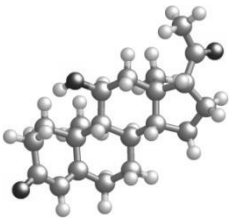

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Name: …… **( )**

Class: ……

Date: …… **/** …… **/** ……

Multiple-choice Questions on Periodic Table

1. The element with proton number 12 has similar chemical properties to the element with which proton number?

A 2 **B** 11 **C** 20 **D** 24

2. Element **Z** has the following properties.

- It has a high melting point.
- Its presence can lower the activation energy of a reaction.

What type of element is **Z**?

A A halogen **B** An alkali metal

C A noble gas **D** A transition metal

3. Lithium and rubidium are both in Group 1 of the Periodic Table.

Which statement is correct?

A Lithium atoms and rubidium atoms have the same number of electrons in their outer shell.

B Lithium atoms are larger than rubidium ions.

C Lithium ions and rubidium ions have the same number of electrons in their outer shell.

D Rubidium ions are larger than rubidium atoms.

4. Which element in the table is an alkali metal?

	melting point °C	density g / cm^3
A	–39	13.60
B	–7	3.10
C	98	0.97
D	1083	8.92

5. Sulfur and selenium, Se, are in the same group of the Periodic Table.

From this, we would expect selenium to form compounds having the formulae…

A Se_2O, Na_2Se and $NaSeO_4$ **B** SeO_2, Na_2Se and $NaSeO_4$

C SeO_2, Na_2Se and Na_2SeO_4 **D** SeO_3, NaSe and $NaSeO_4$

6. Which change in the properties of the halogens, from chlorine to iodine, is **not** correct?

	chlorine → bromine → iodine
A	darker in colour
B	decrease in melting point
C	decrease in rate of diffusion
D	increase in density

7. **W**, **X** and **Y** are elements in the same period of the Periodic Table.

- **X** forms compounds of formulae **X**Cl_2 and **X**Cl_3.
- **Y** forms a solution of pH 12 when it reacts with water.
- The reaction of **W** with water is similar to the reaction of **Y**, but less vigorous.

In which order are the elements in the Periodic Table?

	left-to-right along a Period
A	**W → Y → X**
B	**X → W → Y**
C	**X → Y → W**
D	**Y → W → X**

8. Which statement explains why the chemical properties of sodium and potassium are similar?

A They are in the same Group of the Periodic Table.

B They are in the same Period of the Periodic Table.

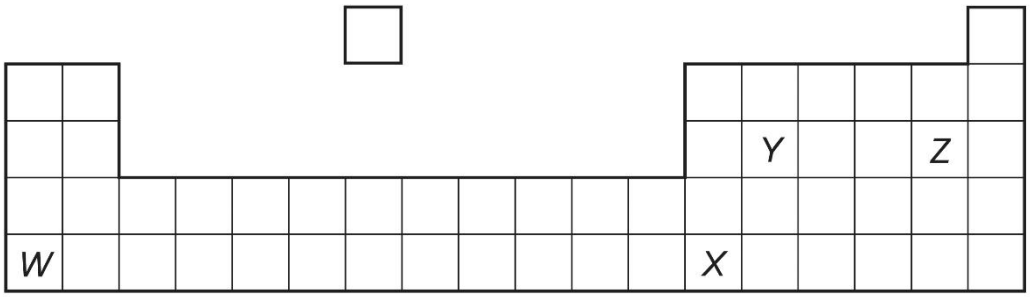
C They are soft and can be cut with a knife.

D They have similar melting points.

9. Which element described in the table is a transition metal?

	number of oxidation states	coloured compounds	melting point	density
A	one	no	high	low
B	two	no	low	high
C	two	yes	high	high
D	two	yes	low	low

10. The diagram shows an outline of part of the Periodic Table,



Which statement is **not** correct?

A The melting point of *W* is lower than that of *Z*.

B *W* and *Z* could react together and form a compound, *WZ*.

C *X* could form an oxide, X_2O_3.

D *Y* could form an oxide, YO_2.

11. Three different elements react by losing electrons. The ions formed all have the same electronic configuration.

Which statement about these elements is correct?

A They are in the same Group.

B They are in the same Period.

C They are noble gases.

D They are transition metals.

12. Some properties that make elements different from each other are listed.

1 Metallic character.

2 Number of electron shells in an atom.

3 Number of protons in an atom.

4 Total number of electrons in an atom.

Which two properties increase across a Period of the Periodic Table?

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

13. Which property shows an increasing trend in the elements, from Group 1 to Group 17, across a Period of the Periodic Table?

A Ability to form anions.

B Metallic character.

C Number of electron shells.

D Reactivity with water.

14. The melting point of lithium is 181 °C. The melting point of sodium is 98°C.

Which statement explains why lithium has a higher melting point than sodium?

A Lithium has more valency electrons than sodium.

B Sodium is more reactive than lithium.

C Sodium is softer than lithium.

D The attraction between the positive ions and the 'sea of electrons' is stronger in lithium than in sodium.

15. From their position in the Periodic Table, which properties would you expect the elements vanadium, chromium and cobalt to have?

1 Variable oxidation states.

2 Coloured compounds.

3 High melting points.

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

16. Three statements about the elements carbon, nitrogen and sulfur are shown.

1 They are in Groups next to each other in the Periodic Table.

2 Their neutron to proton ratios are all 2:1 for the most common isotope.

3 They each form an acidic oxide.

Which statements are correct?

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

17. What is a property of the halogens?

A Their atoms decrease in size down the Group.

B Their melting points increase down the Group.

C They conduct electricity when molten.

D Their silver salts are all soluble in water.

18. The table shows the proton numbers of four elements.

element	**Q**	**R**	**T**	**Z**
proton number	9	11	17	19

Which statement is correct?

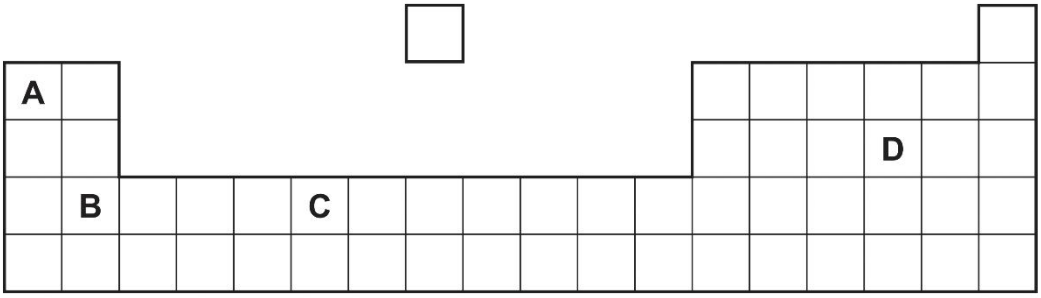
A **Q** is a metal.

B **Q** is more reactive than **T**.

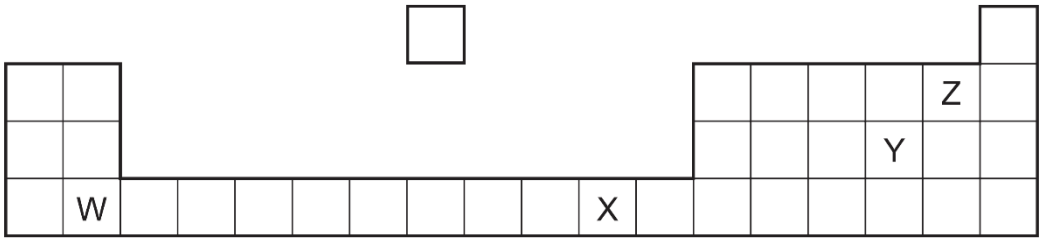
C **R** is more reactive than **Z**.

D **T** and **Z** are in the same period.

19. Part of the Periodic Table shows the positions of four elements. These are **not** the elements' actual symbols. Which element has a high melting point and a variable oxidation state?



20. The diagram shows part of the Periodic Table.



Which two letters represent elements that can react together to form covalent compounds?

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

21. Which statement about elements in the Periodic Table is correct?

A Elements at the left-hand side of the Periodic Table are more metallic than those, in the same period, near the right-hand side.

B Elements at the top of a group lose electrons more readily than those, in the same group, that are lower in the Periodic Table.

C Elements in the same group of the Periodic Table have the same number of completed shells of electrons.

D Elements in the same period of the Periodic Table have the same number of electrons in the outer shell.

22. Which statement about the properties of the elements in Group 18 of the Periodic Table, helium to xenon, is correct?

A Argon reacts with iron to form a compound.

B Helium is less dense than air.

C The elements change from gas to solid down the group.

D The elements exist as covalent molecules.

23. Which two statements indicate that metal **M** may have a proton number between 21 and 30?

1 It conducts electricity.

2 It does **not** react with water.

3 It forms two basic oxides with formulae MO and M_2O_3.

4 It forms two coloured sulfates.

A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

24. Caesium, Cs, is an element in Group 1 of the Periodic Table.

Which statements about Caesium are true?

1 Caesium conducts electricity both when solid and when molten.

2 Caesium reacts explosively with water.

3 Caesium reacts with water and forms a solution of pH < 7.

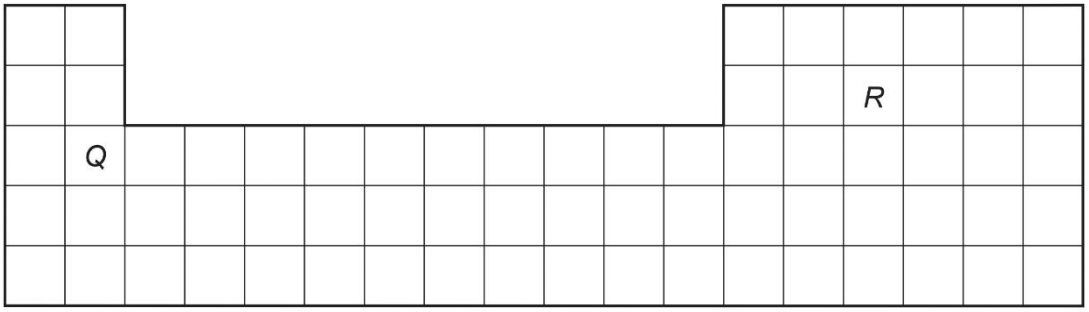
A 1 and 2 only

B 1 and 3 only

C 2 and 3 only

D 1, 2 and 3

25. Elements with the code letters *Q* and *R* occupy the positions shown in the outline of the Periodic Table.



What is the formula of the compound formed between them?

A QR_2 **B** Q_2R **C** Q_2R_3 **D** Q_3R_2

26. The list shows some properties of metals.

1 Metals are good conductors of electricity.

2 Metals form ions by the loss of electrons.

3 Metals have high melting points.

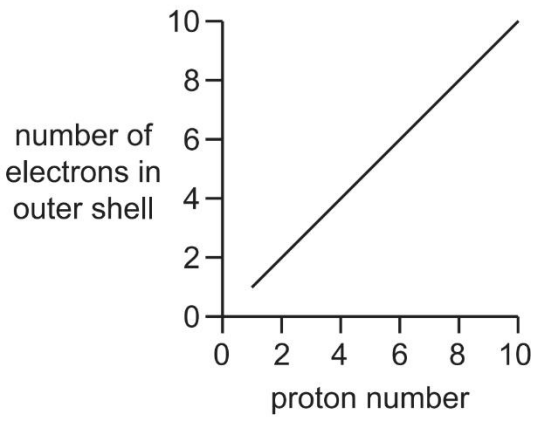
Mercury is a metallic element.

Which of these statements do **not** apply to mercury?

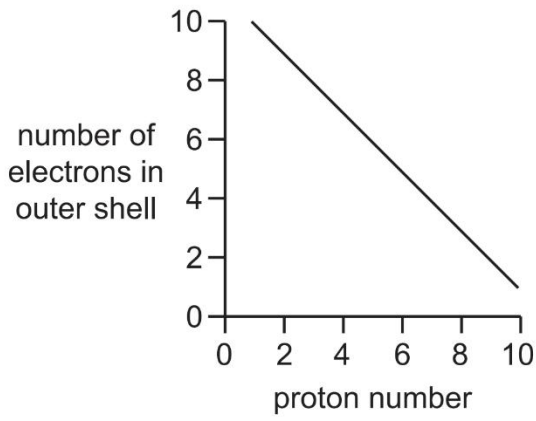
A 1 only **B** 1 and 2 **C** 2 and 3 **D** 3 only

27. Which graph shows the number of electrons in the outer shell of an atom, plotted against the proton (atomic) number for the first ten elements in the Periodic Table?

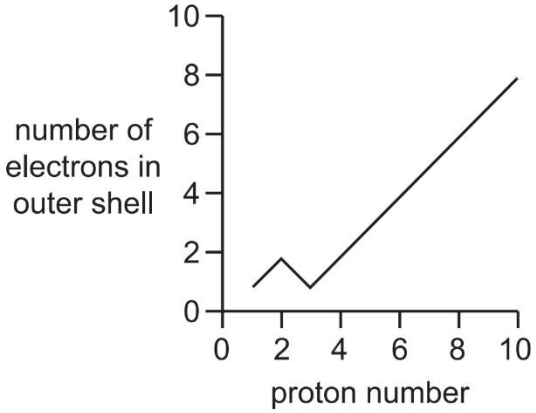
A



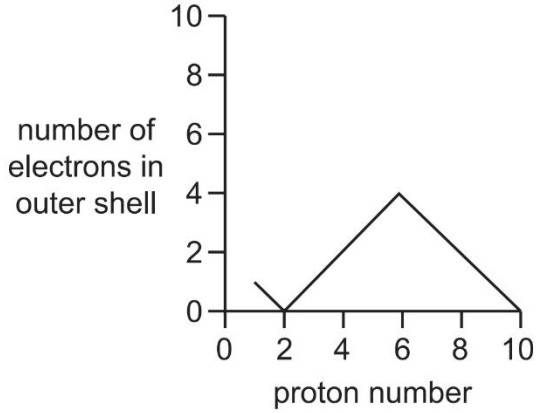
B



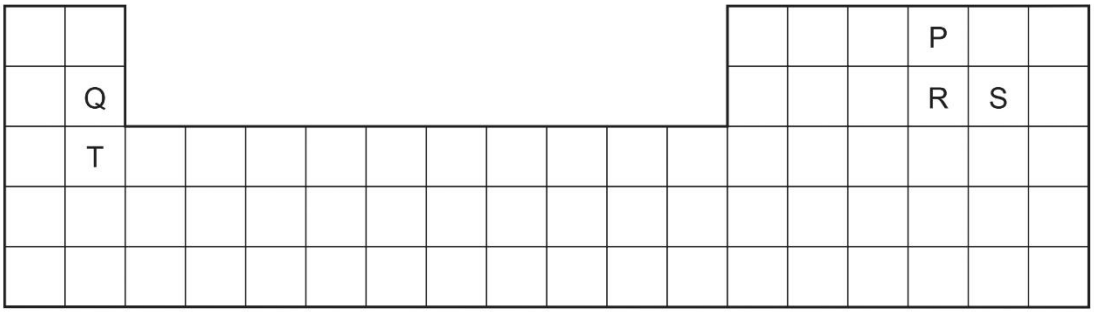
C



D



28. The diagram shows part of the Periodic Table.



Which pair of letters represents elements that are in the same period?

A **P** and **R** **B** **P** and **S** **C** **Q** and **T** **D** **R** and **S**

29. Which pair gives two uses of argon?

A Disinfecting water and in balloons.

B Disinfecting water and in light bulbs.

C In balloons and in the manufacture of steel.

D In light bulbs and in the manufacture of steel.

30. Which row shows the correct number of protons and electrons in the ion of an element in Group 2 of the Periodic Table?

	number of protons	number of electrons
A	9	10
B	12	10
C	14	14
D	16	18

31. The oxide of an element **X** increases the rate of decomposition of hydrogen peroxide. At the end of the reaction the oxide of **X** is unchanged. Which details are those of **X**?

	proton number	mass number
A	18	40
B	20	40
C	25	55
D	82	207

32. Which element is sodium?

	melting point in °C	electrical conductivity	density in g/cm^3
A	1535	good	7.86
B	1083	good	8.92
C	113	poor	2.07
D	98	good	0.97

33. Carbon and silicon are both in Group 14 of the Periodic Table.

Which statement is correct for both carbon dioxide and silicon dioxide?

A They are acidic oxides.

B They are readily soluble in water.

C They contain ionic bonds.

D They have giant molecular structures.

34. Which deduction about the element astatine, At, can be made from its position in Group 17?

A It forms covalent compounds with sodium.

B It is a gas.

C It is displaced from aqueous potassium astatide, KAt, by chlorine.

D It is more reactive than iodine.

35. Which pair of properties are both correct for a typical transition element?

	property 1	property 2
A	forms coloured compounds	soluble in water
B	high density	has variable oxidation states
C	low density	high melting point
D	low melting point	can act as a catalyst

36. A metal **X** forms oxides with the formulae **X**O and $\mathbf{X}_2O_3$.

Where is **X** in the Periodic Table?

A In Group 2

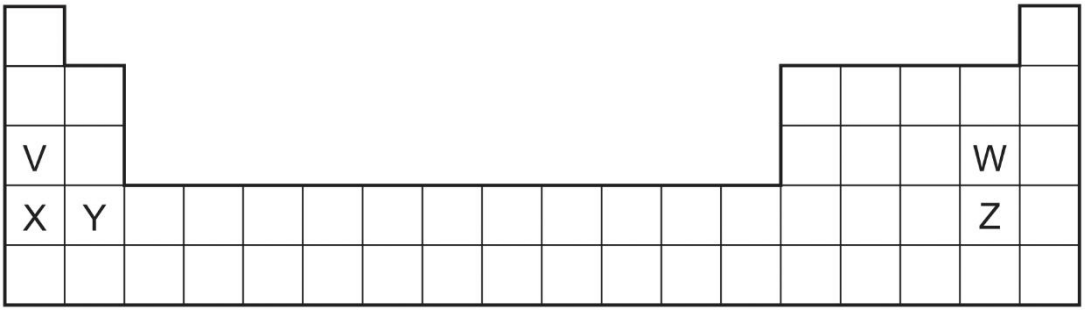
B In Group 13

C The second Period

D In the transition elements

37. Part of the Periodic Table is shown.

The letters are not the symbols of the elements.



Which statement about the elements is correct?

A **V** is more reactive than **X**.

B **W** is more reactive than **Z**.

C **Y** is in the same Group as **X**.

D **Z** has a lower melting point than **W**.

38. Which element has a variable oxidation state, can act as a catalyst and forms coloured compounds?

A Carbon **B** Chromium **C** Nitrogen **D** Sulfur

39. The boiling points of gaseous elements increase as the size of their atoms increases.

Which of these noble gases has the highest boiling point?

A Argon **B** Helium **C** Krypton **D** Neon

40. An element is in Period 3 and Group 17 of the Periodic Table.

Which statement about this element is correct?

A The element will form 1+ ions.

B The element will have 3 electrons in its outer shell.

C The element will have 7 electrons in its outer shell.

D The element will have 7 shells of electrons in its atom.

41. Which property would all the hydrogen compounds of the Group 17 elements possess?

A Be covalent.

B Be solids at room temperature.

C Form alkaline aqueous solutions.

D Conduct electricity when molten.

42. What suggests that metal **M** is not in Group 1 of the Periodic Table?

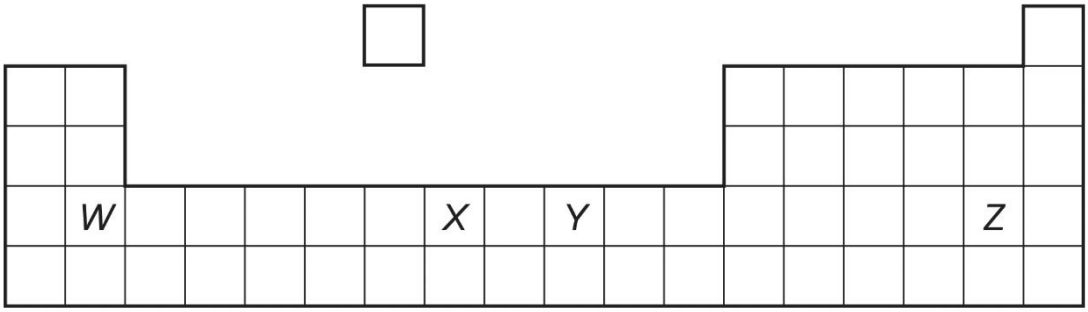
A **M** has a bright, silvery appearance and is a good conductor of electricity.

B **M** is hard and difficult to cut.

C **M** produces an alkaline solution when it reacts with water.

D **M** produces hydrogen gas when it reacts with water.

43. The diagram shows an outline of part of the Periodic Table.



Which statements are correct?

1 Elements *W*, *X* and *Y* form coloured compounds.

2 Elements *X*, *Y* and *Z* have high melting points.

3 Elements *X* and *Y* act as catalysts.

A 1 only **B** 2 only **C** 3 only **D** 1 and 3 only

44. A non-metal element forms oxides of the type **X**O_2 and **X**O_3.

What is **X**?

A Aluminium **B** Carbon **C** Hydrogen **D** Sulfur

45. Group 1 metals form compounds with Group 17 halogens. The compounds formed are ……1…… in water and contain ……2…… bonds.

Which words correctly complete gaps 1 and 2?

	1	2
A	insoluble	covalent
B	insoluble	ionic
C	soluble	covalent
D	soluble	ionic

46. Which statement about the elements in the Periodic Table is correct?

A All the elements in the same group of the Periodic Table have the same reactivity.

B All the elements with four electrons in their outer shells are metals.

C An element in Group 2 of the Periodic Table would form an ion with a 2– charge.

D Elements in the same period of the Periodic Table have the same number of shells of electrons.

47. The table gives the melting points, densities and electrical conductivities of four elements.

Which element is copper?

	melting point in °C	density in g/cm^3	electrical conductivity
A	–38.9	13.6	good
B	–7.2	3.12	poor
C	97.8	0.97	good
D	1083	8.96	good

48. Element **X** forms an oxide of formula $\mathbf{X}_2O_5$.

In which group of the Periodic Table is **X** likely to be found?

A Group 2 **B** Group 13 **C** Group 15 **D** Group 18

49. Element **M** is a typical transition metal.

Which property will it **not** have?

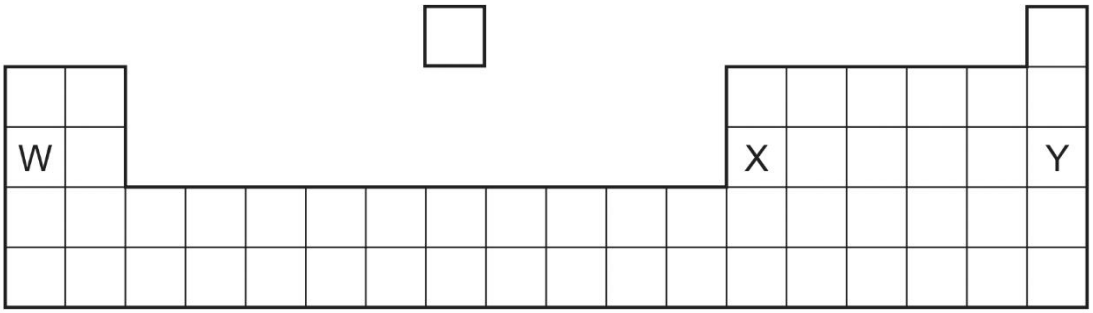
A A low melting point.

B Coloured compounds.

C Good electrical conductivity.

D Variable oxidation states.

50. The diagram shows part of the Periodic Table.



Which row about the elements **W**, **X** and **Y** is correct?

	combines with oxygen in the ratio 2:3	exists as single atoms and is chemically unreactive	forms a carbonate which is not decomposed by heating in a Bunsen flame
A	**W**	**X**	**Y**
B	**W**	**Y**	**X**
C	**X**	**W**	**Y**
D	**X**	**Y**	**W**

51. An atom of element **E** forms a white oxide of formula **E**O.

What is **E**?

A Argon **B** Calcium **C** Copper **D** Potassium

52. Which statement about Group 1 metals is correct?

A They are hard compared with most other metals.

B They form coloured compounds.

C They have high densities compared with most other metals.

D They only form ions with a charge of +1.

53. Which statement about the elements in the Periodic Table is correct?

A An atom of potassium, K, has more protons than an atom of argon, Ar.

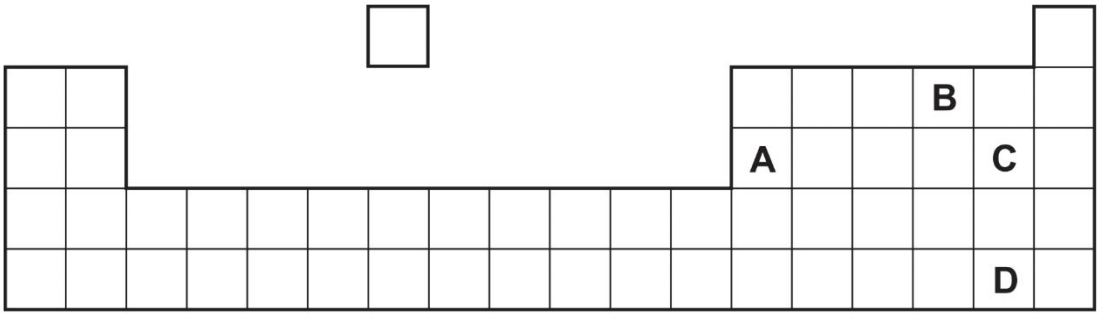
B Elements in the same Period have similar chemical properties.

C Elements that are non-metals form only covalent bonds with other elements.

D On descending Group 1 from lithium, Li, to caesium, Cs, the metals become less reactive.

54. The positions of four elements are shown on the outline of part of the Periodic Table.

Which element is a solid non-metal at r.t.p.?



55. What is **not** a typical property of transition elements?

A They form coloured compounds.

B They have high melting points.

C They have low densities.

D They have variable oxidation states.

56. Indium (proton number 49) is in Group 13 of the Periodic Table. Antimony (proton number 51) is in Group 15 of the Periodic Table.

Which statement comparing indium and antimony is correct?

A Antimony has more metallic character and more valency electrons per atom than indium.

B Antimony has more metallic character; indium has more valency electrons per atom.

C Indium has more metallic character; antimony has more valency electrons per atom.

D Indium has more metallic character and more valency electrons per atom than antimony.

57. Three elements each show oxidation states of +2 and +3.

To which part of the Periodic Table do these elements belong?

A Group 2 **B** Group 13 **C** Group 15 **D** Transition metals

58. The Group 1 metals lithium, sodium and potassium show trends in their melting points and in their reactions with water.

Which statement is correct going down the group from lithium to potassium?

A Their melting points decrease and their reaction with water becomes less vigorous.

B Their melting points decrease and their reaction with water becomes more vigorous.

C Their melting points increase and their reaction with water becomes less vigorous.

D Their melting points increase and their reaction with water becomes more vigorous.

59. Element **X** forms:

- A covalent compound, H_2**X**
- An ionic compound, Na_2**X**
- Oxides **X**O_2 and **X**O_3.

To which group of the Periodic Table does **X** belong?

A 2 **B** 13 **C** 15 **D** 16

60. Palladium is an element, atomic number 46. Some of its properties, and the properties of its compounds, can be predicted from its position in the Periodic Table. Which row is correct?

	predicted property of palladium	predicted property of palladium compounds
A	Its density is similar to the density of sodium.	Some of them can act as catalysts.
B	Its density is similar to the density of sodium.	They are white in the solid state.
C	It is present in compounds in more than one oxidation state.	Some of them can act as catalysts.
D	It is present in compounds in more than one oxidation state.	They are white in the solid state.

61. Which statement about transition elements is correct?

A Their soluble salts usually form coloured aqueous solutions.

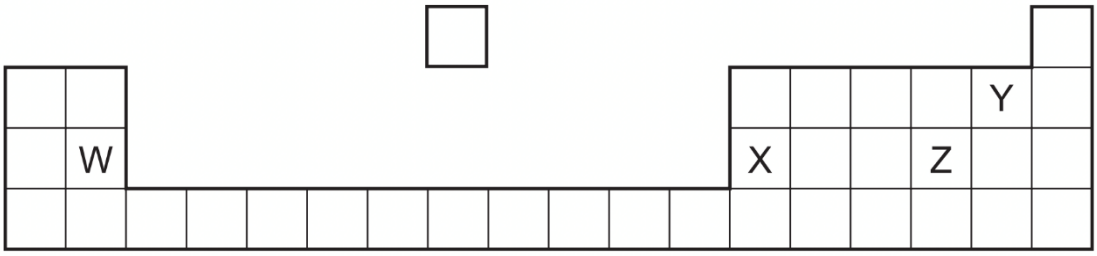
B They are all in the same group of the Periodic Table.

C They are non-metals with high melting points.

D They can be mixed together to form compounds.

62. Part of the Periodic Table is shown with four elements, **W**, **X**, **Y** and **Z**.

These are **not** the elements' actual symbols.



Some pairs of these elements may react to form compounds. Which formulae are correct?

A **WX** and **YZ** **B** **W**Y_2 and **WZ**

C **WZ** and **XZ** **D** X_2Z_3 and **YZ**

63. Helium and xenon are both noble gases. What is true of both elements?

	they are chemically inert	the atoms have eight electrons in their outer shell
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

64. The elements in Group 1 have similar chemical properties.

Which statement explains why this is true?

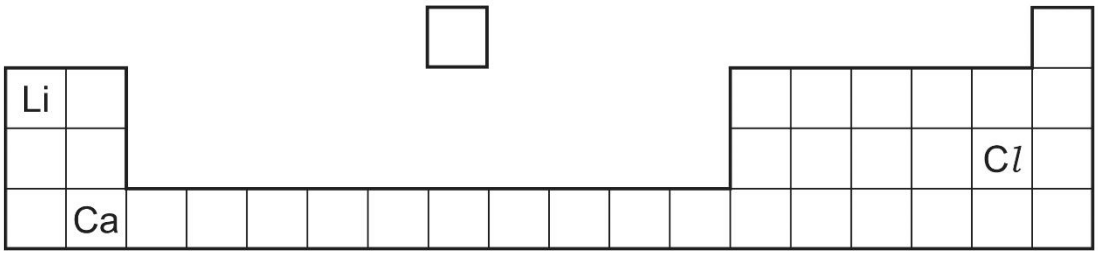
A They all have metallic bonding.

B They all have the same number of complete electron shells.

C They all have the same number of electrons in their outer shell.

D They are all stored under oil to prevent reactions with the air.

65. The diagram shows part of the Periodic Table.



Which element has the highest proton number and which element has the largest number of valence electrons?

	highest proton number	highest number of valence electrons
A	Ca	Ca
B	Ca	Cl
C	Li	Ca
D	Li	Cl

66. Which statement about the properties of some elements is correct?

A All noble gases are unreactive due to having eight electrons in their outer shells.

B The Group 17 element astatine, At_2, is expected to be a black solid at room temperature.

C The reactivity of the elements in both Group 1 and Group 17 increases down the group.

D When aqueous chlorine is added to aqueous potassium bromide there is no change in colour.

67. A lump of element **X** can be cut by a knife.

During its reaction with water, **X** floats and melts. What is **X**?

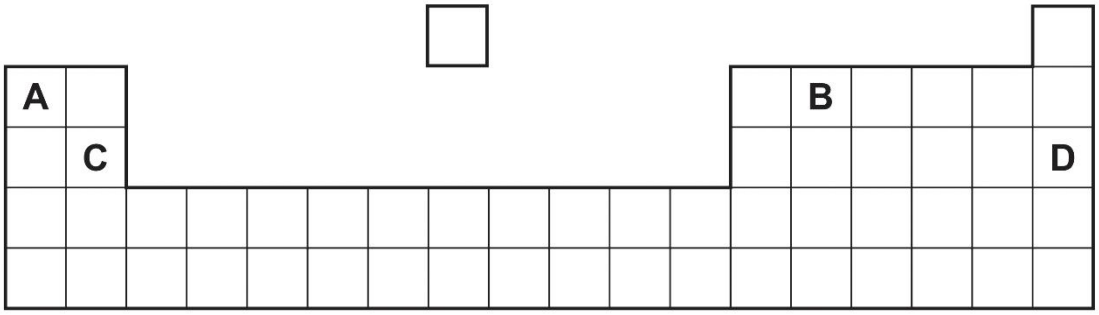
A Calcium **B** Copper **C** Magnesium **D** Potassium

68. Chlorine is passed into separate samples of aqueous potassium iodide and aqueous Potassium bromide. In which solutions is there a colour change?

	KI(aq)	KBr(aq)
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

Key:
✓ = yes
✗ = no

69. Part of the Periodic Table is shown. Which element forms an acidic oxide?



70. Which statements describe the Periodic Table?

1 The elements are arranged in order of their nucleon number.

2 The elements are arranged in order of their proton number.

3 It is used to predict the properties of elements.

A 1 and 3 **B** 1 only **C** 2 and 3 **D** 2 only

71. Which row shows how the properties of the Group 1 elements change on descending the group?

	density	melting point	reactivity
A	decreases	increases	increases
B	decreases	increases	decreases
C	increases	decreases	increases
D	increases	decreases	decreases

72. Copper is a transition element.

Two compounds of copper are copper(II) oxide and copper(II) carbonate. Which row describes the two compounds?

	copper(II) oxide	colour of copper(II) carbonate
A	acidic	green
B	acidic	white
C	basic	green
D	basic	white

73. Some properties which indicate the differences in elements are listed.

1 Metallic character.
2 Number of electron shells in an atom.
3 Number of protons in an atom.
4 Total number of electrons in an atom.

Which two properties increase across a period of the Periodic Table?

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

74. Elements **X** and **Y** combine to form an ionic compound.

Atoms of **X** have more protons than atoms of **Y**.
Atoms of **Y** have more valence electrons than atoms of **X**.

Which statement is correct?

A Ions of **X** are negatively charged.
B Atoms of **X** have more electron shells than atoms of **Y**.
C **X** and **Y** are in the same Period of the Periodic Table.
D **X** and **Y** are in the same Group of the Periodic Table.

75. The elements in Group 1 of the Periodic Table show trends in both their reactivities and their melting points. Rubidium is in Group 1. Which statement about rubidium is correct?

A It has a higher melting point than potassium.
B It reacts with water to produce an acidic solution.
C It reacts with water to produce oxygen gas.
D It is more reactive than potassium.

76. Element **Y** is in Period 3 of the Periodic Table. It forms a chloride that is a liquid at room temperature. Which row shows correct information about the Group number and the nature of the oxide of element **Y**?

	group number	nature of oxide
A	1	basic
B	2	acidic
C	14	amphoteric
D	16	acidic

- Scan the QR Code below to view the answers to this assignment.

http://www.chemist.sg/periodic_table/periodic_table_mcq_ans.pdf