Year 9 Science: The periodic table: groups, periods, metals and non-metals

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Element 17 is in period 3. Name it, give its group, and say whether it is a metal or non-metal.

2. Calcium is in group 2. Would a calcium wire conduct electricity? Give a reason.

3. Why is argon, not air, pumped around the metal while welding?

4. Melting points in group 17 rise down the group: chlorine −101 °C, bromine −7 °C, iodine 114 °C. Predict the state of astatine, the next halogen, at room temperature.

5. A grey element is shiny, conducts, and fizzes violently in water. Which group is it most likely in?

Fix the mistake

6. Correct this statement: "Groups are the rows and periods are the columns."

7. Correct this statement: "The modern periodic table is in order of atomic mass."

8. Correct this statement: "Hydrogen sits at the top of group 1, so it is a metal."

9. Correct this statement: "CO is the symbol for cobalt."

Answer key (for parents and tutors)

1. Element 17 is in period 3. Name it, give its group, and say whether it is a metal or non-metal.
   Chlorine, group 17 (a halogen), a non-metal, because it is right of the staircase.
2. Calcium is in group 2. Would a calcium wire conduct electricity? Give a reason.
   Yes. Group 2 is on the left of the table, so calcium is a metal, and metals conduct.
3. Why is argon, not air, pumped around the metal while welding?
   Argon is a noble gas in group 18, so it does not react with the hot metal, while oxygen in air would.
4. Melting points in group 17 rise down the group: chlorine −101 °C, bromine −7 °C, iodine 114 °C. Predict the state of astatine, the next halogen, at room temperature.
   A solid. The melting points keep rising down the group and iodine is already solid, so astatine's melting point will be higher still.
5. A grey element is shiny, conducts, and fizzes violently in water. Which group is it most likely in?
   Group 1, the alkali metals: reactive metals that react strongly with water.
6. Correct this statement: "Groups are the rows and periods are the columns."
   Groups are the columns (1 to 18) and periods are the rows (1 to 7); elements in one group behave alike, which is why the columns matter most.
7. Correct this statement: "The modern periodic table is in order of atomic mass."
   It is in order of atomic number, the number of protons, which is why tellurium comes before iodine even though it is heavier.
8. Correct this statement: "Hydrogen sits at the top of group 1, so it is a metal."
   Hydrogen is a non-metal gas; it is placed at the top left, but it does not conduct or behave like the alkali metals.
9. Correct this statement: "CO is the symbol for cobalt."
   Cobalt is Co, with a lower case second letter; CO has two capitals, so it is two elements, carbon and oxygen, joined as a compound.