

## Topic 9 –Periodic table

1.

Statement 1: Helium is a reactive gas.

Statement 2: Helium can be used to fill balloons.

Which is correct?

- A Both statements are correct and statement 2 explains statement 1.
- B Both statements are correct but statement 2 does not explain statement 1.
- C Statement 1 is correct but statement 2 is incorrect.
- D Statement 2 is correct but statement 1 is incorrect.

2.

An element has the following properties.

- It forms coloured compounds.
- It acts as a catalyst.
- It melts at 1539 °C.

In which part of the Periodic Table is the element found?

- A Group I
- B Group IV
- C Group VII
- D transition elements

3.

The table shows some properties of two elements in Group VII of the Periodic Table.

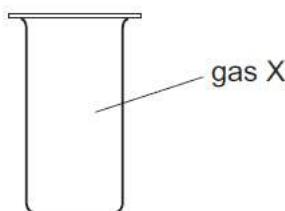
element	state at 20 °C	density/g per cm <sup>3</sup>	melting point/°C
chlorine	gas	0.0032	-101
bromine	liquid	3.1	-7

Which properties is fluorine likely to have?

	state at 20 °C	density/g per cm <sup>3</sup>	melting point/°C
A	gas	0.0017	-220
B	gas	0.17	-188
C	liquid	0.0017	-220
D	liquid	0.17	-188

4.

X is a monatomic gas.



Which statement about X is correct?

**A** X burns in air.  
**B** X is coloured.  
**C** X is unreactive.  
**D** X will displace iodine from potassium iodide.

5.

The diagram shows a section of the Periodic Table.

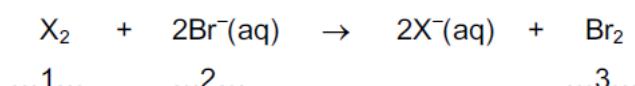
I	II	III	IV	V	VI	VII	0
V			W			X	
	Y				Z		

Which elements will conduct electricity at room temperature?

**A** V, W and X    **B** V, Y and W    **C** W, X and Z    **D** Y and Z

6.

The equation shows the reaction between a halogen and aqueous bromide ions.



Which words correctly complete gaps 1, 2 and 3?

	1	2	3
<b>A</b>	chlorine	brown	colourless
<b>B</b>	chlorine	colourless	brown
<b>C</b>	iodine	brown	colourless
<b>D</b>	iodine	colourless	brown

7.

Which statement is correct for the element of proton number 19?

- A It is a gas that dissolves in water.
- B It is a hard metal that is not very reactive with water.
- C It is a non-metal that burns quickly in air.
- D It is a soft metal that is highly reactive with water.

8.

The table compares the properties of Group I elements with those of transition elements.

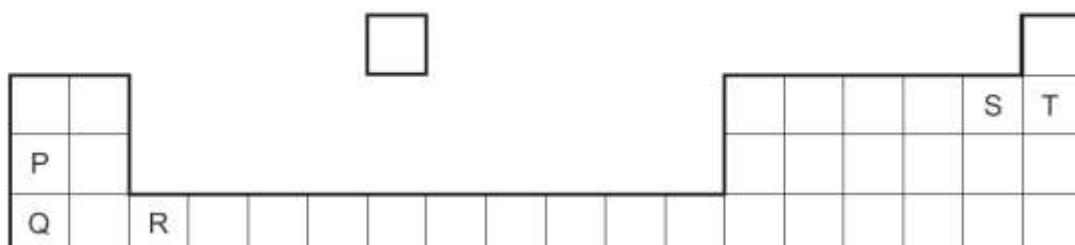
Which entry in the table is correct?

	property	Group I elements	transition elements
A	catalytic activity	low	high
B	density	high	low
C	electrical conductivity	low	high
D	melting point	high	low

9.

The diagram shows the positions of elements P, Q, R, S and T in the Periodic Table.

These letters are not the chemical symbols for the elements.



Which statement about the properties of these elements is correct?

- A P reacts more vigorously with water than does Q.
- B P, Q and R are all metals.
- C T exists as diatomic molecules.
- D T is more reactive than S.

10.

The table shows some reactions of the halogens.

Which reaction is the most likely to be explosive?

reaction	chlorine gas	bromine gas	iodine gas
reaction with hydrogen	A	B	C
reaction with iron	very vigorous	less vigorous	D

11.

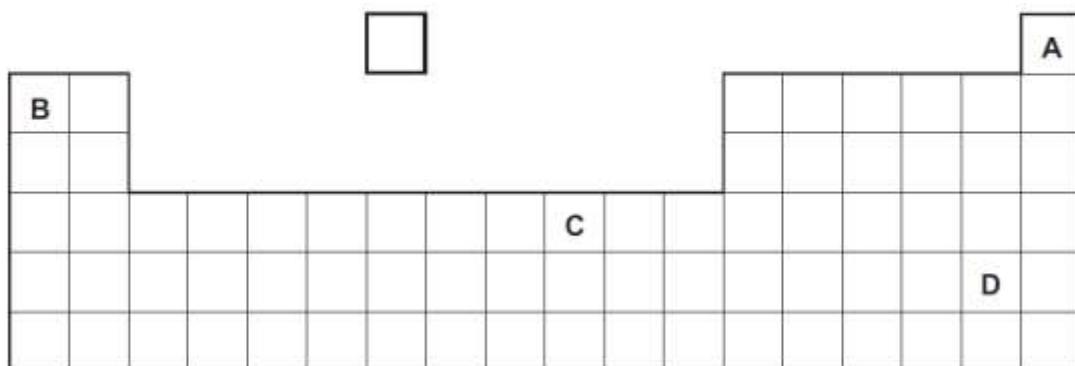
Which is **not** a property of Group I metals?

- A They are soft and can be cut with a knife.
- B They corrode rapidly when exposed to oxygen in the air.
- C They produce an acidic solution when they react with water.
- D They react rapidly with water producing hydrogen gas.

12.

An element melts at  $1455^{\circ}\text{C}$ , has a density of  $8.90\text{g/cm}^3$  and forms a green chloride.

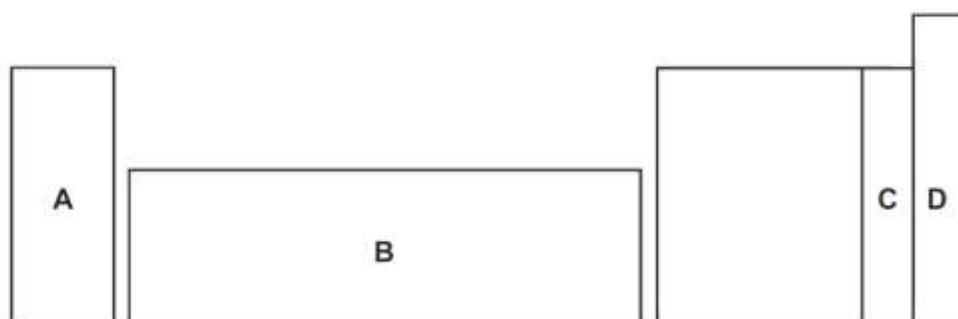
Where in the Periodic Table is this element found?



13.

An element does not conduct electricity and exists as diatomic molecules.

In which area of the Periodic Table is the element to be found?



14.

Solutions of a halogen and a sodium halide are mixed.

Which mixture darkens in colour because a reaction occurs?

- A bromine and sodium chloride
- B bromine and sodium fluoride
- C chlorine and sodium fluoride
- D chlorine and sodium iodide

15.

The table gives information about four elements.

Which element is a transition metal?

	colour of element	electrical conductivity of element	colour of oxide
<b>A</b>	black	high	colourless
<b>B</b>	colourless	low	white
<b>C</b>	grey	high	red
<b>D</b>	yellow	low	colourless

16.

Elements in Group 0 of the Periodic Table have uses.

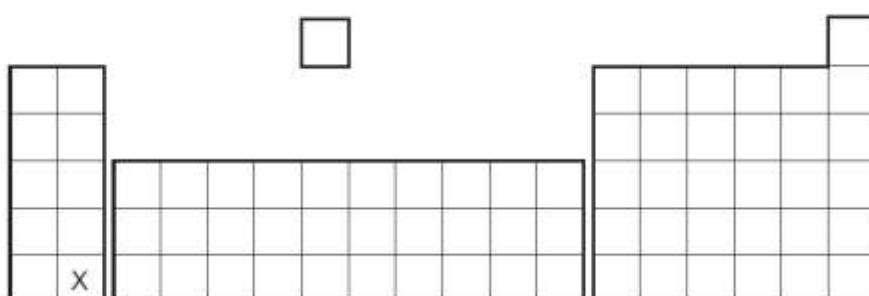
These noble gases are .....1..... and this explains why argon .....2..... be used in lamps.

Which words correctly complete gaps 1 and 2?

	1	2
<b>A</b>	reactive	can
<b>B</b>	reactive	cannot
<b>C</b>	unreactive	can
<b>D</b>	unreactive	cannot

17.

The diagram shows the position of an element X in the Periodic Table.



What is the correct classification of element X and its oxide?

	X	oxide of X
<b>A</b>	metal	acidic
<b>B</b>	metal	basic
<b>C</b>	non-metal	acidic
<b>D</b>	non-metal	basic

18.

Astatine is an element in Group VII of the Periodic Table. It has only ever been produced in very small amounts.

What is the best description of its likely properties?

	colour	state	reaction with aqueous potassium iodide
<b>A</b>	black	solid	no reaction
<b>B</b>	dark brown	gas	brown colour
<b>C</b>	green	solid	no reaction
<b>D</b>	yellow	liquid	brown colour

19.

Which statement describes the trends going down group VII of the Periodic Table?

- A** The boiling point and melting point both decrease.
- B** The boiling point and melting point both increase.
- C** The boiling point decreases but the melting point increases.
- D** The boiling point increases but the melting point decreases.

20.

An inert atmosphere is needed in a lamp to lengthen the useful life of the metal filament.

Why is argon, rather than helium, used for this purpose?

	argon is more abundant in the air	argon is less dense than helium
<b>A</b>	✓	✓
<b>B</b>	✓	✗
<b>C</b>	✗	✓
<b>D</b>	✗	✗

21.

Which compound is likely to be coloured?

- A**  $\text{KMnO}_4$
- B**  $\text{KNO}_3$
- C**  $\text{K}_2\text{CO}_3$
- D**  $\text{K}_2\text{SO}_4$