br		
Si		
Rb		

6 State the condensed electron configuration of each of the following

Atom	condensed electron configuration
Be	
S	
Ti	
Cu	
As	

7 Classify each of the following elements by putting ticks in boxes

	alkali metal	halogen	noble gas	transition metal	lanthanoid	actinoid
Br						
Gd						
Xe						
Mo						
Cm						
Os						
K						

8 Classify each of the following elements based on their position in the Periodic Table by putting ticks in boxes

	metal	non-metal	metalloid
Nb			
Se			
Ge			
Pt			
Ho			
Si			

IB SL Periodic Table 2

- 9 State and explain the trends in atomic radius down a group
- 10 State and explain the trends in atomic radius across a period.
- 11 Explain why Ca^+ is smaller than Ca
- 12 Explain why Cl^- is larger than Cl
- 13 State and explain which is the larger species in each of the following pairs:
Ar and Cl^- Ca^{2+} and S^{2-} Ar and K Ar and K^+ Cl^- and Br Na^+ and Cl^-
- 14 Write an equation for the first ionisation energy of calcium
- 15 State and explain the trend in first ionisation energy down a group
- 16 State and explain the *general* trend in first ionisation energy across a period.
- 17 Explain why Mg has a higher first ionisation energy than Al
- 18 Explain why S has a lower first ionisation energy than P
- 19 Write an equation for the first electron affinity of sulfur
- 20 State and explain the trend in first electron affinity down a group
- 21 State and explain the general trend in first electron affinity across a period
- 22 State and explain the trend in electronegativity down a group
- 23 State and explain the trend in electronegativity across a period
- 24 Explain why metallic character decreases across a period
- 25 Explain the trend in metallic character down a group using Group 14 as an example
- 26 Classify each of the oxides below as acidic or basic or amphoteric.
 Na_2O MgO Al_2O_3 SiO_2 P_4O_6 P_4O_{10} SO_2 SO_3 Cl_2O Cl_2O_7
- 27 Write equations for the reactions of the following with water:
 Na_2O MgO P_4O_{10} NO_2 SO_2 SO_3
- 28 State whether each of the solutions formed in 27 are acidic, alkaline or neutral.
- 29 Explain two reasons why the elements Li and Na are placed in the same group in the Periodic Table
- 30 Explain the decrease in melting point of the alkali metals from Li to Cs.
- 31 Write an equation for the reactions of sodium with water.
- 32 State two observations for the reaction between sodium and water
- 33 Explain why potassium is more reactive than sodium

- 34 Write an equation for the reaction between sodium and chlorine.
- 35 Explain why elements in the same group have similar chemical properties
- 36 Explain the increase in melting point and boiling point down the halogen group
- 37 State and explain the colour changes that are observed when the following are mixed:
- chlorine solution and potassium bromide solution
 - bromine solution and potassium iodide solution
 - bromine solution and potassium chloride solution
- 38 Write an ionic equation for the reaction that occurs when chlorine solution is added to potassium bromide solution
- 39 Predict which of the following reactions will be most vigorous:
- $\text{Na} + \text{Cl}_2$ $\text{K} + \text{F}_2$ $\text{Li} + \text{I}_2$