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Introducing the periodic table

Use these lesson ideas to develop your students' knowledge of and familiarity with the periodic table







Visual Elements images Temperature 0 K – • 6000 K Classification Metal Non-metal Clear filters																	
Groups 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Blocks s p d f Periods 1 2 3 4 5 6 7 Lanthanides Actinides																	
H 1 Tellurium Supply risk High supply risk Low supply risk Low supply risk Unknown 2										He 2							
Li	Be			Key isoto	pes	tion	¹³⁰ Te	6-25-4		Т	e	В	С	N	0	F	Ne
Na	4 Mg	Mg			Density (g cm ⁻³)			6.232			Tellurium		Si	P	s	Cl	Ar
11	12	·		1 st ionisation energy		869.294 kJ mol ⁻¹		52	127.60	13	14	15	16	17	18		
K	Ca 20	Sc 21	Ti	V 23	Cr	Mn 25	Fe	Co	Ni 28	Cu 29	Zn	Ga 31	Ge	As 33	Se 34	Br	Kr 36
Rb	Sr	Y	Zr	Nb	Мо	Тс	Ru	Rh	Pd	Aq	Cd	In	Sn	Sb	Те		Xe
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Cs	Ba	La	Hf	Та	W	Re	Os	lr	Pt	Au	Hg	Tl	Pb	Bi	Ро	At	Rn
55	De	5/	72 Df		/4 5 a	75 Pla	76	//	78 De	79 Der	80	81	82 El	85	84	65 Ta	08
87	88	89	K I 104	105	39 106	107	108	109	110	111	112	113	114	115	116	117	118
		_			_			_		_	_		_	_			
		Ce 58	Pr 59	Nd 60	Pm	5m 62	Eu 63	Gd 64	Tb 65	Dy 66	Ho 67	Er 68	Tm 69	Yb 70	Lu 71		
		Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr		
		90	91	92	93	94	95	96	97	98	99	100	101	102	103		

Think of the periodic table as the classification of elements, according to their different properties.



Supermarket floor plan





At the supermarket

Where would you find...

- a) Carrots?
- b) Scones?
- c) Chicken?
- d) Washing-up liquid?

Give a reason for your answer.



Fill in the periodic table





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Most metals ______ Non-metals ______ Metals are found ______ of the periodic table whereas non-metals are found





A group of strings

In an orchestra, the violins sit at the front. The double bass sits at the back. Violas and cellos sit in between. Suggest a reason why.







A group of elements

A column of elements found in the periodic table is known as a 'group of elements'.

The elements in a group show patterns in their physical properties and show a pattern in reactivity or react in a similar way.





A group of metals

The alkali metals are found in group 1 of the periodic table.

Complete the table as your teacher demonstrates some properties of these metals.

Metal	Symbol	Appearance	Reaction with water
Lithium			
	Na		
Potassium			



Physical properties of the group 1 metals

Look at the table of data.

Identify:

- Patterns and trends in the data.
- Anomalous results.

Metal	Atomic number	Melting point (°C)	Density (g cm ⁻³)		
Lithium	3	180.5	0.534		
Sodium	11	97.8	0.970		
Potassium	19	63.5	0.89		
Rhubidium	37	39.3	1.53		





Conclusion

Describe how the physical properties of the metals change as you go down group 1.

Describe how the chemical reaction with water changes as you go down group 1.



Plenary questions

- 1. Why do chemists find the periodic table so useful?
- 2. What is a group?
- 3. Nitrogen is a non-metal. Where is it found in the periodic table?
- 4. Name an alkali metal.
- 5. Write down the symbol for iron.
- 6. Describe how the reactivity of group 1 metals changes as you go down the group.

